University of Naples Federico II

Department of Humanistic Studies

DOCTORAL COURSE

IN

Mind, Gender and Language

Coordinator: Prof. Dario Bacchini

XXXVI CYCLE

The perinatal experience during the COVID-19 pandemic: mixed-method research on maternal psychological health

Supervisor:
Giorgia Margherita

PhD Candidate:
Alessia Caffieri

2022/2023 Academic Year

The perinatal experience during the COVID-19 pandemic: mixed-method research on maternal psychological health

Introduction 6

PART 1
Theoretical background

Chapter 1 - Motherhood: the lens of perinatal clinical psychology
Chapter 1 - Overview 12
1.1 Motherhood as a crisis 13
1.1.1 Women's brain plasticity in the perinatal period 13
1.1.2 Motherhood: a "developmental" identity crisis 14
1.1.3 Motherhood: a "psychosocial" crisis 17
1.2 *Perinatal psychological distress: a vital crisis* 18
1.2.1 Depression 19
1.2.2 Anxiety 19
1.2.3 PTSD 20
1.2.4 Other disorders and forms of distress 20
1.3 The field of affects 21
1.3.1 Maternal fears and anguishes 21
1.3.2 Maternal loneliness: a "bridge" between intrapsychic and interpersonal experience 22
1.4 Perinatal psychological health: intervention and policies 24
1.4.1 Psychological interventions for women in the perinatal period 24
1.4.2 Perinatal Healthcare Services' global policies and cultural approaches 26

Chapter 2 - A "personal crisis" in a "collective crisis": perinatal maternal experience during the COVID-19 pandemic
Chapter 2 - Overview 28
2.1 The timeline of the COVID-19 pandemic spread 29
2.1.1 COVID-19 infection in pregnant and postpartum women 30
2.1.2 COVID-19 infection in infants: transmission trajectories and risks 32
2.2 The timeline of the virus spread in Italy 33
2.2.1 COVID-19 infection in pregnant and postpartum women: a strict focus on Italy 34
2.2.2 Italian guidelines for perinatal healthcare services 35
2.3 Pregnant and postpartum women's psychological health during the COVID-19 pandemic 37
2.3.1 Depression 38
2.3.2 Anxiety 39
2.3.3 COVID-19-related post-traumatic stress 40
2.3.4 Stress and other forms of distress 41
2.4 Vulnerabilities and protective factors for perinatal women's psychological health 41
2.4.1 Socio-demographic at-risk factors: financial strain, pre-existing illness, and geographical/cultural differences 42
2.4.2 Perinatal experience characteristics 43
2.4.3 Personality and intrapersonal factors 44
2.4.4 Interpersonal domain: isolation, social support, and loneliness 45
2.4.5 Lockdown effect 46
2.4.6 Changes in healthcare procedures and their risks 46
2.4.7 Fears and concerns about COVID-19 47
2.5 A brief focus on infant development and the mother-infant relationship in the COVID-19 era 48
2.6 Not only motherhood: paternal experience during the COVID-19 pandemic 49
2.7 Key issues 50

PART 2
Research studies

Chapter 3 - A national perspective on perinatal women's psychological health in Italy during the first year of the COVID-19 pandemic: a systematic review (2020-2021)
Chapter 3 - Overview 54
3.1 Introduction 55
3.1.1 Aim of the study 55
3.2 Method 56
3.2.1 Eligibility criteria 56
3.2.2 Search strategy 56
3.2.3 Selection strategy 56
3.2.4 Information extraction 57
3.2.5 Quality assessment 57
3.2.6 Synthesis methods 58
3.3 Results 58
3.3.1 Selected studies 58
3.3.2 Methodological Quality 58
3.3.3 Characteristics of the included studies 60
3.3.4 Narrative main findings 64
3.3.4.1 Pregnancy and postpartum continuum– from anxiety to depression and post-traumatic stress 64
3.3.4.2 Risk dimensions: previous psychopathologies and the lack of social support 65
3.3.4.3 Fear for others health more than their own 65
3.3.4.4 Recommendations for clinical practice and services 66
3.4 Discussion 66
3.4.1 New research in the Italian context 69
3.4.2 Limits 71
3.4.3 Highlights and implications 71

Chapter 4 - The time of motherhood, from pregnancy to postpartum, in the COVID-19 era: a longitudinal qualitative study (years 2021-2022)
Chapter 4 - Overview 73
4.1 Introduction 74
4.1.1 Aim of the study 75
4.2 Materials and methods 75
4.2.1 Researcher characteristics and reflexivity 76
4.2.2 Context 77
4.2.3 Participants 78
4.2.4 Procedure 79
4.2.5 Analysis 80
4.3 Findings 81
4.3.1 Maternal functions during the COVID-19 pandemic 83
4.3.2 "Care" needs of women in maternal services 87
4.3.3 Unspeakable: obstetric violence and gender inequality in the working field 89
4.4 Discussion 91
4.4.1 Limits 95
4.4.2 Highlights and implications 95

Chapter 5 - COVID-19-related fears and perinatal psychological distress: the mediation role of COVID-19-related post-traumatic impact and loneliness in a cross-sectional study at the end of the COVID-19 health emergency in Italy (2022)
Chapter 5 - Overview 96
5.1 Introduction 97

5.1.1 Aim of the study ... 98
5.2 Method ... 98
5.2.1 Participants ... 98
5.2.2 Procedure ... 99
5.2.3 Measures ... 99
5.2.4 Data analysis ... 101
5.3 Results ... 103
5.3.1 Perinatal women's characteristics and psychological health ... 103
5.3.2 Differences between pregnant and postpartum women ... 105
5.3.3 Results of bivariate correlations ... 107
5.3.4 Results of the serial mediation analyses ... 108
5.3.4.1 Depression ... 108
5.3.4.2 Anxiety ... 109
5.3.4.3 Stress ... 111
5.4 Discussion ... 112
5.4.1 Limits ... 116
5.4.2 *Highlights and implications* ... 117

Chapter 6 - A global perspective on the prevalence of perinatal depression and anxiety during the COVID-19 pandemic: an umbrella review and meta-analytic synthesis (2020-2023)
Chapter 6 -Overview ... 119
6.1 Introduction ... 120
6.1.2 Aim of the Study ... 120
6.2 Method ... 120
6.2.1 Eligibility criteria ... 121
6.2.2 Search strategy ... 122
6.2.3 Selection strategy ... 122
6.2.4 Data extraction ... 122
6.2.5 Quality assessment ... 123
6.2.6 Quality of the evidence ... 123
6.2.7 Overlap assessment ... 124
6.2.8 Data synthesis ... 124
6.3 Results ... 124
6.3.1 Selected studies ... 125
6.3.2 Methodological Quality ... 125
6.3.3 Quality of the evidence ... 127
6.3.4 Characteristics of the included systematic reviews and meta-analysis ... 127
6.3.5 Characteristics of the included meta-analyses ... 127
6.3.6 Study overlap ... 128
6.3.7 Narrative main findings of SR&MA ... 129
6.3.8 Global prevalence of antenatal and postnatal depression ... 129
6.3.8.1 Sub-groups results for antenatal and postnatal depression ... 130
6.3.9 Global prevalence of antenatal and postnatal anxiety ... 133
6.3.9.1 Sub-groups results for antenatal and postnatal anxiety ... 135
6.4 Discussion ... 136
6.4.1 Limits ... 139
6.4.2 Highlights and implications ... 141

Conclusion ... 142
References ... 149
APPENDIX ... 185

What do women hold?
The home and the family
and the children and the food.
The friendships, the work,
the work of the world and the work of being human,
the memories and the troubles
and the sorrows and the triumphs and the love.
Men do as well, but not quite in the same way.
Sometimes when I'm feeling particularly happy or content,
I think I can provide sustenance for legions of human beings.
I can hold the entire world in my arms.
Other times, I can barely cross the room.
And I drop my arms, frozen.
There is never an end to holding,
and certainly, there is often the feeling of never doing enough.
And then there is the next day and the next day.
And one holds on.

"Women Holding Things". Maira Kalman.

Introduction

The current PhD project aims to explore the psychological health of pregnant and postpartum women during the COVID-19 pandemic. From 2020 to 2023, the COVID-19 pandemic has been considered a public health emergency of international concern (WHO, 2023, May 5). COVID-19 virus spread has prompted national governments to apply several restrictions to limit infections, among which were home confinement, limitations of social contacts, wearing masks, and the shutdown of in-person activities. In particular, Italy was one of the first countries in Europe to be affected by COVID-19 in terms of the number of contagions and deaths as well as one of the countries that applied the most restrictive preventive measures to limit the virus spread (Mattiuzzi et al., 2022). Globally, COVID-19 has represented a collective crisis that in some cases has assumed the configuration of a collective traumatic experience not ascribable to a "natural disaster" or a "man-made trauma". COVID-19-related traumatic aspects are partially related to the threats of infection caused by the encounter and the closeness with others, hence it prominently involves the interpersonal domain (unlike natural disasters), but at the same time, it does not share with the "man-made traumas" the characteristics of voluntary dehumanized and violent action of men on men (Bohleber, 2007). Hence, its traumatic aspects need to be considered specific and different from other collective traumas. Especially in the early stages of the health emergency, COVID-19 could represent for the global population a dangerous threat - a "bringer of death" or, in less persecutory terms, a "bringer of loss"- which led to intense collective experiences of helplessness, loneliness, uncertainty, loss, and grief (Duane et al., 2020; Horesh and Brown, 2020; Masiero et al., 2020; Watson et al., 2020). In this sense, it assumed the configuration of a "collective trauma". At that time, collective needs emerged in the population, such as the need for sharing and the common desire to feel "generative". I have also needed to feel "generative", and I think this doctoral project represents my attempt to realize that desire. In fact, that feeling has prompted my main research question: how do women in the perinatal period – being "life-bearers" – live their experience of motherhood during a pandemic? Among different forms of motherhood, this project has as a unit of analysis a specific form of perinatal experience: the one of birthing motherhood. From the lens of perinatal clinical psychology, the maternal perinatal experience represents a complex bio-psycho-social crisis (Imbasciati & Cena, 2020): a topic of interdisciplinary interest that spans the fields of medicine, psychology, and social sciences. In a broad sense, this research project tries to understand the unfolding of the bio-psycho-social crisis of motherhood within the "collective crisis" of the COVID-19 pandemic. Although the present work approaches the perinatal experience through a psychological perspective, it tents, simultaneously, not to forget all the stratifications that characterize this developmental transition.

Since the onset of the COVID-19 pandemic, pregnant and postpartum women have been considered vulnerable groups for the multi-component impact of COVID-19 on the perinatal experience (Beukens et al., 2020; Ceulemans et al., 2020; King et al., 2021; Motrico et al., 2020). Among these components, there are: the risks and the uncertain consequences of infection in pregnant women and infants, the impact of the social restrictions on the perinatal experience, and the state of emergency of healthcare services which have

modified some perinatal praxes. These COVID-19-related changes and challenges have had a wide impact on maternal psychological health.

Considering this complex situation, one of the main challenges of the current research project is to study the temporality of the perinatal experience, from pregnancy to postpartum, within the temporality of the COVID-19 pandemic "waves". The term "waves" describes well the nonlinearity of the COVID-19 spread that involves temporary periods of total lockdown, partial lockdown, or lifting of restrictions. To these two temporalities, another temporality must be added: that of research. This project was born and has grown during the COVID-19 pandemic. The project started at the end of the first year of the COVID-19 virus spread in Italy, and has focused its primary research on the "second wave" and the "third wave" of virus spread (when the end of the public health emergency was declared in Italy), involving a last phase in 2023, with the formal end of the global concern about the COVID-19 pandemic. Hence, as a fruitful product of the pandemic, it has required several steps forward and back to adapt the research design to the unpredictability of the COVID-19-related temporality and the temporality of the maternal perinatal experience. This has represented a continuous challenge for the current PhD project and me as a researcher. This challenge has required a necessary adaptation of a mix of theories and methods to understand the multi-level and stratified phenomenon of living the perinatal experience during the COVID-19 pandemic, from a psychological perspective.

This thesis consists of two parts: an introductory part in which the theoretical background and premises that have guided the project are described; and a second part in which the research studies are reported.

The first chapter of the current work presents the theoretical framework of perinatal clinical psychology (Imbasciati & Cena, 2007; 2020), which has its roots in the psychodynamic and infant research theories. This framework orients the hypotheses and the overall interpretation of the studies' results. This approach sustains the fundamental role of maternal psychological health in influencing the children, women, and families' health. In addition, this approach considers perinatal health along a continuum from the typical to the pathological manifestations. From this theoretical perspective, the first chapter offers a panoramic on the classic configurations of motherhood as a biological, "developmental" (Bibring, 1956, 1961), identity and "psycho-social" crisis (Erikson, 1984). In this context, maternal mental health, mainly in terms of depression and anxiety, is presented as a "vital" crisis for women and global societies (Diguisto et al., 2022). Moreover, a great part of the first chapter is dedicated to the affective domains that can influence maternal psychological distress, such as maternal fears/anguishes and loneliness. In particular, loneliness is presented as a "bridge" between intrapsychic and interpersonal areas of experience, often underestimated in pregnant and postpartum women. The last part of the first chapter is, instead, dedicated to a reflection on the efficacy of psychological intervention in decreasing maternal psychological distress, and the obstacles to their integration and implementation in perinatal healthcare services, globally and in Italy.

The second chapter focuses on the principal object of the present work: the psychological health of pregnant and postpartum women during the COVID-19 pandemic. Within this chapter, the multi-component

impact of the COVID-19 pandemic on the health of pregnant and postpartum women is discussed, through a binocular perspective. On one hand, through a global perspective, the timeline of the virus spread and its consequences on women in the perinatal period worldwide is presented. On the other hand, a contextual-related perspective is adopted, providing an overview of the COVID-19 virus spread in Italy and the government's recommendations for women in the perinatal period and maternal healthcare services. First, this chapter examines the risks of COVID-19 infection in pregnant and postpartum women and fetuses/infants. Second, the chapter discusses the main areas of psychological distress reported in women who lived the perinatal experience during the COVID-19 pandemic. In particular, a high heterogeneity and controversy on prevalence rates and predictors of perinatal depression and anxiety during the COVID-19 pandemic are highlighted. Moreover, results on COVID-19-related post-traumatic stress after the acute phases of the COVID-19 spread are reported. Third, among the vulnerable and protective factors for maternal perinatal psychological health during the COVID-19 pandemic a focus on loneliness, and COVID-19-related fears is presented. COVID-19-related fears, in fact, emerged as one of the best predictors of perinatal depression and anxiety during the acute phases of the pandemic (Chen et al., 2022; Liu et al., 2020; Motrico et al., 2022; Shuman et al., 2021; Usmani et al., 2021). On the other side, loneliness widely characterized the perinatal experience during the pandemic, assuming the role of mediator between the lack of social support consequent to social isolation imposed by the COVID-19-related social restrictions, and antenatal depression and anxiety (Harrison et al., 2022). This chapter also presents a summary of the consequences of the COVID-19 pandemic on infants' development and paternal and non-birthing parents' psychological health. The chapter ends by underlining the gaps in COVID-19-related literature on maternal perinatal psychological health, paving the way for the second part of the thesis, where the studies of the current project are reported.

The third chapter presents the first research study. This study took form at the end of the first acute year of the COVID-19 spread in Italy and has represented an initial exploratory step in the project design. Considering the strong impact of the COVID-19 pandemic in Italy (Mattiuzzi et al., 2022; Rossi et al., 2023), the study aims to summarize the psychological health of pregnant and postpartum women during the first year of the virus spread in Italy, through a systematic review. This study also investigates the gaps in the scientific literature in Italy, necessary to orient the other steps of the project. The systematic review includes 11 studies of moderate/high quality. The findings shine light on several important dimensions concerning the perinatal women's experience during the pandemic, such as the high variability in depression and anxiety rates, the lack of social support as one of the main at-risk factors for maternal psychological health in Italy, and a great concern of mothers for the health of significant others. Methodologically, the findings of the study suggest the lack of qualitative, longitudinal, and intervention-based studies in Italy.

The fourth chapter presents the second study. Considering the gaps found in the scientific literature in the Italian context by the systematic review, the second study tries to in-depth explore the "multi-component" impact of the COVID-19 pandemic on the maternal experience, through a qualitative longitudinal design, following the paradigm of Longitudinal Interpretative Phenomenological Analysis

(LIPA) (Farr & Nizza, 2019; Smith, 1994). In a historical moment of health emergency, where it appears difficult for perinatal healthcare services to recognize and support women's psychological needs, dedicating part of the project to qualitative research represents an ethical choice. In this sense, the LIPA approach, giving space to women's subjective experience, is in line with a "women-centered" approach applied to the research field (WHO, 2018; ISS, 2021) which aims to consider women's needs in the perinatal period as a health priority. In addition, the longitudinal design of the study leads to an in-depth trace of the changes in needs across the different phases of the perinatal experience and the different phases of the COVID-19 pandemic. In line with LIPA assumptions, that give importance to representativity over numerosity, a homogenous group of 8 women participated in the study. These women were interviewed twice: the first time during their pregnancy in a period corresponding to the "second wave" of the COVID-19 pandemic in Italy (2021), and the second, one year after the first interview, during their postpartum experience in the last phase of the COVID-19 health emergency in Italy (2022). The results highlight the main affective challenges lived by women, from the first lockdown when they decided to have a child, through the isolation and COVID-19-related fears lived during pregnancy and the conflictual interpersonal fears lived during the post-partum, to the fear of the long-term effects of the COVID-19 pandemic on their maternal role and the child's development. In addition, the study shines light on the representations and the affects lived by women about the anti-contagion praxes applied by Italian maternal healthcare services as well as some at-risks conditions of gender-based social injustice, such as obstetric violence and job-forced abandonment. Methodologically, to the best of my knowledge, this study is the only one that investigates the subjective experience of motherhood during the COVID-19 pandemic with a qualitative longitudinal approach.

The fifth chapter presents the third study. The study aims to explore the psychological health of pregnant and postpartum women at the formal end of the COVID-19 public health emergency in Italy. Considering the results that emerged from the systematic review and the longitudinal qualitative study, some hypotheses had been formulated and tested, through a cross-sectional study. A total of 200 women in the perinatal period participated in an online survey at the end of the COVID-19 public health emergency in Italy. COVID-19-related fears, COVID-19-related post-traumatic impact, perinatal depression, anxiety and stress, and loneliness were assessed. In particular, the interest of this study has been to explore if COVID-19-related fears still affected perinatal psychological distress (depression, anxiety, and stress) at the end of the health emergency and if this effect could be explained by the sequential indirect effect of COVID-19 post-traumatic impact and loneliness. To test these hypotheses, robust mediation analyses were performed (Alfons et al., 2022). This study highlights that, despite the end of the health emergency, COVID-19-related fears continued to influence perinatal psychological distress via the full mediation effect of COVID-19-related post-traumatic impact and loneliness.

Finally, the sixth chapter presents the fourth study of this PhD project. Thanks to the collaboration with the group of research led by Emma Motrico of the Universidad Loyola Andalucía (Seville), this study aims to produce a global high-level synthesis on the main forms of psychological distress observed in women in the perinatal period during the COVID-19 pandemic. For this purpose, an umbrella review and

meta-analytic synthesis on the prevalence of antenatal and postnatal depression and anxiety during the COVID-19 pandemic were performed. A highly sensitive search and multiple rigorous procedures were applied to guarantee the quality and robustness of the results. The study includes 25 systematic reviews and meta-analyses, and 198 primary studies from 45 countries, covering five continents. The study suggests that during the COVID-19 pandemic, antenatal and postpartum depression affected one in four women, with prevalence rates of 29% and 26%, respectively. On the other side, the prevalence of antenatal and postnatal anxiety was 31%, affecting one in three women. Sub-group analyses show differences between continents, with Africa having the highest prevalence of perinatal depression and Oceania and Europe having the highest prevalence of antenatal and postnatal anxiety. Differences also emerge considering instruments used to assess prevalence, especially in the case of antenatal anxiety, for which STAI is associated with the highest prevalence. The study highlights also a high heterogeneity and a risk of publication bias.

The limits of the studies and implications for research and practice are discussed within the chapters. The entire research project received ethical approval from the Ethics Committee of Psychological Research of the University of Naples Federico II (Protocol 3/2021).

PART 1

THEORETICAL BACKGROUND

Chapter 1
Motherhood: the lens of perinatal clinical psychology

Chapter 1 - Overview

In this introductory chapter, the theoretical background of the entire PhD project will be presented. The perinatal clinical psychology has been the framework that has generated the research hypothesis and oriented the interpretation of the studies' results (Imbasciati & Cena, 2007; 2020). In Italy, this framework has its roots in the psychodynamic and infant research tradition. This approach orients to examine the perinatal experience through a complex perspective, interwinding biological, psychological, social, and cultural levels. In particular, the current project will have as a unit of analysis a specific form of parenting, the one of birthing motherhood. It is important to underline that, to date, parenthood can assume different forms and configurations, which involve specific intrapsychic and interpersonal processes. The deepening of the different forms of parenthood is beyond the scope of the current work, though it represents an important aspect that needs to be addressed by future research.

In this chapter, motherhood will be presented in its positive and negative crisis-related aspects. Motherhood will be described as a "developmental" and "psychosocial" crisis, along a continuum that goes from functional to dysfunctional drifts. In this context, perinatal psychological distress will be addressed as a vital crisis for women and global societies. Among the great variety of factors that can influence functional or dysfunctional outcomes of this process of crisis, this chapter will focus on maternal fears and loneliness, for the importance they assumed for the current PhD project situated during the COVID-19 pandemic. Then, the transcultural perspective and guidelines that traditionally define how societies address the "care needs" of mothers during the perinatal experience and the role of psychological intervention will be briefly presented.

1.1 Motherhood as a crisis

The current PhD project has been oriented by the theoretical framework of perinatal clinical psychology (Imbasciati & Cena, 2007; 2020). This approach, which integrates the psychodynamic tradition and infant research, has become widespread in Italy since the 2000s as a response to the progressive medicalization of the perinatal pathways (Imbasciati & Cena, 2007). The medicalization of the perinatal experience represents a tendency of clinical practice and research to disregard and minimalize the issues that are not directly related to the biological aspects of the perinatal course, hence, the psychological and social aspects that widely determine the health of the children, parents, and family. According to this approach, the overall health of the "child" should be the nuclear goal of research and clinical fields. To reach this aim, research and clinical practice should focus on the "care" of all people and systems involved in the "care" of the fetus/infant/child (Imbasciati & Cena, 2020). Hence, one of the main issues of perinatal clinical psychology is promoting the health of mothers. Perinatal clinical psychology rejects a dichotomous approach to health and considers the range of behaviors and affective experiences that can characterize the experience of motherhood along a continuum ranging from "typical" to psychopathological (Imbasciati & Cena, 2007). Consistent with an un-medicalizing perspective, this project is oriented towards maternal psychological health, rather than perinatal mental disorders. From the perspective of perinatal clinical psychology, the motherhood experience can be considered a bio-psycho-social crisis that covers both pregnancy and postpartum (up to one year of the child's age). In a broad sense, the crisis is a period of perturbation, a change in the regular process or life. Hence, in itself, the crisis cannot be considered a negative phenomenon, though it can create a dynamic of instability and vulnerability. The relationship between the dynamic of crisis and motherhood will be addressed by considering biological, psychological, and social levels in the next paragraphs.

1.1.1 Women's brain plasticity in the perinatal period

Women's brain during pregnancy seems predisposed to cope with the crisis. This has been suggested by neurobiological research that has identified extensive brain plasticity in pregnant and postpartum women that enables them to adapt to the changes imposed by motherhood (Barba-Müller et al., 2019). It involves structural and functional changes "in regions involved in reward/motivation, salience/threat detection, emotional regulation, and social cognition" (Barba-Müller et al., 2019, p. 295).

Structural brain changes (in particular, reduction in extensive gray matter volume in specific cortical sections involved in social cognitive processing), mediated by the increase in sex steroid hormones occurring during pregnancy, appeared persistent along the entire perinatal period in primiparous women until two years after childbirth, showing a prediction effect on mother-child attachment (Hoekzema et al., 2017). At the same time, another study (Kim et al., 2010) showed an increase in gray matter volume from childbirth to the fourth month of postpartum in neural networks related to motivation, executive functions, and somatosensory information, showing a progressive adaptation of mothers' brain to the children signals. In addition, studies on functional brain activity during the perinatal period showed that mainly the activation of "social

cognitive" neural networks associated with the "theory of mind" function, changed during the postpartum period adapting to the infant's development resulting sensitive to contextual dynamics. In this sense, it was observed that mothers of pre-term children recovered in neonatal intensive care had an increase in the activation of social cognitive networks. Less evidence was provided on the functional activation during pregnancy (Barba-Müller et al., 2019; Raz et al., 2014; Roos et al., 2011). In concert, these results on maternal neuroplasticity were interpreted as a sensitive adaptation of the women's brain to the "care" needs of the child, functional for stimulating the maternal caregiving function (Barba-Müller et al., 2019). However, although neuroendocrinal specific activation was found in pregnant women, it cannot be considered as an assumption for assuming a caregiving function. Interestingly, this specific sensitivity observed in women during the perinatal period was also considered a vulnerable neurobiological condition for the development of psychological distress (Barba-Müller et al., 2019). Hence, the neuroplasticity of women's brains during the perinatal period can assume both a positive and a negative role in influencing maternal function and women's health.

1.1.2 Motherhood: a "developmental" identity crisis

Literally and conceptually, several authors in the psychodynamic and infant research fields have associated the perinatal experience with a "crisis" (Bibring, 1956, 1961; Ferro & Ferro, 2012; Racamier, 2010). Bibring (1959, 1961) described the pregnancy as a "developmental crisis": a turning point in personal life that involved multiple changes, recalling past conflicts lived by women during their past stages of development. In this sense, pregnancy represents a process of dealing with current physical, psychological, and social changes that remark the conflicts involved in the construction of the woman's identity (Ferraro & Nunziante Cesaro, 1985; Breen, 1992; Pines, 1972). Perinatal experience is considered, in fact, the psycho-somatic experience par excellence because of the intertwining of mind and body that characterizes this experience and its outcomes (Manfredi & Imbasciati, 2004). According to Ferraro and Nunziante Cesaro (1985) the experience of pregnancy is often characterized by a "blissful fullness", a feeling of fusion with the child, which fills and repairs the voids and phantasmatic wounds of the woman's body. On the other hand, with childbirth, the body is emptied, and the woman has to return to reckoning with her cavities (Nunziante Cesaro, 1985). Thus, body transformation, during pregnancy and postpartum, recalls the identity conflicts that were part of the growth of the female body during puberty (Ferraro & Nunziante Cesaro, 1985).

At the same time, becoming a mother leads a woman to re-cope with the identifications with her own parents, in particular with her own mother (Breen, 1992; Pines, 1972).

According to Ammaniti et al. (1995), if the woman, crossing this identity crisis, is able to re-elaborate past conflicts towards the future, tolerate the regression, and trust the holding capability of her social environment, she would have integrated maternal representations and an eventual good future parenting style. On the other side, un-integrated maternal representations are characterized by a difficult adaptation to the pregnancy changes and ambivalent states: intense worries for the future or child's health, fantasies of a threatening child and expulsion, and difficulty in "feeling" the child's movements and signals.

Third, women with restricted and un-invested maternal representations highly rationalize pregnancy experience: they do not create specific representations or fantasies about the child or their maternal role, they do not affectively invest pregnancy experience and they do not emotionally recognize the changes they are living.

Racamier (2010) also draws attention to the concept of crisis, which on the psychic level involves internal destruction, a feeling of end and death followed, when it evolves positively, by a feeling of re-birth for the mother. In this sense, the process of psychic crisis makes the personality more fluid and assumes a developmental function (Ferro & Ferro, 2012; Racamier et al., 2010). Beyond the birth of the child, perinatal experience involves the progressive "birth of a mother" (Stern, 1998), a role that has to be integrated into one's own identity and that corresponds also to a specific psychic organization that became stable in the woman's self (Stern, 1995). Progressively the mother creates a mental space for holding a new image of herself and for welcoming the child (Bibring, 1961; Soifer, 1971; Raphael-Leff, 1982; Pines, 1982). This mental space can also be seen as a transitional space, not internal nor external, where it is possible to confront future scenarios (Imbasciati & Cena, 2007).

Being the "crisis" a complex and intense intrapsychic and interpersonal experience, it involves the possibility of eventual adverse outcomes, such as perinatal psychological distress, in cases of vulnerable integration of the self and un-resolved past identifications which predispose to intense anguishes (Bibring, 1959; 1961).

Nevertheless, pregnancy can count on inherent resources, such as the state of mind of "psychic transparency" that describes a great disposition to accept help from others and to open out about inner states and infancy's reminiscences (Bydlowski, 2000). In this sense, women during pregnancy assume generally a receptive function (Deutsch, 1945; Benedek, 1956).

If pregnancy represents a "developmental crisis" (Bibring, 1959, 1961; Racamier, 1961), childbirth is considered an "organizer" of the emotional experience of the woman (Riva Crugnola, 1987). The past conflicts lived during pregnancy re-emerged in the proximity of childbirth (Imbasciati & Cena, 2007). Childbirth can be a moment of intense joy and excitement and a delicate moment that involves painful physical experiences, and the activation of primitive anguishes: a first experience of physical and psychological separation from the child that, in some cases, can assume the characteristics of a "traumatic experience". The psychodynamic perspective has always been interested in the processes and characteristics of trauma, starting from Freud's (1895; 1920) theories to the thoughts of contemporary authors (Bohleber, 2007; Mucci, 2024; Shore, 1994; Varvin, 2016). Beyond the different forms of traumas (e.g., intra-psychic, relational, social, complex trauma) explained by specific theoretical and clinical models, the psychodynamic perspective provides also a wide definition of "traumatic". This position is not intended to define a categorical diagnosis, but rather to use the term "traumatic" to qualify a specific psychological reaction to an unpleasant event. In this sense, an experience can be lived as "traumatic" if it leads to a "break of the protective barrier" (Freud, 1920, pp. 215) of Ego. An unpleasant, harsh, and painful event can provoke an emotional response of great intensity that exceeds the psyche's ability to process it, with disrupting

consequences on symbolization processes (Bohleber, 2007; Mucci, 2024). Although some authors studied the childbirth trauma from the perspective of the child experience (Rank, 1929), in this context, the possible "traumatic" experience lived by the mothers during childbirth are the object of discussion. Childbirth, being an event of intense somato-psychic modification, can lead in women intense emotional responses that can overcome the psyche's threshold of tolerance. This would explain the frequent association between childbirth and "trauma" (Fornari, 1989; Sun et al., 2023). As a prevention towards a possible "traumatic" experience of childbirth, the physical and affective presence of a significant other - bearer of something "good" and comforting - can work as a "protective barrier", capable of "containing" the mothers' anguishes (Fornari, 1981; 1989). On the other side, in some cases, the "traumatic" experience of childbirth can find a repair just in the encounter between the mother and the child. Indeed, the possibility for the mother to know and see that the child is healthy has often a repairing function towards the trauma (Imbasciati & Cena, 2007). In addition, in recent years, a conceptual analysis has provided the coordinates to define psychological birth trauma (Sun et al., 2023). Childbirth trauma has been, in fact, an issue widely discussed in scientific literature and the clinical field. A range from 20 to 68% of women usually describe and define their experience of birth as "traumatic" (Sun, 2023), though only a few of them (around 4%) met the DSM-5's criteria for the diagnosis of post-traumatic stress disorder (Yildiz et al., 2017). Beyond the diagnostic criteria, to date, psychological birth trauma refers to the woman's painful emotional experiences (intense fears and anxiety, helplessness, loss of control) caused by events directly or indirectly related to childbirth, that originate from childbirth and influence postpartum, with different consequences that can go from long-lasting psychological distress, difficulties in parenting, and reproductive challenges to resilient, and post-traumatic growth pathways (Sun et al., 2023).

With childbirth, the postpartum period begins. In this context, the postpartum is described as the period that goes from childbirth to the first year of life of the infant (Imbasciati & Cena, 2020). During postpartum, the woman has to manage the confrontation between "the child of the day" – that is the real child – and "the child of the night", that is the imagined and dreamed child: an image created during the gestational period and useful to create an initial representation and mother-child bonding (Vigetti Finzi, 2019). This disillusion process involves, along with the representation of the child, also the idea of "motherhood" that the women start to create since childhood, on the basis of conscious and unconscious family and social representations. With postpartum, women have to integrate these imagined representations with the real experience of motherhood, a comparison that requires hard "work" for the mind. Selma Fraiberg (1982) distinguishes three children in the minds of parents: the child of the mind, the child of the heart, and the real child. The child of the mind is the phantom child, a product of the "unconscious ghosts of the parents" past, invading the relationship between parents and children. The child of the heart is, instead, the child of each parent's desire and the couple's project. The real child is the born child that elicits affective investment from the parents. The bonds between parents and the real child protect the child from phantasmatic intrusion. On the other hand, in highly pathological situations, parental phantasmatic aspects take over by settling into the relationship with the child.

According to Stern (1995), the “motherhood constellation”, which is a psychic organization that starts with childbirth, becomes one of the main psychic organizations that will determine the woman’s psychic life. The themes around which this psychic re-organization takes form are related to the “life-growth”, which is the main concern of the woman about her adequacy as a mother (Stern, 1995): how she will be able to take “care” of the child and make “good” decisions for his development.

Comparing motherhood to an identity crisis that involves conscious and unconscious processes means recognizing the perinatal experience as a delicate period, whose outcomes can be various and heterogeneous. It means wondering what the woman’s needs are, how they change during the perinatal period, and how they can be addressed to support their health and good experience of motherhood. In the following paragraph the identity crisis of motherhood is also presented as a psychosocial crisis.

1.1.3 Motherhood: a “psychosocial” crisis

From the social development perspective, motherhood was also considered a psychosocial “crisis” that characterized the transition to adulthood (Erikson, 1984). Becoming a parent represents one of the multiple forms through which it is possible to be and to feel generative, to feel that one’s own function in the world and in society is to “create” something new (in this case a new life), to overcome personal interests in favor of the others (Erikson, 1956). However, reproduction and generativity are not overlapping. A person can assume a generative function by dedicating genuinely oneself to others through acts that are not embodied in procreation. Otherwise, a person can give birth to a child but not feel able to assume a generative parental role. A generative perinatal experience means assuming a personal and social function, that requires responsibility across multiple temporalities: the temporality of one’s personal history, whereby the generative function is based on a creative self that has achieved a certain degree of integration and can assume responsibility of “caring” for the other and a transgenerational temporality, whereby generativity is seen precisely as overcoming narcissism in favor of the continuation of life (Imbasciati & Cena, 2007).

The relationship between caring and temporality was also deepened by Baraitser (2017) from a social-psychoanalytical perspective. She identifies two “chronic reiterations” of motherhood. One is that of the “stigma” whereby the woman must be devoted to the “home”, “cooking”, “cleaning” and “care”, in line with the temporality of reproduction. The other is the reiteration of “labor” that indicates an “affective, invested and intersubjective” process (Sandford, 2011, p. 6) for which the life of an individual “unfolds” in relation to the life of another, aimed to sustain individual and societal development and associated to the waiting time of caring (Baraitser, 2017).

The social psychology prefers the terms of *transition to parenthood* (Rossi, 1968) to describe the process through which both parents lived a transition from a past state to a new state, through several changes and challenges. In particular, with the transition to parenthood, one marks the transition from the family of origin to the construction of a new family unit that is as much the result of previously lived relational experiences as of social and cultural pressures (Rossi, 1968).

The modulation of stress related to the transition to parenthood is closely linked to social support, received both from familiars and by healthcare professionals (Wandersman et al., 1980; Barimani et al., 2017). Social support is considered one of the main resources on the interpersonal level that help women manage the new parental role. In fact, it is considered one of the main protective factors for the promotion of pregnant and postpartum women's psychological health (Bedaso et al., 2021; Schwab-Reese et al., 2017).

Hence, motherhood is not only an individual identity journey, but it is intrinsically relational, not only in the perspective of the mother-child relationship but in the way it re-shapes the relationships and social systems within which the woman is embedded. From a perspective that considers complexity, taking care of maternal health means, taking care of the collective well-being.

1.2 *Perinatal psychological distress: a vital crisis*

Being perinatal experience complex and stratified, it is possible that it could drive clinical or sub-clinical forms of psychological distress. Perinatal mental health represents a global and public health concern (WHO, 2017; ISS, 44/2020). It represents a "vital" crisis in particular in Western countries where psychiatric disorders are one of the main predisposing factors of maternal mortality (Diguisto et al., 2022; Glazer & Howell, 2021; Jago et al., 2020; Trost et al., 2021). In addition, it is widely demonstrated that maternal mental health has a cascading effect on women's, families', and children's health (Glover, 2014; Stein et al., 2014).

The line that separates psychopathological manifestations and typical/temporary emotional and behavioral reactions to vicissitudes of the perinatal experience is not always firmly defined. Mood and anxiety are among the main disorders observed in pregnant and postpartum women (Paschetta et al., 2014; Cantweel et al., 2021). However, anxiety and depression can be found in pregnant and postpartum women at sub-clinical levels, impacting maternal and children's well-being (Milgrom & Gemmill, 2020). In the current PhD project, I will refer to depression and anxiety not in terms of clinical diagnoses, but as forms of psychological distress along a continuum from no at-risk levels to dysfunctional. Depression and anxiety predict negative perinatal outcomes, such as spontaneous abortion, lower immunity, operative delivery, cesarean section, preterm birth, and lower birth weight (Grigoriadis et al., 2019; Zhang et al., 2023). They also affect children's health, reducing cognitive development and creating behavioral and emotional difficulties (Stein et al., 2014). Children of mothers who experience psychological distress during pregnancy presented a risk of socio-emotional and behavioral problems almost twice as high as children whose mothers did not experience depression or anxiety during pregnancy (Madigan et al., 2018). In addition, perinatal distress also predicted the development of mental disorders in the offspring, both in children and adolescents (Huizink et al., 2003; O'Donnell et al., 2014). On the level of the mother-infant relationship, perinatal psychological distress emerged as a risk factor for maladaptive bonding between mother and child (McNamara et al., 2019).

In the following paragraphs, the risk of perinatal depression and anxiety as the most frequent aspects of psychological distress in women in the perinatal period are described. Then, a specific space will be

dedicated to PTSD in the perinatal period, for its relevance for the current PhD study. Finally, other forms of distress that can characterize the maternal experience will be mentioned.

1.2.1 Depression

Depression has always been considered the main risk for the psychological health of women in the perinatal period, due to the effect of hormonal, psychological and social changes that characterized the perinatal experience (Imbasciati & Cena, 2007). A first alterated mood reaction after childbirth is considered a "typical" and "normal" aspect of the motherhood experience. With the name Maternity blues (or baby blues) it is common to describe the temporary psychophysiological response, experienced by 50-85% of new mothers, in the period from the fourth to the tenth day after the birth of the child, characterized by bouts of crying, confusion, and irritability that commonly naturally decrease, without the need for specific treatment (Patel et al., 2012). This typical reaction was distinguished from Postpartum depression (PPD) or puerperal depression which is a disorder involving, with varying levels of severity, 17% of new mothers, with an onset between the sixth and twelve weeks after childbirth (Hahn-Holbrook et al., 2018; Palumbo et al., 2016; Shorey et al., 2018). The PPD's most common symptoms are problems in sleep regulation, alimentation, and mood, as well as feelings of sadness, anger, and guilt that may be associated with loss of interest in daily-life activities, child-related obsessive thoughts, and suicidal ideation (APA, 2013; Patel et al., 2012). On the other side, chronologically later in scientific literature than postpartum depression, also antenatal depression was recognized as a frequent condition, which seemed to occur in 20.7% of pregnant women worldwide (Yin et al., 2021; Woody et al., 2017). Some social norms on pregnancy, such as the idea that pregnancy represents a phase of joy and excitement over the arrival of the baby, has been partly responsible for the prenatal depression "stigma", according to which pregnancy-related feelings of sadness, anger or apathy meet with disapproval from the social environment (Kopelman et al., 2008). This has led to a long-standing underestimation of the frequency of depression during pregnancy and its long-term consequences on postpartum depression, hindering the access to treatment (Kopelman et al., 2008). To date, the term perinatal depression helped to insert depressive symptoms along a continuum that goes from pregnancy to postpartum, from clinical to sub-clinical manifestations. In particular, a great number of studies have suggested focusing attention on antenatal depression as a precursor to postpartum depression (Underwood et al., 2016).

1.2.2 Anxiety

For a long time, perinatal anxiety was studied for its comorbidity with depression symptoms (Falah-Hassani et al., 2016). To date, perinatal anxiety assumed an independent role in the framework of perinatal distress, though its association with depression remains an important spot for both the clinical practice and research. Some studies, for example, showed that prenatal anxiety predicted postpartum depression even when controlling for antenatal depression levels (Matthey et al., 2003; Sutter-Dullay et al., 2004).

The symptomatology of anxiety in women in the perinatal period was considered the same as the one observed in the general population (Dennis et al., 2017). However, some authors used the term Pregnancy-

related Anxiety to refer to a specific form of anxiety focused on anxious thoughts regarding pregnancy and gestation (Andreson et al., 2019; Brunton et al., 2015). Generally, anxiety during pregnancy was associated with worries related to all areas of unpredictability that characterized the antenatal period. Among them, there was the fear of childbirth and concerns about the child's health (Hall et al., 2009; Dennis et al., 2017). In fact, anxiety was commonly found in late pregnancy, with the approach to the moment of childbirth (Priyambada et al., 2017).

Antenatal anxiety showed effects on perinatal outcomes (preterm birth, lower Apgar score, low birth weight), as well as on cognitive and emotional child development (Dennis et al., 2017). In addition, perinatal maternal anxiety increases also the risk of anxiety symptoms in children (Schreier et al., 2008). On the other side, postnatal anxiety was often associated with negative and overcontrolling parenting (Barker et al., 2011; Williams et al., 2012).

1.2.3 PTSD

A risk of PTSD was found in pregnant and postpartum women with a prevalence of 3.3% during pregnancy and 4% during postpartum (Yildiz et al., 2017). PTSD symptoms can appear during all the perinatal period (McKenzie-McHarg et al., 2015), though was mainly studied in association with perinatal loss or "traumatic childbirth" (Cook et al., 2018; Sun et al., 2023). The risk of PTSD is higher in women who experience severe complications in pregnancy or during childbirth, such as preterm birth, stillbirth, and unplanned cesarean section (Yildiz et al., 2017). PTSD can also be consequent to violent traumatic events not related to childbirth or at-risk conditions lived during pregnancy such as interpersonal violence (Cook et al., 2018; Harris-Britt et al., 2004). PTSD in mothers during pregnancy was associated with low birth weight and lower rates of breastfeeding (Cook et al., 2018), whereas PTSD during postpartum showed negative consequences on the child's temperament and development at 2 months (Garthus-Niegel et al., 2017).

1.2.4 Other disorders and forms of distress

Among psychopathological disorders that merit attention in the perinatal period there are bipolar affective disorder and puerperal psychosis. Among mood disorders, bipolar affective disorder can occur particularly during postpartum mainly in women who have a history of bipolar affective disorder (Di Florio et al., 2013). Past bipolar affective disorder is also one of the main predisposing factors for puerperal psychosis, a rare condition characterized by paranoid, grandiose, or bizarre delusions and mood lability often occurring during the first two weeks after partum (Paschetta et al., 2013). In addition, substance-use disorders (in particular related to tobacco and alcohol) represented a risk for pregnant and postpartum women (Forrey & Foster, 2015).

In addition, recently, attention to perinatal stress emerged (Liou et al., 2014). Traditionally, stress in psychological literature represents a multidimensional construct that involves the frequency of the stressful events lived by a person, the individual perception of stress, and emotions such as anxiety, worries, and fears (Preis et al., 2021). Considering that the transition to motherhood requires a wide adaptation for women in

the face of the multiple changes introduced by the future or the actual arrival of the child, pregnant and postpartum were considered a vulnerable population regarding stress levels (Rallis et al., 2014).

1.3 The field of affects

Considering the typical functional and negative outcomes of the motherhood crisis described above, maternal affects as emotional dynamics that influence perinatal well-being and maternal psychological health will be addressed. In particular, two emotional aspects - fears/anxieties and loneliness - as two significant areas of the perinatal experience of women which will re-emerge as themes within research studies of the current PhD project will be deepened.

1.3.1 Maternal fears and anguishes

Fears and anguishes can be considered as central aspects of the perinatal experience.

According to the psychodynamic perspective, fear is an emotional specific reaction linked to an object. Anguish instead is not "linked" to specific internal or external objects, and it is commonly ascribed in a terror without a name related to the catastrophic unconscious fantasies of individuals (Giustino, 2013).

Several anguishes and fears characterize the perinatal experience. In the first trimester of pregnancy, the fears related to the possible loss of the baby are frequent. Along with them, a "genetic anguish" (Fornari, 1981) with fantasies related to the deformation of the child can be found. Antenatal visits and ultrasound scans play a fundamental role in reducing or, in some cases, unfortunately, confirming these fears. During the second trimester, when the risks related to the possible loss of the child concretely decrease and the woman begins to perceive the movements of the fetus, the anguishes and fears seem to decrease. Nevertheless, anguish related to the "unknown" child, or on the future maternal competence can be found. With the third trimester, instead, women start to imagine childbirth and confront eventual future scenarios (Imbasciati & Cena, 2007). These scenarios can be characterized by archaic anguishes, such as the persecutory anguishes that the child and the childbirth could destroy the body and the self, or more mature fears such as the fear of pain or the fear for the child's health. Loss anguishes also characterize the prenatal period, such as losing the baby, losing the "blessedness" and "fullness" of pregnancy, and losing the embodied bond with the child via separation (Imbasciati & Cena, 2020).

These more or less unconscious anguishes also characterized the women's childbirth experience. Fornari (1981) attributed specific anguishes to dilatory and expulsive actions during childbirth. Dilatory periods are characterized by persecutory anguishes increased by the pain, related to the destructive effect of childbirth on the woman's bodily integrity, while expulsive actions are associated with depressive anguishes related to the fear of possible harm to the child (Fornari, 1981). The childbirth-related fears can also be considered products of two specular unconscious mournings associated with the moment of mother-child bodily separation: the possible death of the mother or the possible death of the child (Fornari, 1981). The intensity of these anguishes can drive to a "traumatic experience" of childbirth when what was destroyed in

fantasy is not “repaired” by the encounter with a healthy child and/or the support of the partner or healthcare workers.

On the other side, during postpartum, the maternal fears re-organize around the great concerns towards the child’s development. The initial absolute dependency of the children on adult care and, in most cases, on the mother’s care - assuming the mother generally the role of primary caregiver - increases in mothers’ sense of responsibility and related worries. Winnicott (1956) called this caregiver’s mental state “primary maternal preoccupation” to indicate the state of wide concern that the mothers have toward children in the first six months of their development, where the children’s lives depend strictly on maternal care. Mothers regress to a primitive mental functioning, characterized by flight and withdrawal from the outside world in favor of the child. It is, according to Winnicott (1956), in the mother’s ability to temporarily “get sick” of “primary maternal preoccupation” and progressively “recover” from this state that ensures sufficiently good maternal care and healthy child development.

In psychodynamic terms, one of the fundamental emotional needs for the woman during the entire perinatal journey is to feel “contained” in the anxieties and anguishes. Fornari (1981) emphasized how the presence of the father during childbirth represented a central action for promoting the woman and child’s health since it is the father or the designated person who occupies the position of supporting the woman, who reclaims the death anguishes that assail the mother in the critical moment of separation and pain of childbirth. To “contain” the child and assume the function of “container” the mother should be able to rely on several resources: on the one hand, a containing “environment” and on the other hand, possess the internal resources that allow her to oscillate between these two symbolic functions, to be a container (care for) and content (feel that someone cares).

To date, in the research field, perinatal anguishes and fears are often studied as configurations of anxiety symptoms (Fairbrother et al., 2022). However, the fear of childbirth (FOC) is often studied as an independent fear. Almost 14% of pregnant women showed at-risks levels of fear of childbirth, commonly higher in nulliparous women than multiparous women (Räisänen et al., 2014). The awareness and identification of this fear, along with external factors, such as social support, are considered the best strategies to manage this concern and limit negative effects on the mother’s and child’s well-being (O’Connell et al., 2021). Recently, perinatal anxieties were also related to intolerance of uncertainty intended as negative beliefs about uncertainty and its potentially negative consequences (Furtado et al., 2021).

Hence, in the face of the inevitability of unconscious anguishes and the uncertainty that characterizes the perinatal experience, the function of support and containment by the environment - whether by one’s partner and family or by the healthcare systems - is crucial in reducing and transforming intense threatening emotions into tolerable experiences of fear.

1.3.2 Maternal loneliness: a “bridge” between intrapsychic and interpersonal experience

Among the common emotional challenges women face during the perinatal experience, is loneliness.

In the scientific literature, loneliness has sometimes been confused or overlapped with other near constructs such as social isolation, lack of social support, and depression (Rook, 1984; Cacioppo & Patrick, 2008). In the current PhD project, the following distinction between these terms will be assumed. Isolation would be considered the objective state of physical and psychological distance from others (de Jong-Gierveld et al., 2006). The lack of social support would indicate the individual perception of having few social resources, while loneliness is more related to the quality evaluation of relationships (de Jong-Gierveld, 1987; Heinrich & Gullone, 2006). In addition, in the current project, for distinguishing depression and loneliness the Cacioppo et al., (2008) perspective is assumed, according to which loneliness is a feeling related to own's relationships and is a possible symptom of depression in concert with other components such as hopelessness, anhedonia, apathia. In this sense, depression is more pervasive and general than loneliness and cannot be exclusively ascribed to a way of living relationships.

The psychodynamic perspective suggested that loneliness can be the result of different dynamics, some more primitive, related to the persecutory anguish of being "cut off from oneself" (Segal, 1981, p. 144), others more evolved, related to the fear of losing someone, often activated in the face of separation (Klein, 1963). Loneliness can also be a signal that could stimulate people to create relationships with others and a sense of belonging (Milton, 2018; Petrelli, 2020). From a positive perspective, loneliness could represent a prerequisite for creativity (Milton, 2018; Petrelli, 2020), for which Winnicott (1958) defined the "capacity to be alone" as a capacity of the mind to maintain a personal authenticity in the presence of others.

These reflections were also supported by other perspectives. For example, socio-cognitive models suggested that loneliness can be associated with paranoid thoughts due to negative schemes of relationships that disrupt the trust in others (Käll et al., 2020; Masi et al., 2011). In addition, a common difference can be found in scientific literature between "emotional loneliness", considered as the perception of a lack of emotional link with others, and "social loneliness" as the perception of not being integrated into one own's social network (Weiss, 1973). On the other side, "solitude" is often used in the research field to describe the feeling of loneliness that is associated with a feeling of personal growth (Long et al., 2003; Siracusano 2017).

After this necessary general premises, it is important to consider that loneliness has been little studied in women during the perinatal period (Nowland et al., 2021), due to the mechanism of "denying". In fact, according to pioneering Rokach's studies (2004, 2005, 2007), loneliness assumes different forms and has different correlates in mothers than in women without children. In particular, pregnant and postpartum women were considered less prone to express loneliness than women without children (Rokach, 2004; 2005; 2007). Rokach et al. (2004; 2005; 2007) suggested that this result did not indicate an absence of loneliness in women's emotional experience, but difficulties in recognizing and accepting this feeling during pregnancy and postpartum. According to the social norms, motherhood represents an experience that needs to be lived with pleasure, and this leads to the denial of negative emotions, including loneliness, due to the perception of the stigma and fear of judgement as a "bad mother" (Adlington et al., 2023; Kopelman et al., 2008). This aspect also emerged from some studies that investigated the experience of loneliness in women during

breastfeeding (Lee et al., 2019). Lee et al. (2019) found that difficulties in breastfeeding seemed to increase loneliness, starting from the perception of postpartum women of the gap between their experience and the "social norm".

In addition, data showed that women commonly feel less lonely than fathers during pregnancy, due to the physical containment of the child (Junttila et al., 2013). Inversely, after childbirth, maternal loneliness increased while the fathers' loneliness decreased due to the effect of the maternal physical separation from the child (Junttila et al., 2013).

Although the above mentioned possible positive aspects of loneliness, loneliness is widely studied in its possible negative drifts in the perinatal field. The social isolation and loneliness experiences were considered at-risk factors for postpartum depression, though, at the same time, postpartum depression was considered a condition that leads mothers to isolate themselves and feel alienated from their relationships (Kent-Marvick et al., 2022; Kruse et al., 2014; Zaidi et al., 2017). A great contribution to the relationship between loneliness and perinatal psychological distress emerged from longitudinal studies that showed the prediction effect of prenatal loneliness on postpartum depression and long-term chronic depression in mothers and children (Zaidi et al., 2017; Luoma et al., 2015; 2019). In particular, internalizing problems in children and adolescents were more influenced by the loneliness lived by mothers during pregnancy than in other phases (Luoma et al., 2019). This result was explained by the possibility that maternal loneliness during pregnancy was transmitted to the fetus through somatic mechanisms, different from the other phases when the children had access to other stimuli and people which could mitigate the impact of maternal loneliness on their development (Luoma et al., 2019). It is worth noting that parents who have children with disabilities or chronic conditions, or immigrant parents were considered at more risk for experiencing loneliness (Lee et al., 2019; Kent-Marvick et al., 2022; Nowland et al., 2021; Taylor et al., 2021). Social conditions of isolation in fact could assume the role of trigger for the development of emotional loneliness in mothers.

In this PhD project, loneliness will be considered as a "bridge" dimension between intrapsychic and interpersonal fields. In particular, the several aspects of loneliness lived by pregnant and postpartum women during the COVID-19 pandemic will be explored in the current research.

1.4 Perinatal psychological health: intervention and policies

In the following paragraphs, the efficacy and characteristics of psychological interventions for perinatal psychological health and the global policies and common cultural approaches toward perinatal maternal health will be discussed.

1.4.1 Psychological interventions for women in the perinatal period

Psychological interventions are considered the most ethical, safe, and efficacy forms of intervention for maternal mental health (Howard & Khalife, 2020).

Psychological interventions widely showed their efficacy in treating and preventing psychological distress in women in the perinatal period (Howard & Khalife, 2020). Obviously, for reasons considered before, research focused mainly on postpartum depression and less on other forms of perinatal psychological distress. Regardless of the theoretical orientation, robust evidence-based research on the efficacy and cost-effectiveness of psychological and psycho-social interventions for treating postpartum depression can be found in the scientific literature (Branquinho et al., 2021; Comacho et al., 2018; Dennis et al., 2007). Both moderate and low-intensity interventions were also considered effective for treating antenatal depression (Milgrom et al., 2011; Sockol et al., 2018; van Ravesteyn et al., 2017). Considering the type of treatment, CBT-based approaches (Sockol, 2015) and interpersonal psychotherapy (Bright et al., 2021; Sockol et al., 2018) are among the most studied forms of interventions for mothers in the perinatal period. Psychological interventions are effective in the treatment of perinatal depression with a moderate effect size of $g = 0.67$ (Cuijpers et al., 2023). To a much smaller extent, small trials showed the efficacy of psychological intervention in cases of PTSD and OCD in women in the post-natal period (Koochaki et al., 2017; Challacombe et al., 2017). In addition, some studies showed the benefits of psychological interventions toward mothers on the children's health in terms of infant growth, stress, and reactivity (Rahman et al., 2013; Milgrom et al., 2015). Rarer in the scientific literature are studies on interventions for fathers and the whole family (Rominov et al., 2016; Bruce et al., 2018), though they presented promising results in decreasing psychological distress in both parents'.

Moreover, in the perspective of de-pathologizing and preventing psychological distress in pregnant women and early mothers, the interest in clinics and research moved from treatment to investing in preventive interventions. Recently, an increase in the implementation and investigation of the efficacy of preventive psychological interventions for prenatal and postnatal depression emerged (Martín-Gómez et al., 2022; Motrico et al., 2023; Yasuma et al., 2020). Preventive interventions mainly involved psychosocial interventions (Missler et al., 2021), psychoeducation (Missler et al., 2018), home-visiting programs (Leonard et al., 2021), and mother-infants-focused programs (Steele & Steele, 2017). In addition, an increase in online preventive and treatment interventions for perinatal psychological distress was shown in the scientific literature (Ashford et al., 2016; Black et al., 2021; Laughnan et al., 2019; Li et al., 2023; Motrico et al., 2020). Online interventions were promoted, among others, to increase access to psychological intervention for mothers. Indeed, access to psychological interventions was always considered an important issue in this field of study. One of the first obstacles in taking charge of the psychological health of mothers is the screening phase. Globally, psychosocial assessment in the routine visits promoted by perinatal healthcare services is rare (Howard & Khalife, 2020). Hence, although the psychological health of pregnant and postpartum is widely considered a health priority, rarely it is assessed in the health care services. In addition, in the case of routine screening, women can also decide to not disclose their problems and emotions, interrupting the taking charge. Moreover, even in cases of successful screening and a woman's disposition to receive support, the referral and the concrete access to intervention are not always well defined in a lot of healthcare services, creating the possibility of disruption of this path of care (Webb et al, 2023).

Recently, a multi-level matrix was designed to include all the barriers that hindered access to psychological support for women in the perinatal period (Webb et al., 2023). Among the individual factors, the fear of judgment, poor awareness, and negative beliefs about healthcare services and professionals emerged along with eventual logistic factors. In addition, healthcare professionals who were not trained to detect and support women's emotional distress, who normalized symptoms and assumed a judging attitude towards women were considered great barriers. On the interpersonal level, poor relationships and communication with healthcare workers and with family members, the non-involvement in decision making and the lack of information provided were considered important obstacles. In addition, organizational (lack of continuity of carer, facility inadequacies, absence of collaboration among services) and political factors (health, economic, or immigration status) also contributed to hindering access, as well as cultural factors related to the "good mother" social norms (Button et al., 2017; Kopelman et al., 2008; Smith et al., 2019; Webb et al., 2023).

Structural changes in perinatal healthcare services along with national and global policies that would integrate and promote psychological support in perinatal healthcare routine represent increasingly a priority (Motrico et al., 2022), in light of the impact of the COVID-19 pandemic that will be discussed in the next chapters.

1.4.2 Perinatal Healthcare Services' global policies and cultural approaches

Considering global guidelines, the World Health Organization (WHO, 2018) suggests the importance of developing women-centered policies in perinatal healthcare services. Women-centered care represents a "holistic, human rights-based approach" (WHO, 2018, p. 1), aimed to improve the quality of the experience lived by women in clinics, hospitals, and other maternal services, respecting women's rights, privacy, and decision-making (International Confederation of Midwives, 2014). More broadly, this approach promoted a focus on women's needs (Leap, 2009). This perspective should orient the healthcare services to recognize, embrace, and manage the pregnant or postpartum woman's needs and requests, caring not only for the organic health of neonates and gestates but also taking care of the woman's well-being in a holistic way in line with the idea that the support to the mother guarantees support to the health of the child too.

A meta-synthesis on the women's opinion on a respectful and women-centered childbirth experience included the respect of women's preferences through promoting women's self-determination, the possibility of receiving social support from family and being treated with respect and value by the healthcare workers, and experiencing childbirth in secure and clean facilities (Miyauchi et al., 2022; Leinweber et al., 2022).

In particular, maternal mental health has been always considered a global health priority, for the importance it assumes in promoting the health and well-being of mothers, children, families, and gender equality (McNab et al., 2022).

Perinatal clinical psychology – the theoretical framework that oriented the current PhD project – is an approach that embraces the values suggested by WHO (2018). This approach spread in Italy as a response to a progressive medicalization of the perinatal experience (Imbasciati & Cena, 2007). Italy, along with the

Western countries was defined by the research in the transcultural field as a Technocentric culture, because it used to address postpartum care of women in the clinic or hospital investing in the application of medical-pharmacological practices focused on the physiology of the body (Postmontier & Horowitz, 2004; Evagorou et al., 2015). Differently, Ethnokinship cultures which characterize Asian and Arabian countries, mainly invest in social and family support to take care of women after childbirth (Postmontier & Horowitz, 2004; Evagorou et al., 2015).

Perinatal clinical psychology has as its main objective in de-medicalizing perinatal assistance in health care services in favor of a broader "care" that, along with the medical procedures necessary to guarantee the physical health of mothers and children, could involve the psychological and social support for mothers fundamental to promote maternal, family and children well-being (Imbasciati & Cena, 2007; 2020). Hence, this approach is focused on taking charge of the woman's well-being considering both the physical and psycho-social needs, during the entire perinatal course, considering the temporality of maternal experience.

In addition, during the last years, perinatal clinical psychology in Italy also assumed a babycentered approach (Imbasciati & Cena, 2020): a perinatal "care" culture that addresses the needs of both parents, family members, and healthcare workers with the primary aim of guaranteeing the health and safety of the infants. The resources of this approach are the inclusiveness and the recognition of different forms of parenting and a systemic approach that includes all the people involved in the development of the infant. At the same time, the eventual risk of this approach could be to overshadow the women's specific needs.

To date, the debate on national and global practices and guidelines to promote a holistic "caring" approach in perinatal healthcare services is still heated, mainly during and after the COVID-19 global health emergency, whose consequences on the health of women in the perinatal period will be addressed in the next chapters.

Chapter 2

A “personal crisis” in a “collective crisis”: perinatal maternal experience during the COVID-19 pandemic

Chapter 2 - Overview

During the COVID-19 pandemic, some women lived the “developmental crisis” of the perinatal experience within a “collective crisis”. The COVID-19 pandemic, in fact, represented a global health emergency that impacted the physical and mental health of the entire population (Holmes et al., 2020). Since the onset of the virus spread, pregnant and postpartum women have been considered vulnerable groups for several reasons (Buekens et al., 2020; Ceulemans et al., 2020). First, the susceptibility of pregnant women to other coronaviruses generated high concerns about the risks of infection during pregnancy (Mullins et al., 2020). Second, the unknown effect of the infection on fetuses and newborns (Wastnedge et al., 2021). Third, the multiple changes the women had to face. Indeed, women lived the typical bio-psycho-social changes that used to characterize the perinatal experience in a period of macro and micro changes in lifestyles due to the COVID-19 pandemic spread (King et al., 2021). Fourth, the need of women in the antenatal period and during childbirth to receive adequate and systematic healthcare assistance, in the face of the COVID-19 public emergency which affected healthcare services (Motrico et al., 2020). Hence, the concern of global and national institutions was not limited to the risk of infection in mothers and infants, but to the multicomponent impact of the COVID-19 pandemic on the health and well-being of mothers, children, and families.

This chapter will start with the timeline of the COVID-19 spread and the incidence and consequences of the COVID-19 infection on pregnant and postpartum women, with a brief additional focus on infants’ infection. Then, a picture of the extent of the phenomenon in Italy will be provided, involving the Italian timeline of the virus spread as well as the national measures applied to limit contagions and the recommendations promoted for women in the perinatal period and maternal healthcare services. Following, the reasons that made perinatal psychological health a priority during the COVID-19 pandemic will be deepened, examining the main areas of psychological distress, and the vulnerable and protective factors for mothers, highlighting evidence and controversy. The effect of the COVID-19 and maternal COVID-19-related psychological distress on the infants’ development will be also considered briefly. Finally, a brief contribution to paternal and non-birthing parents’ mental health during the COVID-19 pandemic will be presented. In general, this chapter aims to highlight some gaps in the COVID-19-related literature on maternal perinatal mental health, of which some have been addressed by the current PhD research project. At the end of this chapter, a figure (Figure 2.1) will indicate when the data of the studies included in the current project were collected considering the timeline of COVID-19 spread in the world and in Italy.

2.1 The timeline of the COVID-19 pandemic spread

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread across the world since December 2019, when the first four cases were identified in Wuhan, China (WHO, 2020, January 9). Among the several hypotheses on the etiology of the virus, animal-to-human transmission was the most sustained origin (Webster, 2021). COVID-19 is horizontally transmitted via aerosolized droplets or more rarely through contact with infected surfaces. Previous coronaviruses were found in humans, such as SARS-CoV-1 [Severe Acute Respiratory Syndrome-1] and MERS-CoV [Middle East Respiratory Syndrome]. However, this novel form of coronavirus was more contiguous than both SARS-CoV-1 and MERS-CoV (Jafari et al., 2021). Shortly after its identification, due to its extremely rapid transmission, it assumed the form of a global epidemical threat, up to being identified as a pandemic by the World Health Organization on March 11th, 2020 (WHO, 2020, March 11). After China, Europe became the second continent to report the highest percentage of cases of COVID-19 infection and deaths (WHO, 2020, March 13). National governments worldwide applied different restrictions to limit infections, among which were home confinement, limitations of social contacts, wearing masks, and the shutdown of in-person activities. After the first months of the virus spread, some variants were detected and considered relevant according to the mutations and rate of spread. First, the Alpha variant was identified in the United Kingdom in October 2020. Second, the Delta variant was identified and had particularly tragic consequences in India (in May 2021), followed by the Omicron and its sublineages that were first detected in South Africa in November 2021 (WHO, 2021, December 4). COVID-19 variants were characterized by their more rapid transmission and led to reintroducing or maintaining restriction measures in different countries. Globally, in early 2021, with the approval of BNT162b2 vaccine (BioNTech–Pfizer) and ChAdOx 1 (Oxford–AstraZeneca), the vaccination campaign against the COVID-19 infection has started (Webster, 2021). Vaccines showed their efficacy in reducing hospitalization and severity of symptoms, unlike less decreased transmission (Webster, 2021). Concerns about the side effects of vaccines against COVID-19 emerged, in particular for the rare association between mRNA vaccines and myocarditis in men (Webster, 2021). The access to vaccines was not balanced around the world as well as the international monetary resources invested to help governments in the face of economic loss due to the COVID-19 pandemic. Along with the different strategies and resources of national governments to limit contagions, COVID-19 spread, although it was considered a global threat, had different consequences in different countries.

Finally, World Health Organization declared the end of COVID-19 as a public health emergency of international concern on May, 5th 2023 (WHO, 2023, May 5). Although the end of the health emergency, the COVID-19 virus has continued to spread worldwide with a rate of almost 1.100 new cases per week (WHO, 2023, November 30).

From the start of the epidemic to November, 30th 2023, WHO has reported 772.052.752 confirmed cases of COVID-19, including 6.985.278 deaths (WHO, 2023, November 30).

2.1.1 COVID-19 infection in pregnant and postpartum women

For mechanisms underlining the immune and cardiopulmonary systems, pregnant women were previously found as an at-risk population for SARS-CoV [Severe Acute Respiratory Syndrome] and MERS-CoV [Middle East Respiratory Syndrome] infections (Mullins et al., 2020). Specifically, adverse maternal outcomes, such as preterm birth and fetal growth restriction were found in 25.8% of women infected by coronaviruses (SARS-CoV and MERS-CoV) with a mortality rate of 28.6% (Di Mascio et al., 2020).

During pregnancy, changes in cell-mediated immunity normally occur (Zaigham & Andersson 2020). As a consequence, the immune response to infections and viruses is considered altered (Jamieson et al., 2005, Silasi et al., 2015).

Along with the belly growth, physiological changes to the respiratory system (involving chest shape and elevation of the diaphragm) also emerge. Due to these physiological changes, a decrease in lung capacity and difficulties in clear secretions could predispose pregnant women to respiratory dysfunction (Goodnight & Soper, 2005). Commonly, increased heart rate and stroke volume can also be observed in pregnant women (Jafari et al., 2021). Moreover, women in the gestational period are considered at risk of thromboembolic events, associated with maternal mortality (Creanga et al., 2011).

Considering the predisposing factors (changes in immune and respiratory systems, and coagulation response) and data on other coronaviruses, since the onset of the COVID-19 virus spread, pregnant women have been indicated as an at-risk population for COVID-19 infection (Bick et al., 2020).

To date, scientific literature has suggested that COVID-19 does not show a higher risk of transmission or disease severity in pregnant women than in non-pregnant women (Simbar et al., 2023; Wastnedge et al., 2021). In addition, some studies have suggested that the common changes in immunity in pregnant women could be a protective factor against COVID-19 severity (Dashraath et al. 2020, Saadaoui et al. 2021).

Regarding clinical characterization, the most frequent symptoms of infection in pregnant women were fever, dry cough, myalgia, and fatigue (Jafari et al., 2021; Simbar et al., 2023). In addition, headache, nasal congestion, sore throat, dyspnoea, chills, body aches, conjunctivitis, skin rash, diarrhoea, loss of taste or smell, and discoloration of fingers or toes were less reported (Hassanipour et al. 2020; Saadaoui et al. 2021). Radiological findings, including chest x-ray or computed tomography (CT) scan investigations, detected abnormal findings in infected pregnant women, such as bilateral involvement (68%), ground-glass opacity (57%), and consolidation (41%) (Jafari et al., 2021).

In addition, 1 in 3 pregnant women positive for COVID-19 infection presented comorbidities (Jafari et al., 2021). In particular, comorbidity emerged with non-gestational and gestational diabetes as well as both bacterial and virus-co-infection (Jafari et al., 2021). The association between COVID-19 severity and obesity in pregnant women was also found (Mihajlovic et al., 2023).

Moreover, some perinatal risks emerged associated with COVID-19 infection such as postpartum hemorrhage, cesarean childbirth, and preterm childbirth (Jafari et al., 2021; Simbar et al., 2023). In small effect, also pre-eclampsia and eclampsia were found associated with infection (Mullins et al., 2022).

The mortality rate of pregnant women affected by the COVID-19 virus was not significantly different from the mortality rate registered for non-pregnant women infected by the COVID-19 virus (Wastnedge et al., 2021). Although scientific literature tried to estimate the prevalence of maternal mortality due to COVID-19 infection (Jafari et al., 2021= 11.3%; Mullins et al., 2022= 0.2%), it is not possible to establish if the cause of death could be attributed directly to virus infection, driving to un-conclusions on this point.

The infection in late pregnancy (second and third trimester) was associated with a higher risk of hospitalization and the need for oxygen therapy (Seif et al., 2023). Inversely, infection during the first trimester was more associated with the risk of preterm birth (Seif et al., 2023).

Several difficulties emerged for the research in this field, driving controversy in interpreting the results. First, most of the studies involved data collected in clinics in a period of wide emergency. Hence, they often did not report information on why women were hospitalized, and so if the hospitalization directly depended on COVID-19 infection (Wastnedge et al., 2021). Second, the majority of the data were collected from women who showed clear symptoms of infection. Otherwise, it was estimated that 88% of pregnant women who tested positive for the COVID-19 virus were asymptomatic (Khalil et al., 2020). Therefore, while clearer conclusions can be drawn for pregnant women with moderate to severe symptoms, the same cannot be done for asymptomatic pregnant women.

However, the risk of mortality and severity of COVID-19 infection resulted particularly higher in low-income countries, often lacking the resources necessary to respond to the emergency and to ensure adequate care (Buekens et al., 2020; Takemoto et al., 2020; Wastnedge et al., 2021). Moreover, the association between stillbirth and COVID-19 infection was higher in low-income countries than in high-income ones (Simbar et al., 2023).

Differently, the risks of infection for postpartum women up to the onset of the COVID-19 spread have been considered on a par with those observed in the general population (Karimi et al., 2021).

Vaccine evaluation trials have not been conducted directly on pregnant or lactating women, although animal studies, performed in laboratories, suggest the absence of risk to the health of the mother and child (ISS, 2021, February 5). After an initial precautionary period, pregnant women have had access to vaccination since August 11, 2021 (Centers for Disease Control and Prevention, 2023). Vaccinated and unvaccinated women did not differ for gestational or childbirth difficulties, such as gestational hypertension or thrombosis, pre-term birth, or ICU admission (Centers for Disease Control and Prevention, 2023). Rather maternal vaccination during pregnancy was even considered a protective factor against preterm birth, small gestational age, and low Apgar score at 5 min (<7) (Zhang et al., 2023a). The highest initial concern regarded vaccination during the first trimester of pregnancy (Greenberg et al., 2023). Spontaneous abortion emerged as a possible adverse event associated with vaccination in early pregnancy, though the rate of prevalence of spontaneous abortion in vaccinated women was not different from that in unvaccinated pregnant women (Leik et al., 2021; Shimabukuro et al., 2021).

Hence, the amount of scientific evidence showed that pregnant women were not a vulnerable group if we just considered the rate of contagion and severity of COVID-19 infection in comparison with the general population. No firm conclusions emerged for maternal mortality due to COVID-19 infection. However, some eventual perinatal risks were associated with maternal contagion, such as preterm birth. Among at-risk sub-groups, obese women and pregnant women from low-income countries emerged as particularly at risk for COVID-19 severity. In addition, the vaccine for COVID-19 was finally declared as a safe practice for pregnant women at any stage of pregnancy as well as during postpartum (Shook et al., 2023).

2.1.2 COVID-19 infection in infants: transmission trajectories and risks

At the onset of the COVID-19 virus spread the risk of vertical transmission emerged as a salient risk to investigate. Neonatal COVID-19 *in utero* was observed in fetuses with mothers with severe symptoms, as a consequence of the placenta infection (Galderisi et al., 2023). At the same time, it was not always possible to clearly establish that the infection of the placenta was correlated to neonatal infection (Jafari et al., 2021). On the other side, intrapartum transmission was considered rare as the absence of virus traces in vaginal swabs (Galderisi et al., 2023). Scientific literature generally agrees that the vertical transmission of the COVID-19 virus to the fetus needs to be considered rare, though not impossible. The mechanisms and the conditions through which the transmission happens are still unclear (Wastnedge et al., 2021). In particular, it was not possible to establish if, in the cases of infant positivity reported in scientific literature, the transmission occurred during pregnancy, during childbirth, from mothers, or healthcare staff (Wastnedge et al., 2021). A part of the scientific literature even suggested that the infection of neonates depends more likely on environmental exposure to the virus (horizontal transmission) than from mother-to-child transmission (vertical transmission), without excluding it as a rare possibility (Galderisi et al., 2023; Musa et al., 2021).

Even in cases of positivity to COVID-19, severe respiratory symptoms in neonates appeared to be rare (Wastnedge et al., 2021). Infected neonates resulted, in fact, mostly asymptomatic (Ferrazzi et al., 2020). Although a commonly positive prognosis of COVID-19 infection in children, infants (< 1 year old) emerged as a vulnerable group for contagion and severity of symptoms compared to older children (Dong et al., 2020; Ludvigsson, 2020).

On the other side, COVID-19 mother infection was associated with the risk of preterm birth (Timircan et al. 2021), and neonatal or NICU admission (Cruz-Lemini et al. 2021), suggesting keeping the clinical attention on maternal infection for its consequences on neonatal outcomes. The risk of stillbirth was not completely excluded (0.8% according to Mullins et al., 2022), and was considered more likely in childbirth within 2 weeks of infection than childbirth ≥ 2 weeks after infection (0.2% according to Mullins et al., 2022). No risk was found for birthweight and congenital malformations (Mullins et al., 2022).

In addition, although some studies highlighted the possibility of transmission through breastfeeding - highlighted by the positivity of some cells detected in the breast milk of infected women (Groß et al., 2020) - the scientific community largely agreed on the decision of suggesting women breastfeed infants even in

cases of positivity. The benefits of breastfeeding for the development of children were considered more important than the consequences of the eventual (and rare) infection of the infants (Wastnedge et al., 2021). Breast milk emerged also as a strong transfer of SARS-CoV-2 antibodies, in both mothers with natural and vaccine-induced adaptive immunity (Devera et al., 2023). In particular, women infected during the first and the second trimester of pregnancy showed the highest levels of IgA in their breast milk than women infected in the third trimester of pregnancy or postpartum (Wachman et al., 2023; Shook et al., 2023). On the other side, the concentration of antibodies in breast milk did not linearly correspond to the protection of the neonates from infection. Neutralization processes, in fact, were naturally activated during the infant's digestion of milk (Pieri et al., 2022). In particular, while IgG was often neutralized, IgA emerged as the main antibody in breast milk to drive immune protection in infants (Devera et al., 2023; Pieri et al., 2022).

Thus, vertical transmission of the virus emerged as a rare risk for the fetus, while horizontal transmission is more likely to happen. Fortunately, COVID-19 infection in infants is generally not severe and it is not a great risk for infants' health. Breast milk could be a medium of infection but at the same time it may be a protective factor for infants for transferring antibodies, developed by mothers due to infection or vaccination. In any case, breastfeeding has been always generally recommended by researchers and clinicians even in the case of mother positivity.

2.2 The timeline of the virus spread in Italy

Italy was one of the first countries in Europe to be affected by COVID-19 in terms of the number of contagions and deaths (Mattiuzzi et al., 2023). After the first cases were detected in North Italy on February 20th, 2020, a rapid transmission transformed Italy into the epicenter of the COVID-19 pandemic in Europe (Italian Ministry of Health, 2020; Pisano et al., 2020). To control the epidemiological curve, the first lockdown in Italy was established and lasted from March to May 2020 (D.P.C.M. 9/3/2020). Mandatory social distancing measures, such as the prohibition on the encounter of more than two persons and self-isolation in case of positivity, along with the shutdown of public places and all services which sold or produced non-essential goods were some of the restricted measures introduced during the lockdown. After 110 days of the pandemic, more than 34000 deaths were registered in Italy (Italian Ministry of Health, 2020). However, the strong strict measures applied by the Italian government were effective in controlling and decreasing the epidemic for a while. After the summer break, since September 2020, the contagions increased, and from November 2020 to May 2021 the so-called "second wave" affected the country driving to a second and less restricted lockdown (D.P.C.M. 3/11/2020). During the second wave, regional restrictions were applied considering the number of contagions reported in local areas and the public health resources of the regions to respond to the increase in infections. The immunization drive started in Italy in September 2021. As an effect of a multicomponent process - including a more efficient and timely diagnosis of COVID-19 infection, more available healthcare resources, prevention and therapeutic improvement of strategies to manage COVID-19, natural or vaccine-elicited immunity, and mitigation of COVID-19 aggressiveness over time (Mattiuzzi et al., 2023) - a decrease in hospitalization was observed in Italy from

pre-Alpha variant spread (prevalent during 2020) to the Omicron sublineages (prevalent during 2022) (Mattiuzzi & Lippi, 2022). In the current PhD project, the "third wave" (January-May 2022) of virus spread will refer to the period corresponding to the prevalence of Omicron mutations spread, considered also as the last phase of the COVID-19 public health emergency in Italy. The formal end of the COVID-19 public health emergency in Italy was, in fact, declared on March, 31st 2022 (DL n. 24, 24/03/2022). However, to date, in terms of infection, more than 100.000 cases per day are registered in Italy (Italian Ministry of Health, 2023, November 29).

2.2.1 COVID-19 infection in pregnant and postpartum women: a strict focus on Italy

Most of the data on COVID-19 infection in pregnant and postpartum women in Italy was derived from the Italian Obstetric Surveillance System (ItOSS) reports. These reports assessed pregnant women with COVID-19 infection from 315 Italian maternity hospitals in three time periods correspondent to: the first lockdown (February-May 2020), the second wave characterized by the prevalence of the Alfa variant spread (September 2020-June 2021), and the third wave (January-May 2022), with the prevalence of Omicron mutations spread. In general, extremely severe risks, such as maternal mortality, stillbirths, and neonatal deaths were not found significantly different from pre-pandemic rates (Donati et al., 2021; 2022). The main aspect of concern was, instead, the preterm birth rate which emerged as increased compared to pre-pandemic data (Donati et al., 2021). Considering the first and the second waves, most of the COVID-19-infected women (64.5% on a total of 667) were asymptomatic, while 12.8% developed pneumonia. Pregnant women showed a higher severity of symptoms during the second wave than the first wave, perhaps for the diffusion of the Alpha variant of the virus that was in general considered more virulent for pregnant women. Results during the period of the Omicron variant spread (the third wave), showed a lower percentage (1.5%) of women with pneumonia, and in general, quite good results on the effect of infection on perinatal outcomes (ItOSS, 2023), mainly in women who received vaccine. The severity of COVID-19 symptoms in Italian pregnant women was related to age (older than 35 years), citizenship of countries with high migration pressure, comorbidity with previous diseases, in particular diabetes and chronic hypertension, and obesity (Donati et al., 2021; 2022).

It is worth noticing that a consistent COVID-19 vaccination hesitancy (86.4% of 385 women in the South of Italy; 31.1% of 1011 and 22.7% of 926 women in the North of the country) was found in Italian pregnant women during the pandemic (Lubrano et al., 2023; Miraglia del Giudice et al., 2022; Reno et al., 2021), with women being highly worried about the side effects of the vaccines.

In brief, the Italian data on COVID-19 infection in pregnant women confirmed international results. They showed a major risk for pregnant women in particular in the period of the Alpha variant predominance, corresponding to the second wave of virus spread in Italy. However, a great COVID-19 vaccination hesitancy characterized Italian women, in particular during the first phases of the vaccination campaign.

2.2.2 Italian guidelines for perinatal healthcare services

During the first lockdown in Italy, the National Minister of Public Health published "Interim guidelines for pregnancy, childbirth, breastfeeding and care of children of 0-2 years in response to the COVID-19 emergency" (ISS, 45/2020) aimed to define evidence-based recommendations for managing COVID-19 pandemic emergency, directed to perinatal healthcare services and mothers. In this paragraph, the main points suggested by the guidelines useful to understand the changes in "perinatal care" consequent to the COVID-19 spread in Italy will be presented.

One of the main recommendations of this first version of the document regarded the organization of prenatal visits. Considering the healthcare services' state of emergency during the first wave of the pandemic, the risk of changes, delay, and loss of some prenatal visits emerged. Hence, the guidelines suggested the importance of guaranteeing a minimum of 6 in-person prenatal visits, aggregating consultations in one comprehensive visit, when possible, and involving few health professionals. A further echography was also suggested in the case of the mother's positivity for COVID-19 14 days after the acute symptoms disappeared. When possible, the use of telemedicine was also suggested as a medium to limit in-person contact with healthcare staff. In case of positivity for COVID-19 at the moment of childbirth, women were also often transferred to designated hospitals, different from the expected and planned ones.

A second recommendation regarded the restrictions on social contact. Women were invited to limit encounters with other people during their pregnancy and postpartum. Online tools were suggested to maintain contact with friends and family.

In hospitals and clinics, the social distance needed to involve the relationship between the mother and the healthcare workers, both during visits and childbirth. Healthcare workers had recommendations to wear personal protective equipment such as masks, visors, and gloves during each contact with the woman and the infant. A person, with the role of "visitor" could have a brief access to the facilities during childbirth and postnatal stay. However, this possibility was subordinated to the negative result for COVID-19 infection and to the specific organizational and logistical conditions of the single healthcare organization.

Moreover, guidelines promoted *rooming-in* as a relevant praxis to increase *skin-to-skin* contact and breastfeeding. *Rooming-in* is a healthcare practice where during the postpartum period mothers and healthy infants remain together in the same room for 24 hours a day, since the moments immediately after childbirth (Barrera et al., 2018). *Rooming-in* was traditionally introduced firstly to promote early breastfeeding and secondly to support maternal–infant bonding (Theo et al., 2017). Although, clinically, *rooming-in* was widely supported, research did not find clear evidence that could demonstrate that *rooming-in* was a protective factor for guaranteeing breastfeeding more than mother-infant separation (Ng et al., 2019). During the pandemic, even in the case of women's positivity for COVID-19 infection, *rooming-in* was suggested, as well as breastfeeding, to encourage the benefits for children's health (ISS, 45/2020). The eventual horizontal transmission of the virus from the mother to the infant was, in fact, considered a mild risk, not sufficient for renouncing breastfeeding and *skin-to-skin*, considering their importance for the long-term development of the children (Bigelow et al., 2020).

Recognizing the perinatal and COVID-19-related stressors, access to psycho-social support was also mentioned as an important service that needed to be guaranteed to women during the perinatal period (ISS, 45/2020). Empowerment via psychoeducation, early screening for depression and anxiety, and brief treatment in case of risk for mental illness was suggested by national institutions (ISS, 44/2020). However, it was not clear how and if these recommendations were applied by the healthcare services.

The prominent necessity to contain contagions in healthcare facilities, to limit the collapse of the sanitary system in Italy during the first lockdown, partially left the perinatal women's needs in the background. During the first lockdown, slightly more than half of women with infection (51.9%) had the possibility to have the in-person support of a significant person during childbirth. In addition, 69% of infected women experienced *rooming-in*, though only 26.6% of women experienced *skin-to-skin* (ItOSS, 2020). In line with previous evidence (Ng et al., 2019), infected women who lived *rooming-in* did not differ from women separated from the child after childbirth in terms of breastfeeding. The first lockdown impaired the perinatal healthcare services' functioning, in fact, of a total of 77 maternal healthcare services in Italy, just 28.7% were able to guarantee visits as usual, and 23.4% were understaffed (Cena et al., 2021b). In-person psychological support, instead, was provided in 32.4% of the services (Cena et al., 2021b).

Thus, in 2021, with the ongoing pandemic, the national recommendations were modified (ISS, 2/2021), focusing on promoting a 'women-centered' system of care. The promotion of online courses on preparedness for childbirth was pointed out as a fundamental resource for pregnant women. On this point, telemedicine was again promoted as a benefit that needed to be encouraged by healthcare services. In addition, the second version of the guidelines underlined the importance of the support of a significant person for the women during the entire perinatal course. In this sense, the person was not considered as a 'visitor' but as a 'caregiver': someone who could care for the woman in her path of caring for the child, from antenatal visits to childbirth and postpartum. Hence, in the updated version of the guidelines, greater recognition and relevance were attributed to the personally chosen 'caregiver' during the perinatal path.

It is important to note that this new version of the guidelines was published on February 5, 2021, and responded probably to a progressive reticence of healthcare services in allowing the presence of visitors during childbirth and postpartum stay. In fact, in the period from September, 2020 to January, 2021, the lowest percentage of companionship during childbirth hospitalization compared to all the other phases of the COVID-19 pandemic was registered in Italy (Donati et al., 2022).

Lack of companionship during childbirth and little time for father visits were identified by the women who delivered during the pandemic in Italy as two of the main aspects that needed to be changed to improve the quality of maternal services (Geremia et al., 2023).

Surely the revision of guidelines has been an attempt to bring the attention of healthcare systems to women's personal and relational needs and to take care of their well-being, partially overshadowed by the emergency needs of the healthcare services during the first phases of the pandemic.

2.3 Pregnant and postpartum women's psychological health during the COVID-19 pandemic

In addition to the risk of contagion and its direct organic consequences, the COVID-19 pandemic exposed the worldwide population to several stressful and potentially traumatic experiences, such as changes in lifestyle habits, the decrease in vis-à-vis relations, economic discomfort, such as job loss or financial strain, the loss of significant people, and long susceptibility to negative media news.

Hence, it was not surprising that the COVID-19 pandemic negatively impacted the mental health of the general population, inducing an increase in anxiety, depression, stress, and sleep disorders (Morin & Carrier, 2021; Wang et al., 2021).

From an organic threat, COVID-19 spread, and its related consequences became a "collective crisis" that affected the psychosocial well-being of the entire population, with a specific impact on some groups (Diaz et al., 2021). In particular, COVID-19 had a major detrimental impact on the mental health of women than men in the world and, more specifically, in Italy (Ausìn et al., 2021; Connor et al., 2020; Rossi et al., 2020; Wang et al., 2021). According to some studies, the wide psychological distress in women could be attributed to job conditions, including their increased employment as healthcare professionals (Wang et al., 2021). On the other hand, some studies underlined the greater incidence of relational factors, such as a decrease in contact with friends and family, higher levels of loneliness, and the greater involvement of women in childcare duties than men (Benassi et al., 2021; Etheridge & Spanting, 2020). In particular, women in the perinatal period were considered as a specific at-risk category for mental health (Kotlar et al., 2021; Wu et al., 2020; Saccone et al., 2020). Controversial data emerged comparing pregnant and non-pregnant women's mental health during COVID-19. Some results suggested women in the perinatal period were more likely to develop psychological distress (Lopes-Morales et al., 2021), while in China pregnant women showed better mental health than non-pregnant women, during the first period of the COVID-19 pandemic (Zhou et al., 2020).

During the COVID-19 pandemic, a great number of studies showed psychological distress in pregnant and postpartum women, mainly in terms of anxiety, stress, and depression (Fan et al., 2020; Hessami et al., 2020; Kotlar et al., 2020). Other studies investigated post-traumatic symptoms, and sleep impairment in the perinatal period (Berthelot et al., 2020; Zhou et al., 2020). Another part of the literature was interested in detecting risk and protective factors for maternal psychological health (Gu et al., 2020; Yue et al., 2020). In addition, "home confinement" and healthcare emergency were also considered at-risk conditions for the increase in interpersonal violence (Beukens et al., 2020) and obstetric violence (Sadler et al., 2020; Paes et al., 2021). In particular, in Italy, a study on 282 women showed that 78.4% of them experienced obstetric violence, involving non-consented care (55.5%) and abuse (66.4%) (Scandurra et al., 2020).

It is worth noticing that both women with or without positive COVID-19 were considered at risk for mental health (Ceulemans et al., 2021). Hence the affection of perinatal mental health should not be attributed to the effective COVID-19 infection, unlike all the changes and emotional challenges created by the pandemic. In support of this hypothesis, a study suggested that the perceived changes created by the

pandemic directly influence the mental state of perinatal women, after controlling for at-risk sociodemographic factors (Fallon et al., 2020). Women in the perinatal period, in fact, addressed different challenges to the COVID-19 pandemic, including changes in maternity care services' procedures, changes in their social and working life, and the effect of the pandemic on their psychological well-being as emerged from studies conducted in different countries such as Germany, India, Turkey, US, UK, China and Italy (Güner & Oztürk , 2022; Sahin & Kabakci, 2021; Kumari et al., 2020; Miani et al., 2023; Mari et al., 2022). King et al. (2021)'s model helped to categorize the main "stressors" for maternal mental health during the COVID-19 pandemic, distinguishing between "objective adversities" and "subjective stress". The "objective" stress area regarded the several changes in the pregnant women's/partners' employment or finances, and the measures adopted by prenatal care services which specifically involved changes in prenatal visits, birthing protocols, and postpartum procedures. Otherwise, subjective COVID-19 stress included the women's concerns about COVID-19's impact on their social support, medical care, and infant development, as well as concerns about their or their family's health (King et al., 2021). Additionally, mainly for primiparous women, the unpreparedness for the "new" perinatal experience was associated with the unpreparedness to deal with the COVID-19 pandemic and its medical, social, and emotional consequences. The unknown of the pandemic increased the feeling of uncertainty and fear related to the pregnancy and the future of the baby (Atmuri et al., 2022). However, the association between maternal psychological distress and perinatal outcomes during COVID-19 was uncertain due to the lack of studies that addressed this issue (Zhao et al., 2022). The few available data showed how probably antenatal depression during COVID-19 influenced preterm birth, low birth weight, and small for gestational age (Preis et al., 2021; Wdowiak et al., 2021; Zhao et al., 2022).

The pandemic increased the publication of research studies and provided a huge number of results, in some cases difficult to synthesize. One of the challenges of this PhD project was, in fact, navigating this wide available data, trying to provide new insights as well as re-organizing previous knowledge. Below, the effect of the COVID-19 pandemic on depression, anxiety, COVID-19-related post-traumatic stress, and other forms of distress in perinatal women will be addressed.

2.3.1 Depression

During the COVID-19 pandemic, depression was considered one of the main aspects of concern regarding perinatal mental health (McNab et al., 2022).

Depression seemed to increase during the COVID-19 as a direct effect of the pandemic, as well as via the indirect effect of the increase in loneliness, lack of social support, maternal worries, and fear of contagion in the acute phases of the pandemic (Harrison et al., 2022; Wall & Dempsey, 2022). In particular, anhedonia-related symptoms of perinatal depression emerged as particularly frequent during the COVID-19 pandemic in pregnant and postpartum women (Costa et al., 2023).

However, a moderate number of studies highlighted higher levels of depression during the pandemic than before in Italy, China, Turkey, Canada, Hong Kong, and Brazil (Ayaz et al., 2021; Berthelot et al., 2020;

Cameron et al., 2020; Davenport et al., 2020; Hui et al., 2020; Loret de Mola et al., 2021; Mateus et al., 2022; Ravaldi et al., 2021; Sinaci et al., 2020; Xie et al., 2021), while others found a decrease in depression in pregnant women during COVID-19 than before in Japan, and Israel (Pariente et al., 2020; Suzuki et al., 2020). Similar controversial results emerged in US: some studies suggested depression in pregnant women increased during the COVID-19 (Moyer et al., 2020; Perzow et al., 2021), whereas other studies supported the opposite thesis (Mcfarland et al., 2021; Silverman et al., 2020a; 2020b).

Few data on *maternity blues* showed that mother isolation after childbirth, which frequently occurred in lockdown periods, affected *maternity blues* more than long-term postpartum depression, showing how coming back home after peripartum hospitalization could have a reparative function against depression symptoms for mothers (Boudiaf et al., 2022).

Few studies addressed the association between depression and perinatal outcomes during the COVID-19 pandemic (McKee et al., 2023; Preis et al., 2021; Wdowiak et al., 2021). In particular, shortened gestation, preterm birth, low birth weight, and small for gestational age were associated with maternal depression during the COVID-19 pandemic (McKee et al., 2023; Preis et al., 2021; Wdowiak et al., 2021).

In general, several studies investigated the prevalence of perinatal depression worldwide, showing a high heterogeneity (Wall & Dempsey, 2022)

Drawing a firmer conclusion on the prevalence of antenatal and postnatal depression during the COVID-19 pandemic, as well as providing indication of the COVID-19-related impact on perinatal depression in the latest phases of the pandemic remained open areas of research, that will be partially addressed by the current PhD project.

2.3.2 Anxiety

As well as for depression, perinatal anxiety was considered a phenomenon to monitor due to its increase during the COVID-19 pandemic (McNab et al., 2022). In particular, co-morbid depressive and anxiety was 15.2 % in pregnancy and 20.3 % in postpartum (Mateus et al., 2022).

The COVID-19 pandemic, increasing uncertainty and unpredictability, mainly during the first phases of the virus spread, emerged as a potential driver of anxiety in mothers (Davenport et al., 2020; Moyer et al., 2020; Sinaci et al., 2021).

During lockdowns, it was estimated that from 11% to 61% of mothers experienced clinically significant anxiety symptoms (Wall & Dempsey, 2022).

In general, perinatal women during the COVID-19 showed higher anxiety than pre-pandemic era (Davenport et al., 2020; Mateus et al., 2022; Moyer et al., 2020; Sinaci et al., 2021), influenced by the increase in COVID-19-related stress (Moyer et al., 2020). However, this difference between pre and post-COVID-19 anxiety in perinatal women was not confirmed by other studies (Cevik et al., 2022).

As well as for depression, the results on perinatal anxiety during COVID-19 are still controversial and heterogeneous and will be partially addressed by the current PhD project.

2.3.3 COVID-19-related post-traumatic stress

Some authors suggested that the COVID-19 represented for the population a "collective trauma" (Duane et al., 2020; Horesh and Brown, 2020; Masiero et al., 2020; Watson et al., 2020), defined as such for the psychological response that has generated, connecting "people around the world through helplessness, uncertainty, loss, and grief" (Kaubish et al., 2022, p. 28). Some studies have been interested in studying the post-traumatic impact of the COVID-19 pandemic on pregnant and postpartum women mainly after the acute phases of the virus spread. Among the studies on women in the perinatal period published during the COVID-19 pandemic, some of them addressed post-traumatic stress regarding a personal traumatic experience lived during the pandemic, such as the loss or the sickness of a close person or traumatic childbirth (Berthelot et al., 2020; Gonzalez-Garcia, 2011; Zhou et al., 2020), while others considered the entire COVID-19 experience as potentially traumatic, so as a "collective trauma" (Basu et al., 2021).

In general, the PTSD symptoms in women in the perinatal period were higher during the pandemic than before (Berthelot et al., 2020; Wu et al., 2020). Specifically, a meta-analysis showed a pooled prevalence of COVID-19-related PTSD of 27.93%, with a high heterogeneity, in women in the perinatal period (Delanarolle et al., 2022). In addition, a cross-national study involving 6894 women from 64 countries, showed a prevalence of COVID-19-related post-traumatic distress of 41%-45% in pregnant women and 45.2% in women during postpartum (Basu et al., 2021). In addition, a study conducted in Spain on 3319 women in the perinatal period between 2020 and 2021 showed that more than 40% of them presented PTSD symptoms associated with the COVID-19 pandemic (Motrico et al., 2023). In particular, being infected by the virus during pregnancy emerged as a driver of post-traumatic distress in perinatal women (Hocaoglou et al., 2020; Wang et al.; 2020), up to three months of postpartum (Wang et al., 2020), though other data did not confirm this association (Motrico et al., 2023). Younger age, high pandemic-related fears, and changes lived due to the pandemic, along with previous psychopathology also emerged as at-risk factors for COVID-19-related PTSD (Motrico et al., 2023). Longitudinal data confirmed that the PTSD symptoms during the postpartum were more severely influenced by COVID-19-related fears, than direct exposure to stressful COVID-19-related events, suggesting the crucial role of COVID-19-fears in predicting COVID-19-related post-traumatic distress (Shiffman et al., 2023). This results are in line with the perspective that give importance to the intensity of the emotional response consequent to an event or groups of events in the etiology of "post-traumatic" conseuqneces to a crisis (quantitative perspective on trauma). Finally, a common aspect between the studies on COVID-19 post-traumatic distress in perinatal women was the period of the pandemic in which the data were collected, which was the first lockdown or the first year of the virus spread. To the best of my knowledge, no studies addressed the COVID-19-related post-traumatic impact and its consequences on perinatal psychological health at the end of the COVID-19 pandemic health emergency.

2.3.4 Stress and other forms of distress

During the pandemic, the required adaptation to COVID-19-related social changes added to the normal adaptation lived by women during the transition to motherhood, affecting the capability of women to respond neurobiologically and psychologically to stressful events (Iyengar et al., 2021; Kim, 2021).

During the first year of the COVID-19 pandemic, researchers wondered how to categorize and operationalize the forms of stress lived by women during pregnancy and postpartum. In Preis et al. (2020a)'s model, the COVID-19-related stress in pregnant women was based on two main components: the stress caused by the fear of COVID-19 infection and the stress associated with the unpreparedness and unpredictability of childbirth experience during the pandemic (Preis et al., 2020a). COVID-19-related stress was found in 1 in 3 pregnant women during the first phases of the pandemic (Preis et al., 2020b). The childbirth fears due to the pandemic predicted short gestation and unplanned cesareans (Preis et al., 2021). However, as the King et al. (2020) model showed, the stress lived by women in the perinatal period during the pandemic involved several objective and subjective stressors, difficult to categorize. Considering the intensity and not the "quality" of the stress, acute stress during pregnancy predicted traumatic birth experiences and preterm birth during the COVID-19 pandemic (Mayopoulos et al., 2020; Preis et al., 2021). However, during the pandemic era, the level of stress appeared additionally higher postpartum than during pregnancy (Shayganfard et al., 2020), and higher acute stress was documented in mothers who gave childbirth during the pandemic than before (Matvienko-Sikar et al., 2020; Mayopoulos et al., 2020).

Other risks for maternal mental health emerged during the pandemic, such as the incidence of sleep disorders (Alimoradi et al., 2021). In particular, poor sleep quality characterized the pregnancy experience of women during the pandemic (Alimoradi et al., 2021), with a salient increase in insomnia (Cevik et al., 2022). On the other side, good quality of sleep emerged as a protective factor for maternal mental health (Iyengar et al., 2021).

2.4 Vulnerabilities and protective factors for perinatal women's psychological health

Considering perinatal mental health as a priority during the COVID-19 pandemic and the high heterogeneity between studies, the vulnerable or protective factors for the development of psychological distress in pregnant and postpartum women during the pandemic will be discussed. In the following sub-paragraphs, some predominant aspects that impacted perinatal psychological health will be highlighted. In particular, the effect of socio-demographic factors (1), perinatal experience characteristics (2), personality and intrapersonal factors (3), interpersonal domains (4), and contextual aspects, among which the effect of lockdown restrictions (5) and changes in healthcare services (6), and finally the affective domain of COVID-19-related fears and worries (7) will be considered.

2.4.1 Socio-demographic at-risk factors: financial strain, pre-existing illness, and geographical/cultural differences

In this subparagraph, the main socio-demographic at-risk factors for perinatal psychological health during the COVID-19 pandemic will be summarized, considering controversies and evidence.

First, financial and job areas included several risks for maternal psychological health. In general, financial difficulties were widely associated with perinatal psychological distress during the pandemic (Berthelot et al., 2020: Cameron et al., 2020; Ceulemans et al., 2021; Dib et al., 2020; Effati-Daryani et al., 2020; Lewkowitz et al., 2022; Luo et al., 2022; Matsushima et al., 2020; Motrico et al., 2022; Silverman et al., 2020a; Thayer et al., 2020). The economic impact of the pandemic, in fact, was huge in many countries and for many families that had to manage financial strain. In fact, along with the lack of social support, problems in household finances were considered one of the most at-risk factors for anxiety in pregnant women during the COVID-19 pandemic (Luo et al., 2022). On one side, personal or partner unemployment, often created by the pandemic conditions, was considered a great concern that affected maternal psychological health (Ceulemans et al., 2021; Fallon et al., 2021; Luo et al., 2022; Spinola et al., 2020; Usmani et al., 2021). On the other side, full-time jobs and jobs that required vis-à-vis contact emerged as stressful experiences for pregnant women, mainly during the lockdown period, during which the workplace was an at-risk context for contagion (Bender et al., 2020; Matsushima et al., 2020; Moyer et al., 2020; Wu et al., 2020; Zhang et al., 2020).

Second, being a single mother during COVID-19 also emerged as a driver for psychological distress, perhaps due to the consequent increase in loneliness, lack of social support, and more responsibilities and duties toward children (Cameron et al., 2020; Matsushima et al., 2020).

Third, pre-existing psychological or physical illnesses - mainly psychiatric history and chronic conditions -represented a vulnerability that increased the risk of psychological distress during the pandemic (Berthelot et al., 2020: Cameron et al., 2020; Ceulemans et al., 2021; Durankus et al., 2020; Luo et al. 2022; Moyer et al., 2020; Usmani et al., 2021).

Fourth, unhealthy behaviors, such as disobeying the isolation rules, and smoking during pregnancy have increased the risk of depression (Ceulemans et al., 2021; Luo et al., 2022), while the respect of safety recommendations during pandemic resulted in a protective factor for the psychological health of pregnant women (Shayganfard et al., 2020).

Fifth, immigrant women or women that were part of a minority inside their own countries emerged as vulnerable groups for mental health (Endres et al., 2023; Gur et al., 2020; Taubman et al., 2021; Usmani et al., 2021).

Six, controversial results emerged for maternal age. Some studies highlighted that older mothers were more at risk for antenatal and postnatal depression during the COVID-19 pandemic (Akgor et al., 2020; Suárez-Rico et al., 2021; Usmani et al., 2021). Inversely, in other studies, low maternal age emerged as a risk for mental health (Matsushima et al., 2020; Patabendige et al., 2020; Preis et al., 2020; Wu et al., 2020). In Luo et al. (2022) study, instead, age did not emerge as a factor that influenced depression and anxiety.

Seven, controversial results also emerged considering education. In some cases, undereducated women were considered at major risk for mental health during the pandemic (Berthelot et al., 2020; Cameron et al., 2020; Durankus et al., 2020; Kahyaoglu Sut et al., 2020; Luo et al., 2022; Moyer et al., 2020); in other cases, a high level of education was associated with higher anxiety in perinatal women, perhaps due to the higher exposition to threat information on the virus spread (He et al., 2020; Mappa et al., 2020).

This short narrative synthesis of the socio-demographic at-risk factors for maternal perinatal psychological health represents a general approximation. Several controversial results that emerged could depend on country-related factors (Mesquita et al., 2023). Cross-national studies highlighted some variations in maternal mental health among countries. Pregnant and postpartum women in Europe, UK and Ireland showed the highest levels of psychological distress during the COVID-19 spread (Ceulemans et al., 2020). On the other side, in Italy, maternal age emerged as a main risk factor for psychological health, while in the Netherlands mental illness was mainly predicted by high education and unemployment (Guo et al., 2022). In China, instead, surprisingly, both high education and high income were associated with psychopathological symptoms compared to other countries (Guo et al., 2022). Considering that these differences among countries might depend on the different national COVID-related situations, an additional research question emerged: was maternal mental health worse in the epicenter areas of the pandemic than in low-at-risk areas? The answer was not clear. Some studies, in particular in the first phase of the pandemic in China and Italy showed a major risk (Liu et al., 2020, Zhang et al., 2020). However, these results were not confirmed by other studies (Bo et al., 2020; Dong et al., 2020; Ionio et al., 2022; Iyengar et al., 2021).

Thus, there is a quite consistent evidence of the effect of financial strain, employment status, immigrant or minority belonging, unhealthy behaviors, and past illness history on perinatal psychological health during the COVID-19 pandemic, globally. On the other side, ambiguous results emerged for the maternal age, education level, and living in at-risk-COVID-19 areas. However, it clearly appears that the above mentioned factors need to be contextualized considering each specific country.

2.4.2 Perinatal experience characteristics

Most of the studies during the COVID-19 pandemic did not highlight a clear association between perinatal experience characteristics and maternal psychological health, suggesting that beyond the specific perinatal experience, all pregnant and postpartum women had to be considered potentially at risk for psychological distress during the pandemic. However, some studies found some specificities.

Considering the trimester of pregnancy, differences emerged in depression and anxiety during lockdown (Wall & Dempsey, 2022). As expected, anxiety and stress were particularly high in women in the third trimester of pregnancy, closer to the childbirth moment even during the pandemic (Dagklis et al., 2020; Delanarolle et al., 2023). On the other side, depression was higher in the first and second trimesters than in late pregnancy (Brik et al., 2020). Lebel et al. (2020) showed also higher levels of depression and anxiety in nulliparous women than in primiparous or multiparous ones. On the other side, multigravida exposed to COVID-19 emerged as a vulnerable population (Mesquita et al., 2023).

In addition, previous events such as a history of abortion or traumatic birth were found as at-risk factors (Sun et al., 2020; Usmani et al., 2021). As was predictable, women with an at-risk pregnancy also showed higher scores in anxiety during the COVID-19 pandemic (Sinaci et al., 2020).

Moreover, substantial evidence suggested that women who lived an unplanned pregnancy had been more affected by the consequences of the pandemic on their mental health (Ceulemans et al., 2021; Myo et al., 2021; Usmani et al., 2021).

2.4.3 Personality and intrapersonal factors

Considering personality traits, comprehensive/conscientious and extrovert/sociable traits were associated with an increase in anxiety during the COVID-19 pandemic (Birkelund et al., 2022). On the other hand, along with comprehensive/conscientious and extrovert/sociable traits, also being energetic/active and stable/conservative emerged as at-risk factors for perinatal depression (Birkelund et al., 2022). Being highly conscientious in the face of a global threat like the COVID-19 pandemic, might in fact increase anxiety and depression, as well as having a contact-oriented personality might be detrimental in a period of imposed social distancing. In addition, the objective impairments created by the pandemic, such as the limitations in movement and outdoor activity, might increase depression in energetic and active mothers as well as several changes imposed by the pandemic might increase depression in tradition and habit-oriented perinatal women (Birkelund et al., 2022).

Differently, being able to cope with stress, via flexibility and problem-solving, emerged as a good resource during the pandemic (Dib et al., 2020; Racine et al., 2021). However, some authors argued that the effect of functional coping strategies was mild considering the high stress imposed by the COVID-19 pandemic on pregnant and postpartum women (Levinson et al., 2023).

Resilience also emerged as a protective factor against adverse events created by the pandemic (Gur et al., 2020; Ionio et al., 2021; Kinser et al., 2021; Lubián López et al., 2021). Resilience was associated with engagement in creative and coping activities during the lockdowns, such as painting, cooking, or physical activity (Anderson et al., 2021; Farrell et al., 2021; Lubián López et al., 2021). In particular, connecting with others via remote tools, as well as spending time in nature when it was possible, increased the well-being of pregnant and postpartum women (Anderson et al., 2021; Badon et al., 2022)

In addition, the combination between resilience and good emotion regulation emerged as protective both for anxiety and depression, and COVID-19-related worries in pregnant women (Gur et al., 2020). Moreover, pregnant women with low emotion regulation had been more affected by the prolonged pandemic spread (Gimbel et al., 2022).

In addition to adverse situations, the COVID-19 pandemic widely increased uncertainty, in particular during its first phases. In this sense, traits' difficulties in tolerance the uncertainty emerged as an obstacle for perinatal women during COVID-19, affecting their mental health (Sbrilli et al., 2021; Songco et al., 2023). In particular, a study showed that objective COVID-19-related adversities highly predicted postpartum mental

health in women with low levels of resilience and low tolerance to uncertainty during pregnancy (Di Paolo et al., 2022).

In brief, women with comprehensive/conscientious, extrovert/sociable, energetic/active and stable/conservative personality traits were considered more at risk for mental health, as well as women with low emotion regulation and tolerance to uncertainty. On the other side, as it was predictable, functional coping strategies and resilience were associated with higher mental health.

2.4.4 Interpersonal domain: isolation, social support, and loneliness

During the lockdown, mandatory or suggested self-isolation represented an objective stressor for pregnant and postpartum women (Anderson et al., 2021) that decreased their mental health.

Psychologically declined, social distance-restricted measures led to a decrease in perceived social support and an increase in loneliness both during pregnancy and postpartum (Dib et al., 2020; Doyle & Klein 2020; Iyengar et al., 2021; Lebel et al., 2020; Luo et al., 2022; Wall & Dempsey, 2022; Usmani et al., 2021; Basu et al., 2022; Harrison et al., 2022; Miyoshi et al., 2022).

With the onset of the lockdown higher family bonding, and partner intimacy were perceived by pregnant women, whereas the ongoing lockdown disrupted the social extended support (Sakaladis et al., 2022). During the years of the COVID-19 pandemic, the decrease in social support was associated with an increase in depression, anxiety, and stress in pregnant and postpartum women (Chen et al., 2021; Harrison et al., 2022; 2023; Lebel et al., 2020; Luo et al., 2022). On the other side, high social support was inversely considered a protective factor for maternal psychological health (Ibiwoye & Thompson, 2023). Several forms of support protected women from perinatal depression, such as partner support, economic support from family, emotional support, friends' support, infant support groups, and healthcare support in maternal healthcare services (Chen et al., 2022; Dib et al., 2020; Fallon et al., 2021; Harrison et al., 2023; Myo et al., 2021). A good relationship with the healthcare providers emerged, indeed, as a protective resource for a good pregnancy experience in the COVID-19 era (Javaid et al., 2021). In addition, Myers and Emmott's (2021) identified three main support-related challenges contributing to higher rates of postpartum depression during lockdown: decrease in support from others contributed to feeling overwhelmed by "constant mothering" and managing caring tasks (1); women reported feeling isolated from social support despite virtual contact, which was deemed an inadequate replacement for face-to-face interaction (2); last, women reported sadness based on an inability to establish "mommy friends" (3) (Atmuri et al., 2022; Myers & Emmott, 2021).

Similarly, loneliness was highly associated with psychological distress during the pandemic (Giurgescu et al., 2021; Harrison et al., 2022; Perzow et al., 2021). Longitudinal studies showed that loneliness moderated the change in depressive symptoms from the pre-pandemic to the pandemic period (Perzow et al., 2021). In particular, loneliness emerged as a mediator between the social support perceived by pregnant women and psychological distress in terms of depression and anxiety. In particular, a strong mediation effect of loneliness on depression was found, while the combination of loneliness and repetitive negative thinking mediated between social support and anxiety (Harrison et al., 2022).

2.4.5 Lockdown effect

Studies on pregnant and postpartum women generally showed an effect of lockdowns on maternal psychological health (López-Morales et al., 2021; Niela-Vile´n et al., 2021).

A longitudinal study, conducted during the first 50 days of quarantine in Argentina, showed how the persistence of lockdown over time had a higher disruption effect on the psychological health of pregnant women than non-pregnant women (López-Morales et al., 2021). In particular, it showed that pregnant women had had a major increase in depression, anxiety, and negative emotions as well as a decrease in positive emotions than non-pregnant women over the lockdown period (López-Morales et al., 2021). Similar effects of the prolonged lockdown on postpartum psychological health were found in Australia (Sakaladis et al., 2022).

On the other side, comparing data between lockdowns and following phases of the pandemic (e.g., second wave), results collected in European countries, such as Spain, Portugal, France, and Finland, showed a progressive increase in perinatal psychological health after the end of the first lockdown (Chavez et al., 2023; Fernandes et al., 2022; Gonzales-Garcia et al., 2021; Niela-Vile´n et al., 2021). In particular, in Finland, a decrease in stress levels after the strict pandemic restrictions for pregnant women was found (Niela-Vile´n et al., 2021). On the other side, higher anxiety prevalence was found in French pregnant women during the lockdown than in women who lived their pregnancy in periods with minor restrictions (Gonzales-Garcia et al., 2021). In Portugal and in Spain, pregnant and postpartum women during lockdown showed higher depressive levels than in the other phases (Chavez et al., 2023; Fernandes et al., 2022). Chavez et al. (2023)' s study also showed a decrease in negative emotions and an increase in positive emotions after the lockdown, in contrast with poorer life satisfaction found in women during the "second wave" than during the lockdown. The authors supported this result considering that the "second wave" in most of the countries corresponded to a moment of life re-organization which involved job, family, and social life that - along with the normal life re-organization required women in the perinatal period - could have affected the overall maternal life satisfaction, unlike strictly the perinatal psychological health (Chavez et al., 2023).

Thus, studies commonly showed a detrimental effect of prolonged lockdown on perinatal psychological health as well as an increase in psychological health during the "second wave" of the COVID-19 pandemic, with a decrease in limitations.

2.4.6 Changes in healthcare procedures and their risks

As mentioned above, changes in healthcare procedures during the COVID-19 pandemic created hard conditions for maternal mental health.

A qualitative study on 2519 pregnant women in the US explored the perception of women of prenatal care services, highlighting three different areas of changes during the COVID-19 pandemic that might be extended to many countries, divided in structural, behavioral, and emotional changes. On the

structural level, the COVID-19-related procedures included maintaining social distancing, wearing masks, shifting visits in-person to online, focusing visits not only on preparedness for pregnancy but also on COVID-19 information, and limiting the participation of others in the visits (Javaid et al., 2021; Sahin & Kabakci, 2021). On the other side, COVID-19 influenced the behavior of pregnant women and healthcare workers, promoting self-monitoring of pregnancy and redefining "necessary" procedures. On the emotional level, instead, it drives in mothers the perception of anxiety, worries, lack of support, distrust in healthcare workers, and feelings of abandonment.

Difficulties to access prenatal care, as well as postponed/canceled appointments, impacted antenatal mental health (Farewell et al., 2020; Iyengar et al., 2021; Jiang et al., 2021; Shayganfard et al., 2021). In particular, changes in perinatal visits and childbirth plans substantially increased stress in pregnant women (Preis et al., 2020b).

2.4.7 Fears and concerns about COVID-19

After the onset of COVID-19, as it was stated by WHO Director General, Tedros Adhanom Ghebreyesus: "Fear from the virus is [was] spreading even faster than the virus itself" (p.129, 2020). COVID-19-related fears, among which the fear of infection, in fact, widely impacted the psychological health of the general population (Alimoradi et al., 2022).

Along with the fear of personally being infected by the virus, in women in the perinatal period, the fear of the vertical or horizontal infection of the child and the fear for family and friends' health was high (Atmuri et al., 2022, Chen et al., 2022; Kumari et al., 2020; Liu et al., 2020). In general, women with high fear of contagion and pandemic health concerns showed higher levels of perinatal psychological distress (Chen et al., 2022; Liu et al., 2020; Motrico et al., 2022).

In pregnant women, anxiety was associated with COVID-19-related fears of the horizontal child's infection during childbirth (Akgor et al., 2020). The fear of not being able to reach an obstetrician emerged also as an additional fear that predicted antenatal depression and anxiety in low-income countries (Akgor et al., 2020). In Sweden, a study highlighted that pregnant women were more worried than their partners and had an increase in worries about their own and significant others' health during the pandemic than before (Naurin et al., 2023).

COVID-19-related worries affected also the postpartum period. In a UK subpopulation of 1329 postpartum women, 71% declared to be worried by the COVID-19 pandemic (Dib et al., 2020). During the first phases of the virus spread, just having an infected family member increased the risk of depression and anxiety during postpartum (Lewkowitz et al. 2021). In addition, postpartum women had an increased risk of developing depressive symptoms and PTSD symptoms if they had a great fear for themselves or their infants being infected by COVID-19 (Shiffman et al., 2023; Shuman et al., 2021; Usmani et al., 2021).

Although being informed on risks generally led to an increase in healthy behaviors and represents a protective factor for mental health, during the first phases of the pandemic, information on the virus, due to the increase in negative news, increased fears and worries in mothers (Ibiwoye & Thompson, 2023).

Knowledge about the virus resulted in an at-risk factor during the first phases of the pandemic, while being informed about the virus in the later phases of the pandemic emerged as a functional coping strategy to manage the pandemic consequences (Ibiwoye & Thompson, 2023).

Hence, although the risk of infection and severity of COVID-19 was not higher in perinatal women than in the general population, the fears and concerns for personal, child, or family health were high in women during pregnancy and postpartum and played an important role in increasing perinatal psychological distress.

2.5 A brief focus on infant development and the mother-infant relationship in the COVID-19 era

Considering the effects on the infants' health, some studies showed a decline in cognitive (verbal and nonverbal) skills of children born during the pandemic compared with infants born before the COVID-19 pandemic spread (Deoni et al., 2021; Ferrari et al., 2022). In addition, socio-emotional skills in infants were influenced by the severity of the restrictions: the more restricted the limitations, the worse the cognitive and emotional development of infants were observed (Ferrari et al., 2022). In particular, Wang et al. (2020) showed that the separation from the mothers resulted positive for COVID-19 infection during the first days of life of the infants affected the communication, gross motor, and personal-social skills of the children.

On the other side, some results showed that motor and communication skills in infants born during the pandemic were lower than those in infants born before the pandemic if assessed at one year of age, unlike six months of age (Huang et al., 2021). It suggested that some of the consequences of COVID-19 on infants' development could become evident in the long term.

Other studies suggested that the disrupting effect of the COVID-19 pandemic on mothers' lives had a major impact on their psychological health till 24 months after birth, unlike a direct effect on children's emotional development (Sperber et al., 2022). Moreover, a study showed that, although the interaction patterns between mothers and infants seemed not been affected by the COVID-19 pandemic, the emotional availability of mothers who had low social support during the COVID-19 pandemic was more influenced by child responsiveness than women with high social support (Shakiba et al., 2022). Hence, the personal characteristics of the infants, such as their temperament, seemed to influence the outcomes of the mother-child relationship more than maternal characteristics, in mothers who experienced low social support during the pandemic.

During the COVID-19 pandemic, high maternal depression was associated with lower levels of self-reported maternal-infant bonding (Firestein et al., 2022). In addition, some results suggested that prenatal psychological distress in mothers affected postnatal psychological distress and it predicted infants' socio-emotional development (Duguay et al., 2022; Provenzi et al., 2021b), as well as the infants' brain connectivity with the moderation effect of social support (Manning et al., 2022).

Hence, these studies suggest that the impact of the COVID-19 pandemic on the development of infants was strongly influenced by maternal experience (e.g., perceived social support) and maternal psychological health.

2.6 Not only motherhood: paternal experience during the COVID-19 pandemic

Although the current PhD project focuses on maternal psychological health during the COVID-19 pandemic, a necessary mention needs to be directed to the experience lived by fathers and non-birthing parents and the effects that the pandemic had on their well-being.

The restrictions imposed to limit the COVID-19 spread influenced the daily life of the entire family, including fathers. During lockdown periods, some fathers had the opportunity to spend more time with family and with women during pregnancy and postpartum due to the shift to work-from-home, while on the other side, some partners, in particular the ones with at-risk of contagion jobs, lived partial periods of isolation and distance from women and children even in their own homes (Cameron et al., 2023). In the first case, fathers as well as mothers had to manage the work and family "spaces" trying to establish a new life balance. In the second case, the men were forced to be isolated and keep a distance from pregnancy and from infants to limit the possibility of contagion, creating experiences of exclusion. The risk of "paternal exclusion" was particularly expressed in regard to the limitations imposed by healthcare services that in most of the countries - among which Italy – did not allow the father to participate in prenatal visits, partum and post-partum stay, unlike for very brief periods after birth (Smith et al., 2020). It is important to notice that, unlike mothers who can create representations of the child and mother-infant prenatal bonding on the basis of physical cues, such as the feeling of the movement of the child and the transformation of their own bodies, for fathers the possibility of participating to the prenatal visits represents occasions to "see-feel-perceive" the child as a vital being. This could be generalized to all non-birthing parents who participate in the antenatal development of the child without direct biological inputs (Cox et al., 2023). Scan eco-graphics often help the father in creating a representation of the child, engaging in father-child bonding, and smoothing the transition to parenthood (Cox et al., 2023). During the COVID-19 pandemic, paternal involvement in perinatal course emerged as a secondary need, separated from the motherhood experience. This situation created in some cases experiences of disconnection of the father from pregnancy: fathers felt isolated, lost, and did not create specific memories about pregnancy (Andrews et al., 2022). The exclusion from prenatal and partum procedures also increased fathers' anxieties about the health of mothers and children (Andrews et al., 2022; Smith et al., 2020). Literature during the COVID-19 pandemic has highlighted the phenomenon of fear of "missing out" to describe the set of fears that required the lack of the involvement of the father in the perinatal course and child development (Vasilevski et al., 2022).

Higher rates of depression in fathers were found during COVID-19 compared to pre-pandemic data, moving from 9.8-8.8% before the pandemic (Rao et al., 2020) to 24.3% and 20.4% during the pandemic in prenatal and postnatal periods, respectively (Obikane et al., 2023). Factors that predicted depression in perinatal women such as higher COVID-19-related fears, lack of help and social support, and previous experience with mental disorders affected also the probability of fathers developing depressive symptoms during antenatal and postnatal periods (Obikane et al., 2023).

In addition, the active participation of the father in the perinatal journey, from pregnancy to postpartum, has been considered one of the cornerstones for the integrity of the family unit upon the arrival of a new member (WHO, 2007; Pinto et al., 2020). Early men's engagement in the relationship with the infant is important for father-child bonding and consequently for guaranteeing the cognitive, emotional, and relational development of the child, up to predict depressive symptoms at 18 years (Gutierrez-Galve et al., 2019; Letourneau et al., 2012; Scism and Cobb, 2017; Wynter et al., 2023). Moreover, the engagement of the father in parenting is a predictor of positive perinatal outcomes and maternal well-being (Fisher, 2017). Motherhood and fatherhood experiences are, in fact, extremely intertwined, influencing each other toward positive and negative outcomes. In fact, the absence of the partner during childbirth, as well as the concern that the father could not participate in the childbirth, increased depression, and anxiety in both parents during the COVID-19 pandemic (Cox et al., 2023).

On the other side, work-from-home rules, in some cases, greatly increased a father's involvement in childcare and family life (Andrews et al., 2022). It had an effect also on the general "new" representation of fatherhood that implied a higher engagement in parenthood and childcare (Andrews et al., 2022).

It is possible that the effect of COVID-19 on paternal psychological health during the perinatal period was also under-estimated due to the little research on this field and the effect of internalized stereotypical masculine tropes that drive men to deny their difficulties and needs, such as the need for informal support during the transition to parenthood (Ndzi & Holmes, 2022).

The "pandemic" studies confirmed that paternal perinatal psychological health should be considered a fundamental area of interest for public health, for the wide consequences it has on the development of the children, the well-being of parents, and that of the entire family and society.

2.7 Key issues

In the face of the huge number of studies on COVID-19's impact on perinatal women's health, the key aspects shown by the scientific literature will be summarized in points as the basis of the research studies presented in the following chapters:

1) The pregnant and postpartum women were not considered at a higher risk for contagion or the severity of COVID-19 infection than the general population. However, the COVID-19 infection was associated with some perinatal risks (e.g., preterm birth). COVID-19 infection during pregnancy and postpartum seemed to not directly influence perinatal psychological health. It is better to affirm that COVID-19 had a "multi-component" effect on perinatal experience, involving different stressors: changes in life habits, changes in healthcare perinatal procedures, and mainly increasing worries, fears, and social isolation. The capture of this multi-component impact represents a great challenge for the research field.

2) The psychological health of women in the perinatal period during the COVID-19 pandemic represented a global health priority for its impact on perinatal outcomes, mother, child, and family's health. Controversy emerged on the extent of the prevalence of depression and anxiety in pregnant and postpartum women during the pandemic. In any case, depression and anxiety remained the most studied areas of distress,

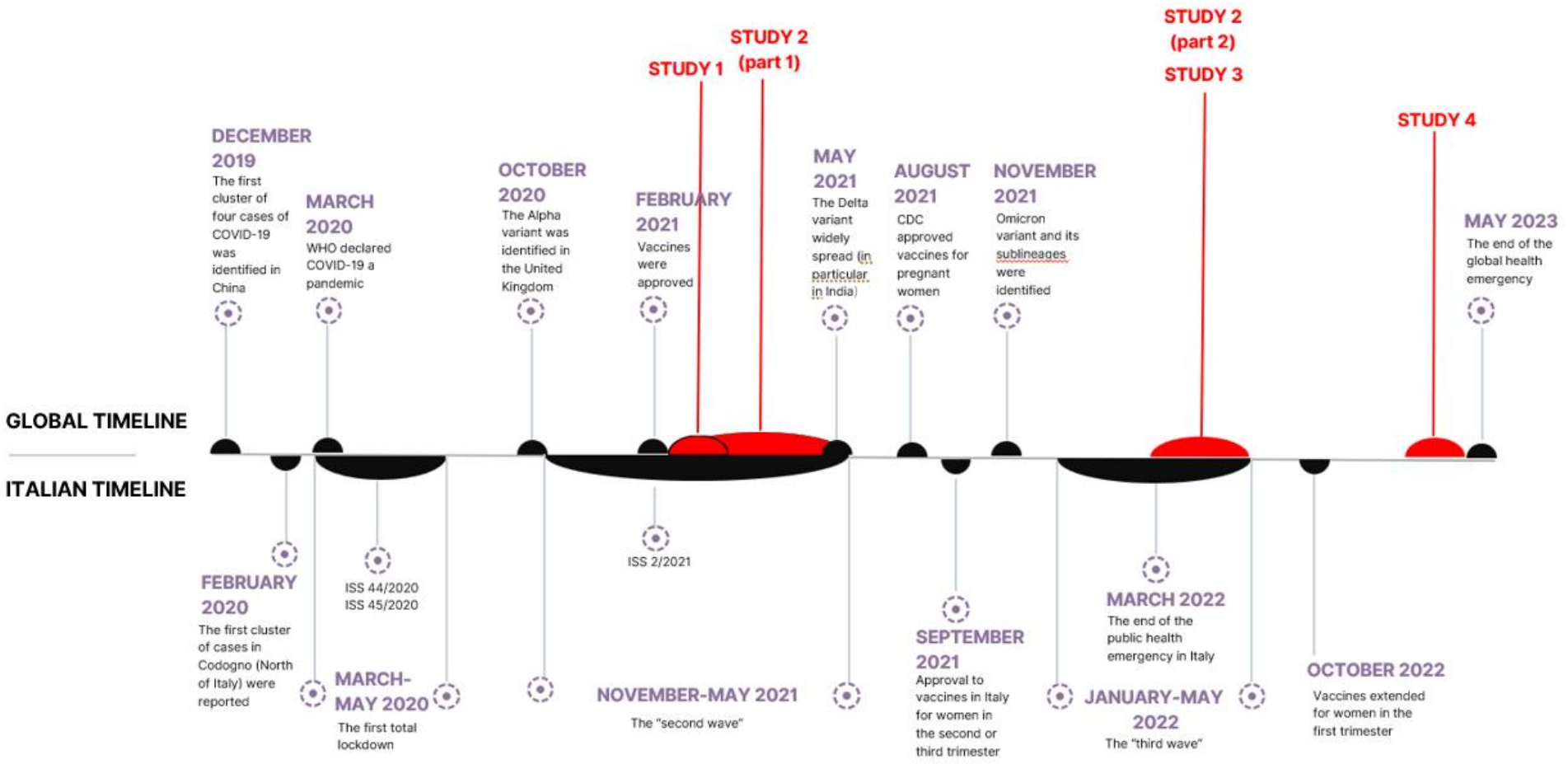
though the literature suggested assessing the broad definition of perinatal psychological distress, including sub-domains and related factors (Motrico et al., 2020).

3) Considering the affective domains, loneliness, and COVID-19-related fears emerged as two affective areas to deepen regarding the experience of pregnant and postpartum women during the COVID-19 pandemic. Most of the results on these aspects were related to the first acute phases of the pandemic, in particular to lockdown periods. Less was known regarding other phases of the COVID-19 pandemic.

4) Studies on the impact of COVID-19 as a "collective trauma" have to integrate two perspectives: a global perspective, being COVID-19 a global threat, and a contextual-related perspective considering its different timeline spread, restrictions, and consequences in different continents and countries.

The above mentioned four key issues guided transversally the entire PhD project orienting the studies that will be presented in the following chapters. In particular, in line with the fourth point, Figure 2.1 shows the "positioning" of the PhD studies along the timeline of COVID-19 spread globally and in Italy, respectively.

Figure 2.1 Positioning of the studies along the global and the Italian COVID-19 virus spread timelines.



Note: ISS= Istituto Superiore della Sanità [The Italian National Institute of Health]; CDC= Centers for Disease Control and Prevention.

PART 2
RESEARCH STUDIES

Chapter 3
A national perspective on perinatal women's psychological health in Italy during the first year of the COVID-19 pandemic: a systematic review (2020-2021)

Chapter 3 - Overview

The current study represents the first "step" of the PhD project, partially published in 2021[1]. This step was fundamental in orienting the further steps of the research. It helped to identify the main issues lived by Italian pregnant and postpartum women during the acute phase of the COVID-19 spread and to investigate gaps in the scientific literature in Italy.

A year after the COVID-19 onset, the first systematic review and meta-analyses on the impact of the pandemic on the psychological health of pregnant and postpartum women were published in the scientific literature (Fan et al., 2020; Hessami et al., 2020; Sun et al., 2020). They were focused on providing global perspectives on this important health issue. Being Italy one of the countries most hit by the COVID-19 pandemic during the first year of its spread, in terms of death, contagions, and psychological distress (Mattiuzzi et al., 2022; Rossi et al., 2023), the necessity of a synthesis of Italian findings on the psychological health of pregnant and postpartum women emerged. Considering that no systematic review on the Italian context had been published before, it was decided to assume a broad focus on the impact of COVID-19 on the psychological health of women in the perinatal period in Italy without considering specific outcomes. It is important to note that, after the conduction of this systematic review a brief narrative review was published in Italy (Cataudella et al., 2022). To the best of my knowledge, to date, the current study still represents the only systematic review on maternal perinatal psychological health during the acute phase of the COVID-19 spread in Italy.

[1] Caffieri, A., Margherita, G. (2021). The psychological impact of COVID-19 on women's wellbeing during pregnancy and postpartum one year after pandemic outbreak in Italy. A Systematic review. *Mediterranean Journal of Clinical Psychology.* 9(2), 1-24. https://doi.org/10.13129/2282-1619/mjcp-3026

3.1 Introduction

As previously reported, Italy was one of the first countries in Europe to be affected by COVID-19 in terms of the number of contagions and deaths (Mattiuzzi et al., 2022). In 2020, Italy represented the epicenter of the COVID-19 pandemic in Europe (Italian Ministry of Health, 2020; Pisano et al., 2020). In particular, the North of the country was the first and most affected area. The first strict lockdown in Italy was established and lasted from March to May 2020 (D.P.C.M. 9/3/2020). Between May 2020 and November 2020, the state of emergency decreased, and a partial re-opening of activities was possible. After the summer break, since September 2020 the contagions increased, and from November 2020 to May 2021 the so-called "second wave" affected the country driving to a second and less restricted lockdown (D.P.C.M. 3/11/2020).

In brief, the first year of the COVID-19 spread (March 2020- March 2021) represented the more acute phase of the COVID-19 spread in Italy.

During this first phase, great uncertainty about the effect of the infection on mothers and children was prevalent (ISS, 1/2020). In addition, pregnant and postpartum women were not among the priority groups of the Italian vaccination plan.

International reviews on the effects of the COVID-19 pandemic on women in the perinatal period showed several dimensions of psychological distress in women, including anxiety, stress, and depression (Fan et al., 2020; Hessami et al., 2020; Kotlar et al., 2020). In addition, post-traumatic symptoms, negative emotions, and insomnia were considered more prevalent in women who lived perinatal experience during lockdown periods than before the pandemic (Berthelot et al., 2020; Zhou et al., 2020). Instead, among the protective factors, social support from close ones and one's partner was considered fundamental (Gu et al., 2020; Yue et al., 2021).

As previously mentioned, in Italy, the impairment in the healthcare services' functioning caused by the health emergency and the necessity to contain contagions in perinatal healthcare structures, to limit the collapse of the sanitary system, partially left the psychological needs of women in the perinatal period in the background.

In Italy, the COVID-19 pandemic, in its acute phase, represented the hardest collective crisis lived by the country from the Second World War. Its impact on the individual and collective levels of experience was wide, and, at least in the first phases, it was wider than in other European countries. Hence, although global results were available on the impact of the COVID-19 pandemic on perinatal psychological health, a focus on the Italian context was important to orient research and clinical recommendations nationwide.

3.1.1 Aim of the study

The aim of this study was to summarize the impact of the COVID-19 pandemic on the psychological health of pregnant and postpartum women during the first year of the COVID-19 spread in Italy. Hence, the early and hardest period in terms of the national public health emergency in Italy.

In particular, the study was aimed to:

- Assess the quality of the Italian research on the psychological health of women in the perinatal period during the first year of the COVID-19 pandemic spread.

- Synthesize the main findings of the studies conducted in Italy during the first year of the COVID-19 spread and highlight research gaps in scientific literature.

3.2 Method

A systematic review was performed to synthesize the impact of the COVID-19 pandemic on women in the perinatal period during the first year of the COVID-19 spread in Italy.

For the report of the current systematic review, the PRISMA 2020 Checklist was followed (Page et al., 2020). The PRISMA statement represents a guideline for the transparent, complete, and accurate report of the systematic review, recommended by the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network (Moher et al., 2010). The Checklist was provided in Appendix Chapter 3 (A.3.1)

3.2.1 Eligibility criteria

To be included in this systematic review, papers had to meet the following inclusion criteria: (a) Participants: Women during the perinatal period (from pregnancy up to a maximum of one year postpartum); (b) Key variable: Research conducted in Italy; (c) Phenomenon of interest: the impact of the COVID-19 pandemic on psychological health; (d) Study Design: qualitative and quantitative studies, clinical suggestions' paper, reviews (e) Date of publication: studies that were published from September 2019 to March 2021; (f) Language: English or Italian. Articles that (a) did not present new research results or clinical purposes (for example: letters to editors, presentations of experimental protocols, data reports, abstracts), (b) were not written in English or in Italian, (c) were not conducted in the Italian context were excluded from the current systematic review.

3.2.2 Search strategy

Papers were retrieved up to 11 March 2021, from the following databases: Web of Science, Embase, EBSCO (APA PsycArticles, APA PsycInfo; Psychology and Behavioral Sciences Collection; MEDLINE) and Pubmed. Papers were searched in databases using the following combinations of terms adapted for each database: (pregnancy OR 'pregnant woman' OR perinatal OR antenatal OR puerperium OR 'postpartum' OR gravidanza OR puerperio) AND ('sars cov 2' OR 'covid 19' OR coronavirus) AND (psychological OR psychology OR phychopathology OR mental OR stress OR anxiety OR depression OR depressive OR ansia OR depressione OR psicologico OR psicologia OR psicopatologia OR mentale) AND (italy OR italian OR italia). An additional strategy, through the Google Scholar search engine, was then applied to identify the relevant "grey literature" for inclusion in this paper. In this study, the term "grey literature" is used to refer to the unpublished and first online papers that did not emerge from systematic database searches (Higgins et al., 2019). Details on the search strategy can be found in Appendix Chapter 3 (A.3.2)

3.2.3 Selection strategy

The selection strategy followed the steps suggested by the PRISMA statement (Page et al., 2020). First, all duplicate papers were deleted. Then, abstracts and titles of the remaining studies were screened.

Finally, the full texts of the papers were reviewed to establish whether or not they met the eligibility criteria. The selection strategy was conducted by two independent researchers (AC, GM)[2] and possible conflicts were solved through meetings.

3.2.4 Information extraction

Data extraction was undertaken independently by two reviewers (AC, GM), and disagreements were solved through discussion until total consensus was obtained. The following information was extracted and included in a summary table: author(s), year of publication, study design, context, phase of the COVID-19 pandemic in which the data were collected, outcomes/phenomenon of interest, instruments used to assess outcomes, and main results of each study.

3.2.5 Quality assessment

Quality assessment of the studies was performed by using JBI's critical appraisal tools. In particular, specific checklists were chosen considering the study design of each study. Specifically: (a) Checklist for analytical cross-sectional studies (JBI, 2017a) (b) Checklist for case-control studies (JBI, 2020a), (c) Checklist for textual evidence: expert opinion (JBI, 2020b), and (d) Checklist for qualitative research (JBI, 2017b).

The JBI's Checklist for analytical cross-sectional studies (8 items) assesses the clarity of the research question, the precision in the definition of the participants, setting, measurements, the identification, and strategies to deal with confounding factors, and appropriateness of the statistical analyses used.

The JBI's Checklist for case-control studies (10 items) assesses precision and validity in the definition of exposure group and controls, the validity of the measurement, the address of confounding factors, and the appropriateness of statistical analyses.

The JBI's Checklist for Qualitative research (10 items) addresses the congruity between research method, philosophical framework, and objectives, congruity between research method and analyses, the clarity on the position and participation of the researcher in the study, ethical integrity and the enhancement of the participants' voices, and consistent conclusions.

The JBI's Checklist for textual evidence: expert opinion (6 items) addresses clarity in the source of the opinion, the author's expertise, the congruity of the opinion within the entire text, and the agreements and disagreements with previous literature.

The entire checklists were provided in Appendix Chapter 3 (A.3.3; A.3.4; A.3.5; A.3.6).

Each item of the JBI's checklists allows four response options: yes, no, unclear, and not applicable. Although the checklists are not intended to be scored, the percentage of "yes" responses was calculated for each included study to have a quantitative index of the quality of the study. No general thresholds were, in fact, identified in scientific literature to define hierarchical intervals of quality.

[2] Alessia Caffieri in the role of the PhD candidate, and Giorgia Margherita in the role of supervisor of the PhD project.

3.2.6 Synthesis methods

Tables and narrative synthesis were used to summarize the characteristics of the included studies. In addition, the main findings of the studies were integrated into common narrative trajectories.

3.3 Results

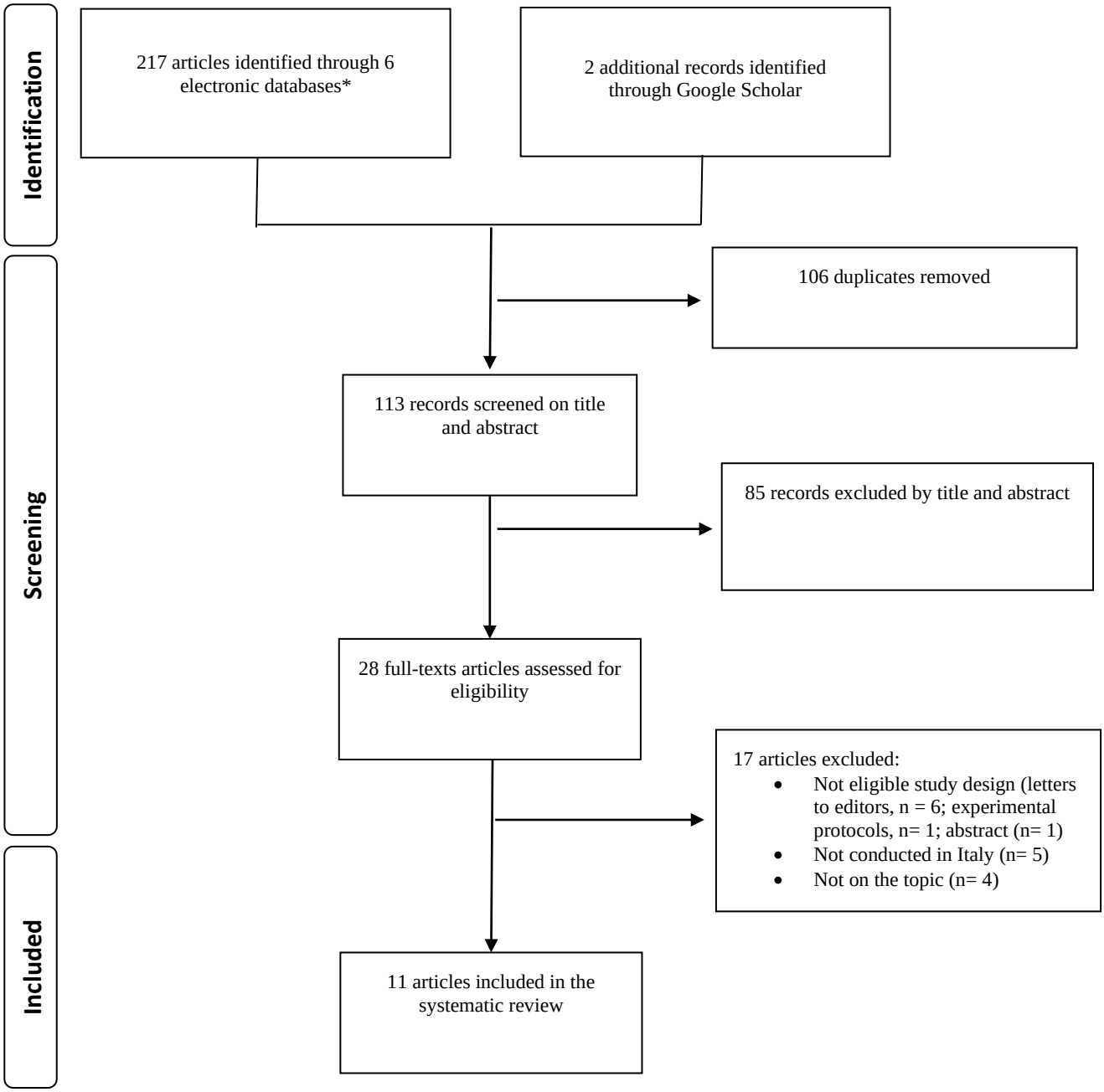
3.3.1 Selected studies

Database research produced a total of 217 papers. To these articles, 2 studies retrieved from Google Scholar were added. In the first selection step, 106 duplicates were found and deleted. After reviewing titles and abstracts, 28 articles were considered eligible and were screened for full-text. After the full-text screening, 17 papers were excluded: 8 because they were not journal or conceptual articles (6 were letters to editors, 1 was an experimental protocol, 1 was a data report and 1 was an abstract); 1 because the full-text was not available; 4 because they were not on the correct topic; and 5 because they were not based in the Italian context. In the end, a total of 11 studies were included in the current systematic review (Figure 3.1).

3.3.2 Methodological Quality

The results of the quality assessment are detailed in Table 3.1. Among the total, 6 studies scored 100% of yes responses showing a high quality in relation to their study design. It is worth noticing that one study assumed the design of a literature review, though no systematic research and selection of the studies was involved. In that case, the JBI's Checklist for textual evidence: expert opinion was used for quality assessment. No one study scored under 50%, suggesting a moderate/high overall quality of the studies included in the current systematic review. The assessment and strategies to deal with confounding factors were the most critical areas for cross-sectional and case-control studies.

Figure 3.1
Flow-diagram of excluded and included studies.



*Databases considered: Web of Science, Embase, APA PsycArticles (via EBSCO), APA PsycInfo (via EBSCO); Psychology and Behavioral Sciences Collection (via EBSCO); MEDLINE (via EBSCO) and Pubmed.

Table 3.1

Methodological quality of the included studies (N=11).

Authors (year)	Items of JBI's Checklists										
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Percentage of yes
Camoni et al. (2020)[c]	+	+	+	+	+	+					100%
Cena et al., (2021a)[d]	+	+	+	+	+	+					100%
Fumagalli et al. (2021)[d]	+	+	+	+	+	+	+	+	+	+	100%
Molgora & Accordini (2020)[a]	+	+	+	+	+	+	+	+			100%
Ostacoli et al. (2020)[a]	+	+	-	+	+	+	+	+			88%
Ravaldi et al. (2020a)[a]	+	+	+	+	+	+	+	+			100%
Ravaldi et al. (2020b)[a]	+	+	+	+	+	+	+	+			100%
Saccone et al. (2020)[a]	+	-	-	+	-	-	+	+			63%
Spinola et al. (2020)[a]	+	+	+	+	+	+	+/-	+/-			75%
Zanardo et al. (2020)[b]	+	+	+	+	+	-	-	+	+	+	80%
Zanardo et al. (2021)[b]	+	+	+	+	+	-	-	+	+	+	80%

Notes: += Yes; -= No; +/-=Unclear; NA= Non-applicable; [a] Checklist for analytical cross-sectional studies (8 items); [b] Checklist for case-control studies (10 items); [c] Checklist for textual evidence: expert opinion (6 items); [d] Checklist for Qualitative research (10 items).

3.3.3 Characteristics of the included studies

The main characteristics of the included studies were synthesized in Table 3.2. Among the total, 8 studies were published in 2020 and 3 in 2021. The review included 6 cross-sectional studies, 2 non-concurrent case-control studies, 1 qualitative study, 1 conceptual study, and 1 literature review. The majority of the studies collected data from the entire Italian territory, 4 studies collected data in Northern Italy, and 1 collected data in the South of the country, exclusively. In 4 studies, data was collected during the first total lockdown in Italy (from March 1 to May 3), 2 studies collected data after the first lockdown, in a period of partial decrease of COVID-19 impact in Italy (from May 4 to June), whereas 4 studies collected data during both phases. Among the total, 3 studies only included women during pregnancy, 5 studies included postpartum women, and 1 study included both pregnant and postpartum women. Only one study specifically focused on the psychological health of women who tested positive for COVID-19 infection. The included studies mainly focused on the following outcomes: depression (n= 6), anxiety (n= 3), and post-traumatic symptoms (n= 3) of which only one study directly assessed COVID-19-related post-traumatic stress. Among the instruments used in cross-sectional and case-control studies, the Edinburgh Postnatal Depression Scale (EPDS) was mainly used to assess depression (n= 6), whereas the State-Trait Anxiety Inventory (STAI) was mainly used to assess anxiety (n= 3). The post-traumatic

impact of COVID-19 was measured via the Impact of Event Scale-Revised (IES-R) by 1 study. The other studies that assess PTSD risk in women in the perinatal period used the Perinatal PTSD Questionnaire (PPQ), and IES-R, respectively.

Table 3.2

Characteristics and main results of the included studies (n= 11).

Authors (year)	Study design	Participants	Context	Phase	Outcomes/ Area of interest	Instruments	Results
Camoni et al. (2020)	Conceptual Article	NA	Italy (National-wide)	1st and 2nd phase (first semester of the COVID-19 pandemic)	-Program of screening and intervention	NA	Phases of a screening and intervention program for perinatal anxiety and depression during the COVID-19 pandemic: -empowerment knowledge -remote screening (NICE items and socio-demographical schedule) - clinical assessment of anxiety and depression (GAD-7; EPDS) - remote psychological intervention proposals
Cena et al., 2021	Literature review	NA	Italy (National-wide)	NA	Impact of the COVID-19 pandemic on NICUs' and families	NA	COVID-19 led to a re-organization of NICU, decreasing the family-centered care support: a priority for the mothers and new-borns. The study suggests the use of online tools to support parents.
Fumagalli et al. 2021	Qualitative study	Postpartum women positive to COVID-19 assessed during the second or the third month postpartum Total:22	Northern Italy	2nd phase (June 2020)	-Pregnancy and childbearing experience during the pandemic	-Semi-structured interview	The women's issues related to coping with unsatisfied expectations, trying to adapt to the new situation, managing separation from family and partners, relations with medical staff and, the long-lasting emotional effect of COVID-19 experiences emerged.
Molgora & Accordini (2020)	Quant. Cross-sectional study	Women from the 1st month of pregnancy to the 6th month after childbirth Total: 575 Pregnant: 389 Post-partum: 186	Italy (National-wide)	1st phase (March 3-May 1)	All: -State anxiety -Depression Only pregnant: -Expectations regarding childbirth Only post-partum: -Experience of childbirth -Childbirth-related post-traumatic	All: - STAI, Y - EPDS Only pregnant: - WDEQ(A) Only post-partum: - WDEQ(B) - PPQ	A high percentage of women scored above the clinical cut-off both during pregnancy and postpartum, for anxiety (64.0%; 57.7%; cut-off ≥ 40), depression (34.2%, 26.3%; cut-off ≥13), negative birth expectation or experience (51.2%; 31.7%; ≥ 35), PTSD during postpartum (16.7%; cut-off ≥ 19). Women's mental health was predicted by socio-demographic, medical, and pandemic-related variables,

					stress		especially the lack of support from one's partner.
Ostacoli et al. (2020)	Quant. Cross-sectional study	Postpartum women from childbirth to the 4th month after childbirth Total: 163	Northern Italy (Turin)	1st and 2nd phases (March 8 - June 15)	-Depression -Post-traumatic stress -Adult attachment style	-EPDS -IES-R -RQ	44.2% of women had a score above the cut-off (≥ 11) for postpartum depression. 42.9% of women had a score above the cut-off (≥ 24) for mild post-traumatic stress. Postpartum psychological distress seemed to be associated more with the antenatal experience and other individual dimensions than with the pandemic-related factors. A protective factor against depression and PTSD was the perception of healthcare staff support.
Ravaldi et al. (2020a)	Qualit-Quant. Cross-sectional study	Pregnant women Total: 200	Italy (National-wide)	1st phase (first weeks of th COVID-19 the pandemic n Italy)	-anamnestic variables -COVID-19-related concerns -women's emotions	COVID-ASSESS	Positive constructs about childbirth expectations were prevalent before the pandemic, while negative ones were dominant after (Chi square = 482.6, $p < 0.01$). Among emotions, joy was the most expressed before the outbreak (63.0% before vs 17.0% after; $p < 0.05$), while fear was the most prevalent after (7.5% before vs 49.0% after; $p < 0.05$). In particular, fear before the pandemic was associated with joy, happiness and the impatience to meet the child, while, during COVID-19, fear was associated with sadness, loneliness, and anguish. Pregnant women expressed greater concern about the health of the child and significant relatives, than their own health. In particular, women with previous psychopatology showed a greater concern for their partner's health.
Ravaldi et al. (2020b)	Quant. Cross-sectional study	Pregnant women Total: 737	Italy (National-wide)	1st phase (March 18- March 30)	-PTSD -State Anxiety	-COVID-ASSESS In particular: -NSESSS -STAI-Y	10.2% of women had a score above the cut-off (≥24) for post-traumatic symptoms. 21.7% of women had a score above the cut-off (≥50) for state anxiety. Women with a history of anxiety or depression showed significantly higher levels of anxiety, PTSD, and greater concerns about COVID-19.

Saccone et al. (2020)	Quant. Cross-sectional study	Pregnant women Total: 100	Southern Italy	1st phase (March 15 -April 1)	-Post-traumatic impact of the COVID-19 -Anxiety -Medical variables	-IES-R -STAI -VAS -Medical variables	53% of women had a score above the cut-off (≥37) for severe post-traumatic stress. 68% of women had a score above the cut-off (≥36) for anxiety. 46% of women reported high anxiety regarding the vertical transmission of infection (cut-off >50). Women in the first trimester of pregnancy showed significantly higher anxiety and COVID-19-related post-traumatic stress than women in other trimesters.
Spinola et al. (2020)	Quant. Cross-sectional study	Postpartum women from childbirth to the 12th month after childbirth Total: 243	Italy (National-wide)	2nd phase (May 11-June 6)	-Coping orientation -Depression -Perceived Stress -Maternal social support	- Brief-COPE - EPDS -PSS -MSSS	44.40% of women had a score above the cut-off (≥ 12) for postpartum depression. 51.90% had a score above the cut-off for significant stress perceived (≥ 27). 87.20% perceived very low Maternal Social Support. Women in Northern Italy reported higher levels of postpartum depression and perceived stress than women who lived in other areas of the country. Almost all COVID-19-related variables significantly increased the depression score. High levels of fear for significant others' health, instead, decreased the depression level.
Zanardo et al. (2020)	Quant. Non-concurrent case-control study	Data was collected the second day after childbirth Study group: 91 Control group: 101	Northern-est Italy	Control group (2019) Study group- 1st and 2nd phases (March 8 - May 18)	-Depression	-EPDS overall score and subscales (anhedonia, anxiety, depression)	The study group reported significantly higher EPDS overall scale, anhedonia, and depression subscale, scores than the control group. 28.6% of mothers in the study group vs 11.9% in the control group (p=0.006) had a score above the cut-off (≥ 12) of EPDS.
Zanardo et al. (2021)	Quant. Non-concurrent case-control study	Data was collected the second day after childbirth Study group: 152 Control group: 147	Northern-est Italy	Control group (2019) Study group – 1st and 2nd phases (March 8 - May 18)	-Feeding modalities -Depression	-Frequency of feeding modalities -EPDS overall score and subscales (anhedonia, anxiety, depression)	The study group reported significantly higher overall scores of EPDS (6.58 ± 4.08 vs, 8.03 ± 4.88, $p < 0.005$), anhedonia (0.18 ± 0.38 vs, 0.56 ± 0.65, $p < 0.001$) and depression subscales scores (0.39 ± 0.44 vs, 0.62 ± 0.60, $p < 0.001$), than the control group. Mothers who practiced exclusive breastfeeding showed a significantly lower EPDS score in comparison

	with those practicing other feeding modalities.

Notes: STAI-Y = State-Trait Anxiety Inventory – Y form; EPDS= Edinburgh Postpartum Depression Scale; WDEQ= Wijma Childbirth Expectancy Questionnaire; PPQ= Perinatal PTSD Questionnaire; Brief-COPE= Brief Coping Orientation to Problems Experiences; PSS= Perceived Stress Scale; MSSS= Maternity Social Support Scale; IES-R= Impact of Event Scale-Revised; RQ= Relationship Questionnaire; STAI= State-Trait Anxiety Inventory; VAS= Visual Analog Scale; COVID-ASSESS= COVID-19 related Anxiety and StreSs in prEgnancy, postpartum and breaStfeeding; NSESSS= National Stressful Events Survey; NICE= National Institute for Health and Care Excellence; GAD-7= General anxiety Disorder-7; NICU= neonatal intensive care units.

3.3.4 Narrative main findings

Four different meaning trajectories were used to report and summarize the findings of the Italian studies included in the current systematic review: *Pregnancy and postpartum continuum – from anxiety to depression and post-traumatic stress; Risk dimensions: previous psychopathologies and the lack of social support; Focus on others health before themselves; Recommendations for clinical practice and services.*

3.3.4.1 Pregnancy and postpartum continuum– from anxiety to depression and post-traumatic stress

The literature on the psychological effects of COVID-19 on the health of Italian women in the perinatal period was distributed differently about the outcomes and the target (pregnancy and/or postpartum women) considered. Anxiety was mainly investigated during pregnancy (3 studies), while depression and post-traumatic stress were the most explored symptoms during postpartum (4 studies on depression, 3 studies on post-traumatic stress).

Regarding pregnancy, studies showed significant levels of anxiety in women, though very different percentages were recorded: 68% (Saccone et al., 2020); 64% (Molgora & Accordini, 2020), and 21.7% (Ravaldi et al., 2020b). Higher levels of anxiety were observed especially in women during the first trimester of pregnancy than women in the other trimesters (Saccone et al., 2020).

Studies about the postpartum period found a high percentage of women with significant depression scores: 28.6% two days after childbirth (Zanardo et al., 2020); 44.2% up to 4 months (Ostacoli et al., 2020); 26.3% up to 6 months (Molgora & Accordini, 2020); 40.40% up to 12 months (Spinola et al., 2020). Close to childbirth, a higher prevalence of depressive symptoms appeared in women who became mothers during the COVID-19 period (28.6%) than women who became mothers in the previous year (11.9%) (Zanardo et al., 2020; 2021).

The only data available about depression in the antenatal period and anxiety in the postnatal period did not show significant differences between these stages of motherhood (Molgora & Accordini, 2020; Zanardo et al., 2020b).

In women in the perinatal period, stress (51.90% in Spinola et al., 2020) and post-traumatic distress (16.7% in Molgora & Accordini, 2020; 42.9% in Ostacoli et al., 2020; 53% in Saccone et al., 2020; 10.2% in Ravaldi et al., 2020b) were also observed. The four included studies that assessed post-traumatic stress were barely comparable for several reasons. One is the perinatal phase: some assessed PTSD risk in pregnant women (Ravaldi et al., 2020b; Saccone et al., 2020), others during the postpartum (Molgora & Accordini, 2020; Ostacoli et al., 2020). Second, because they accessed different constructs: Molgora & Accordini (2020) assessed the childbirth-related post-traumatic impact, Ostacoli et al. (2020) and Ravaldi et al. (2020)

assessed post-traumatic stress in general, while Saccone et al. (2020) assessed the COVID-19-related post-traumatic impact.

3.3.4.2 Risk dimensions: previous psychopathologies and the lack of social support

All studies that included COVID-19-related variables showed their effect on women's well-being during pregnancy and postpartum, alongside other individual and social factors (Molgora & Accordini, 2020; Ostacoli et al., 2020; Ravaldi et al., 2020a, 2020b; Spinola et al., 2020).

Considering the individual dimensions, the set of studies included in the current review suggested that women who suffered psychological disorders in the past were in an at-risk category of psychological distress during the COVID-19 pandemic (Molgora & Accordini, 2020; Ravaldi et al., 2020a, 2020b; Spinola et al., 2020). In particular, the presence of mood, anxiety, and eating disorders, along with alcohol, and drug abuse in the past were predictive of anxiety and depression in pregnancy and anxiety, depression, and PTSD during postpartum (Molgora & Accordini, 2020). Having suffered from previous emotional distress was also associated with anxiety, and postpartum stress (Spinola et al., 2020). In addition to the increase in anxiety and PTSD symptoms, pregnant women with previous histories of psychological distress showed greater concerns about COVID-19 (Ravaldi, 2020a, 2020b).

On the other hand, among situational risk factors, the lack of support mainly emerged (Cena et al., 2021; Fumagalli et al., 2020; Molgora & Accordini, 2020; Ostacoli et al., 2020; Spinola et al., 2020). Low perceived social support was recorded in women (Spinola et al., 2020). Studies also showed that the lack of social support, particularly from one's partner, led to a decrease in the psychological health of pregnant and postpartum women (Molgora & Accordini, 2020), while receiving social support from the medical staff seemed to assume a protective value for the psychological health of women (Ostacoli et al., 2020). Separation from partner and family during childbirth and the perinatal period were also found to be sources of emotional distress for women from the qualitative study (Fumagalli et al., 2021).

3.3.4.3 Fear for others health more than their own

The review showed that women seemed to be more concerned about the health of their children and significant others than their own health both during pregnancy and postpartum (Ravaldi et al., 2020a; Spinola et al., 2020).

Pregnant women expressed greater concern about the health of the child and significant relatives, than their own health (Ravaldi et al., 2020a). In particular, fear in pregnant women pandemic was often associated with experiences of loneliness, anguish, and sadness during the COVID-19, whilst fear in the pre-covid era, was mainly attributed to the uncertainty and trepidation of childbirth (Ravaldi et al., 2020a). In addition, Saccone et al. (2020) showed that 46% of pregnant women reported high anxiety regarding the vertical transmission of infection.

On the other hand, even during the first year of motherhood, the women showed fears for their children, their elderly family members, and their partners (Spinola et al., 2020). Surprisingly, fear of

contagion for significant others was associated with a decrease in postpartum depression symptoms in data reported by Spinola et al. (2020). Even for women who tested positive for COVID-19, the fear seemed to focus on the possible contagion of the child and of the medical staff who took care of the accompaniment to childbirth (Fumagalli et al., 2021).

3.3.4.4 Recommendations for clinical practice and services

Recommendations for guaranteeing psychological support to women in the perinatal period during the COVID-19 pandemic in Italy were scarce in scientific literature. In summary, the indications provided by scientific literature were: to promote screening and intervention for maternal perinatal anxiety and depression via remote tools and to improve the capacity of healthcare staff to recognize the risks for parental mental health, to support parents in at-risk situations.

Camoni et al. (2020) proposed an adaptation of an evidence-based screening and treatment program for perinatal depression and anxiety in healthcare services, as suggested by the Italian Minister of Health (ISS 44/2020). The program involved the following steps: a promotion of empowerment knowledge through the informative action in primary and maternal healthcare services in-person or remote; a remote screening (4 NICE items for depression and anxiety and socio-demographical schedule); in case of risk, the assessment of anxiety and depression (GAD-7; EPDS) by a psychologist or a psychiatrist; remote psychological intervention proposals in case of clinical risk of perinatal depression or anxiety, and referral to public mental health services in case of risk of suicide, bipolar disorder or psychosis. The adaptation of the program to the health emergency consisted of considering online or remote tools as key resources to be preferred for both psychological screening and psychological intervention during the COVID-19 pandemic.

On the other side, Cena et al. (2021) focused instead on the difficulties of Neonatal Intensive Care Units (NICU) in guaranteeing a good quality of care and psychological support for parents of hospitalized infants during the COVID-19 pandemic in Italy. They also suggested the use of online or remote tools to guarantee a family-centered system of care.

3.4 Discussion

The current systematic review synthesized findings on the psychological perinatal health of women during the first year of the COVID-19 pandemic in Italy. It highlighted considerable levels of psychological distress symptoms in terms of anxiety, depression, and post-traumatic stress. From the findings of the current systematic review, the lack of social support, and previous psychopathologies emerged as the main risk factors for maternal perinatal psychological health during the COVID-19 pandemic in Italy. In addition, the findings showed women's greater concern for others' health over their own. Clinical and healthcare services recommendations were also synthesized.

It is worth noticing that the current systematic review involved studies that collected data mainly during the lockdown and in the North of the country. The methodological quality of the studies was moderate/high. In addition, most of the studies had a cross-sectional quantitative design.

Regarding perinatal psychological distress, studies suggested high levels of anxiety in the prenatal period and high depressive and post-traumatic symptoms in the postpartum period.

During pregnancy, the prevalence of anxiety symptoms in Italy appeared to be widely variable (21.7%-68%) which could partially depend on the different STAI versions and cut-off thresholds used in the studies. However, this variability seemed to confirm the great heterogeneity in antenatal anxiety found by international meta-analysis involving data from the same pandemic period (Fan et al., 2020). Ravaldi et al. (2020b) was the only study that showed a prevalence rate (21.7%) of antenatal anxiety closer to the prevalence rates observed before the COVID-19 pandemic, both in the international literature (22.1%, Dennis et al., 2017) and more specifically in Italian studies (24.3%, Cena et al., 2020). On the other hand, the other studies showed dramatically higher rates (64%, 68%).

During postpartum, depressive symptoms had been the most investigated in Italy. The increase in depression in postpartum women during the COVID-19 pandemic (Zanardo et al., 2020), emerged also when comparing the percentages of the included studies (26.3%-44.2%), with those recorded before the pandemic worldwide (17%, Shorey et al., 2018) and nationwide (9.6%, Banti et al., 2011; 4.7%, Clavenna et al., 2017).

Moreover, high variability was also found among post-traumatic symptoms' prevalence rates in postpartum women (16.7%-53%). This variability could depend on different groups of factors: (a) first and mainly the definition of the construct: some studies assessed PTSD risk in general, while others focused on COVID-19-related impact, and others on the childbirth-related trauma; (b) the different scales used by the studies (PSS, IES-R), and (c) from the contexts in which the data was collected (online, clinics in the North or the South of Italy). However, in all cases, pre-COVID-19 literature showed lower rates of PTSD in postpartum women mainly referring to the potential trauma of childbirth (4%, Yildiz et al., 2017).

In terms of research gaps, the findings showed little data available on depression and post-traumatic stress in the antenatal period and anxiety in the postnatal period (Molgora & Accordini, 2020; Zanardo et al., 2020b). It suggested the need to explore depression, anxiety and post-traumatic stress during the entire perinatal period in Italy during the COVID-19 pandemic.

From the findings of this systematic review, some at-risk factors for maternal perinatal psychological health during the acute phase of the COVID-19 pandemic in Italy emerged. Among individual dimensions, studies in Italy suggested that previous psychopathologies could predict several forms of distress during pregnancy and postpartum, confirming data already emerged in the pre-pandemic literature (Patel et al., 2012; Simpson et al., 2018).

In addition, for many years, research has considered the lack of social support as a risk factor for the psychological health of women during pregnancy and postpartum (Grussu et al., 2020; Lancaster et al., 2010; Negron et al., 2013). From the data that emerged in the current systematic review, it might be hypothesised that the social restrictions imposed by the Italian government and clinics to prevent contagions decreased the social support perceived by women, fostering an increase in psychological distress (Cena et al., 2020; Fan et al., 2020; Khoury et al., 2021).

Another aspect highlighted by the current systematic review was the attention that women gave to the health of their children and close ones over their own, as it was observed in other contexts, worldwide (Corbett et al., 2020; Taubman-Ben-Ari et al., 2020). Women who lived critical antenatal and postnatal experiences during the COVID-19 acute phase seemed to have directed their concerns toward the other, through a decentralization of personal needs, ignored or replaced with those of others. Paraphrasing a concept stated by Winnicott (1956), it could be suggested that women lived an "extended primary maternal preoccupation" during the COVID-19 pandemic or rather wide concerns regarding the health of both the infant and the significant others. In line with this perspective, the concern for others' health could be related to assuming a satisfying "caring" function for women, and in this sense, it could assume a protective function for the psychological well-being of postpartum women, explaining the inverse association found by Spinola et al. (2020) between fear for others' contagion and less postpartum depressive symptoms.

However, on the other hand, a wide fear for others during pregnancy in the COVID-19 acute phase seemed to be associated with feelings of sadness and anguish (Ravaldi et al., 2020). On the negative side, from a gender-sensitive perspective, this tendency to worry for others could lead women to flatten their self-representation to the social patriarchal norms which attributes to women the exclusive role of "care" within society, hindering the recognition of needs and distress and limiting the request for medical and psychological help and support (Austin et al., 2008; Camoni et al., 2020; Tavero et al., 2018).

Furthermore, only one study reported guidelines for screening and intervention for perinatal depression and anxiety during the pandemic (Camoni et al., 2020). From these guidelines, the remote tools emerged as the key resources for guaranteeing psychological support and treatment for women at-risk for mental health in the perinatal period during the COVID-19 pandemic. In general, the studies suggested a difficulty of perinatal healthcare services in responding to the support needs of women, in particular in case of risk, such as for women tested positive for COVID-19 (Fumagalli et al., 2021), or mothers of hospitalized children in NICU wards. During the first phase of the COVID-19 pandemic in Italy, the possibility of responding to the support needs of people in clinics and healthcare facilities was largely hampered by the state of emergency to which health services were subjected (Di Giacomo, 2020). For this reason, remote tools were widely promoted. Although international scientific literature has widely shown promising results on the efficacy of online interventions in preventing and treating perinatal psychological distress, no research study on the efficacy of remote preventive or treatment interventions in Italy during COVID-19 emerged.

In addition, some methodological aspects of the included studies need to be discussed. Most studies included in the current systematic review used a quantitative methodology. Only one Italian qualitative study was published in the literature focusing in particular on women infected by the COVID-19 virus during the first year of the pandemic (Fumagalli et al., 2021). In addition, most of the studies included in the current systematic review had a cross-sectional design. The increased frequency of cross-sectional studies appeared to be a general feature of psychological research on the effects of COVID-19 in the first phase of the virus spread (Associazione Italiana di Psicologia, 2020). Only two studies included in the current systematic review, conducted by the same group of research, involved a control group, comparing a group of women

who gave to childbirth during the pandemic with a group of women that gave childbirth in 2019 (Zanardo et al., 2020, 2021). In addition, considering that the systematic review collected the literature on the first year of virus spread, longitudinal studies did not emerge.

Looking at the contexts in which the data were collected, it emerged that the studies had mostly focused on the first lockdown in Northern Italy. In particular, there was a higher frequency of research conducted in healthcare settings in the North of the country than in the South. This data could derive from the fact that in the first half of 2020, the North was the area that suffered the greatest effects of the pandemic in terms of contagion and mortality (Ministry of Health, 2020), activating the interests of research in psychology. Italian studies also confirmed the results observed in other contexts which showed wide experiences of anxiety, fear, and concern in women who delivered during the peak phase of virus spread (Mortazavi et al., 2021).

3.4.1 New research in the Italian context

After the conduction and publication of the current systematic review, new studies were published in Italy, involving data on the different "waves" of the COVID-19 pandemic. To compare the results of the current systematic review with the new data about Italian mothers, new publication has been selected through a non-systematic search strategy, which was performed via Google Scholar engine, involving the combination of the same terms used for the systematic review. In addition, for the selection of the material to use for discussion, the same inclusion and exclusion criteria previously used for the systematic review have been applied. The quality of the studies reported in this paragraph was valued considering the JBI's criteria, though no systematic assessment of the quality was performed.

Among them, a study that involved 14828 pregnant and postpartum women showed that the prevalence of perinatal depression in Italy slightly increased from 11.6% in 2019, to13.3% in 2020, 19.5% in the period between January and September 2021, and 25.5% in the last period of the health emergency in Italy (November 2021-April 2022) (Camoni et al., 2022). In addition, the study showed that in the last phases of the health emergency, previous psychopathological diagnosis and the lack of social support remained two of the main predictors of anxiety and depression in women in the perinatal period (Camoni et al., 2022), confirming the findings highlighted by the current systematic review.

Another study involving 2108 women in the perinatal period, from October 2020 to May 2021, showed that 12.1% of pregnant women and 9.3% of postpartum women experienced psychological distress (Lega et al., 2022). Considerable levels of antenatal anxiety (Cerioli et al., 2023; Colli et al., 2022) and depression were also found in other studies involving smaller samples (Cerioli et al., 2023; Stampini et al., 2021). Further studies showed that pandemic-related emotional stress - mainly linked to the fear of her own or significant others' infection - predicted both anxiety and depression in pregnant and postpartum women (Grumi et al., 2021; Lega et al., 2022; Mappa et al., 2020; Orsolini et al., 2022). A post-traumatic impact of COVID-19 first lockdown on maternal perinatal experience was also found in pregnant women positive for COVID-19 (Cerioli et al., 2023) and in negative for COVID-19 pregnant women regardless of the region in

which they lived, more (Lombardy) or less (Tuscany) hit by the COVID-19 consequences (Ionio et al., 2021). Hence, studies on perinatal maternal psychological health during the COVID-19 pandemic in Italy increased in the scientific literature, confirming the need to consider it a public health priority. In particular, depression and anxiety remained two of the main areas of concern in the entire perinatal period, from pregnancy to postpartum.

New data supporting the effect of COVID-19 in increasing risks for mothers' perinatal psychological health also emerged. An increase in psychological distress - in particular in terms of depression and anxiety – was found in pregnant (Smorti et al., 2022; Allegri et al., 2023) and postpartum women (De Chiara et al., 2023; Madera et al., 2021) who lived the perinatal experience during the first/second waves of the COVID-19 pandemic when compared with control groups of women who lived the perinatal experience before the COVID-19 pandemic in Italy. In addition, in the period between September and December 2021, around the phase that it is conventionally called the "third wave" of the COVID-19 pandemic in Italy, women continued to show higher levels of perinatal depression if compared to pre-pandemic groups, mainly during pregnancy (Scandurra et al., 2023). Otherwise, no difference emerged for psychiatric conditions in terms of major depression and suicidal ideation from the comparison between pre-pandemic and pandemic data (De Chiara et al., 2023).

New data on other psychological health-related areas of research also emerged. A clear detrimental effect of the restricted partners' visiting policies on postnatal maternal anxiety during lockdown was found (Morniroli et al., 2021). In contribution to the results on the effect of social support on maternal psychological health during the COVID-19, a study conducted in Italy during the "third wave" of virus spread showed that loneliness predicted perinatal depression, differently from maternal social support that was found not significant (Scandurra et al., 2023). In addition, more qualitative studies focused on the perinatal experience of women not infected by the COVID-19 virus were published in scientific literature. Qualitative research in Italy showed that the prior resource that the women identified to face COVID-19-related uncertainty was the "certainty" of others' support, including partner, peer, and professional support (Bolgeo et al., 2022; Mari et al., 2022; Smorti et al., 2022). At the same time, the intrusion of relatives or visitors during postpartum represented a great concern for the mothers. Hence, from these studies emerged that the perinatal experience was something to share only with people who showed empathy and support to the mother (Bolgeo et al., 2022; Mari et al., 2022). Qualitative research also shed light on maternal loneliness during the COVID-19 pandemic. In particular, loneliness lived by women in clinics and hospitals, or the experience of loneliness product of a comparison between the expectation of sharing the maternal experience with others with the restricted reality, as well as feeling alone in their caring duties toward children were reported in literature (Fumagalli et al., 2022; Ravaldi et al., 2021). In addition, a study showed that, compared to a group of pregnant women interviewed before the COVID-19 pandemic, the women during the pandemic showed more restricted/disengaged and less integrated/balanced maternal representations (Smorti et al., 2023). These restricted/disengaged representations were also associated with a tendency to focus on concrete aspects of pregnancy rather than on emotional ones (Smorti et al., 2023).

Considering the association between maternal psychological distress and mother-infant relationship, a study involving 1179 pregnant women showed that COVID-19-related state anxiety moderated the effect of a woman's trait anxiety on prenatal attachment (Craig et al., 2021).

In addition, an Italian study investigated the stressful impact of the lockdowns on maternal and child health, assessing patterns of DNA methylation in specific stress-related genes. This study showed altered patterns of epigenetic biomarkers of stress-related genes mainly in mothers and children who were exposed to the lockdown during the first trimester of pregnancy (Nazzari et al., 2022).

To the best of my knowledge, the only longitudinal quantitative study conducted in Italy on women in the perinatal period was that of Provenzi et al. (2021). It showed that antenatal maternal stress along with the lack of social support increased anxiety symptoms immediately after postpartum. Consequently, the high levels of peripartum anxiety had an impact on postnatal maternal stress, with a secondary impact on children and mother-children relationship (Provenzi et al., 2021).

In addition, to the best of my knowledge, no research on interventions for preventing or treating perinatal psychological distress during the COVID-19 pandemic in Italy was published in scientific literature.

3.4.2 Limits

The current study is not free from limitations. From a methodological point of view, although the choice of words for the selection of studies was made concerning international works on the topic, it can be assumed that the use of other words could have led to different results. In addition, the phenomenon of interest in the current systematic review is very wide. The interest of the researcher was exploring broadly the scientific literature on the psychological health of pregnant and postpartum women in Italy, hence the study was not focused on specific outcomes. This choice had several consequences on the possibility of responding to some PRISMA standards, such as the assessment of the certainty of evidence, that need to be focused on specific outcomes. In addition, no protocol was published for this systematic review.

Furthermore, the research did not focus on a specific target of pregnant and postpartum women (e.g. adolescent women or women with high-risk pregnancies,), which could represent vulnerable categories.

3.4.3 Highlights and implications

The findings of this systematic review suggested antenatal and postnatal psychological distress as a field that merited great research and clinical attention in Italy during the COVID-19 pandemic. The high variability emerged among the prevalence rates of perinatal depression and anxiety, and the research gaps observed showed the importance of studying depression, anxiety, and post-traumatic symptoms during the pandemic through all the stages of early motherhood. Beyond the increase in psychopathological symptoms, the review revealed some areas of vulnerability that women experienced during the perinatal period. From this perspective, the loss of the protective function of social support by significant others who usually take care of the woman and accompany her during pregnancy, childbirth, and the following months after birth,

emerged. Furthermore, the great concern for the other's health pushed to rethink the maternal function, in particular, its generative aspects. During that historical period, women who gave birth to a child felt the responsibility of assuming a role of care and support even to protecting the social bonds.

Methodologically, findings showed the necessity of qualitative, longitudinal, and intervention studies in this field.

Chapter 4

The time of motherhood, from pregnancy to postpartum, in the COVID-19 era: a longitudinal qualitative study (years 2021-2022)

Chapter 4 - Overview

The current study represents the second "step" of the PhD project, partially published in 2023[3].

As shown in the previous chapter, the first study shed light on the strong points and gaps in the scientific literature on the psychological health of pregnant and postpartum women during the COVID-19 pandemic in Italy. As was shown in the results of the systematic review, in the first months of 2021, when the idea for this second study was born, only one Italian qualitative study was published (Fumagalli et al., 2021). In the face of the "multi-component" impact of the COVID-19 pandemic on the maternal experience, and the gaps in the literature on the Italian context, exploring perspective and broadly focus on the maternal perinatal experience was adopted. It was chosen to explore the maternal experience in-depth, assessing the multiple ways in which the "personal crisis" of motherhood could intertwined with the "collective crisis" of the COVID-19 pandemic, and to consider how the challenges faced by women could vary over time. Hence, a part of the project was dedicated to qualitative research. Qualitative research has the great value of promoting a holistic understanding of humans and their connections with social change (Smith, 2007). This choice is in line with a "women-centered" approach applied to the research field (WHO, 2017; ISS, 2021) aimed to consider women's needs in the perinatal period as a health priority. In a historical moment where it appeared difficult for healthcare services to center the assistance on women's needs, dedicating a space in the project to women's narratives represented an ethical choice, aimed to consider women's subjective experience as the most important source of information about the complexity of the perinatal experience lived during the COVID-19 pandemic. Hence, in this phase of the PhD project, an explorative stance was embraced by the researcher, considering the participants as the real experts on the phenomenon under research (Smith, 2007). In addition, the narrative process provides an important opportunity to contact one's emotions trying to give them a meaning. This process of signification in itself represents a first step of awareness to deal with the crisis and its consequences at the intra-psychic, relational and social levels.

Starting from the hypothesis that women's needs could change in the different phases of the perinatal experience, as well as they could change in the different phases of the COVID-19 pandemic, the researcher opted for a longitudinal qualitative research design, that could associate deep and temporality.

[3] Caffieri, A., Margherita, G. (2023). The time of motherhood in a time of crisis: a longitudinal qualitative study. *Journal of Reproductive and Infant Psychology.* Advanced online https://doi.org/10.1080/02646838.2023.2243487

4.1 Introduction

Each process of crisis, being a process of change, has to do with temporality. In the theoretical introduction of the current dissertation, different temporalities around which the maternal perinatal experience unfolds have been presented. The one determined by biological rhythms, characterized by the conception, the gestation, the delivery, and the puerperium; the temporality of individual psychological development (how the woman experienced her childhood, how she experienced puberty, identification processes and relationship with her mother, and expectations about the future that substantiate the integration of the self); and a transgenerational temporality (family history, unconscious ghosts transmitted in the form of the unspoken) (Bibring, 1959; 1961; Imbasciati & Cena, 2007; 2020; Pines, 1972; Raphael-Leff, 1982; Soifer, 1971). Moreover, an internal temporality, related to waiting times, underlies a generative care function - an "affective, invested and intersubjective" process (Sandford, 2011, p. 6)- that should characterize the experience of motherhood (Baraitser, 2017).

To these complex personal temporalities, the temporality of the pandemic crisis - which, with its peaks and phases of partial openness, has created great chaos on a practical and emotional level – needed to be considered.

As above mentioned, longitudinal quantitative studies mainly focused on the persistence of depression, anxiety, negative emotions, and stress in women in the perinatal period during the ongoing pandemic (López-Morales et al., 2021; Niela-Vilén et al., 2021).

On the other side, qualitative studies were published in different countries and during different phases of the COVID-19 pandemic, sharing the interest in exploring the main challenges and needs of pregnant and postpartum women during the pandemic (Jin & Murrey, 2023). Recurrent themes emerged from these studies. One was the lack of healthcare system resources to address women's well-being (Atmuri et al., 2022; Javaid et al., 2021; Jones et al., 2022; Kinser et al., 2022; Sahin & Kabakci, 2021). Two was the great uncertainty lived by pregnant and postpartum women (Keating et al., 2022; Mari et al., 2022; Rauf et al., 2021; Sahin & Kabakci, 2021). COVID-19 impacted the feeling of preparedness to become a mother (Atmuri et al., 2022), and hindered access to some important resources that in the past supported the process of feeling prepared to become a mother, such as the access to prepartum courses, and intergenerational and peer support (Atmuri et al., 2022; Mari et al., 2022; Jones et al., 2022). Third were the higher concerns about the health of the infants, partner, and relatives as well as concerns about the use of telemedicine (Atmuri et al., 2022, Kumari et al., 2020). Four, the great feeling of loneliness experienced by mothers (Anderson et al., 2021; Linden et al., 2021; Mari et al., 2022¸ Rossetto et al., 2021). Qualitative studies also showed some "positive aspects" of living pregnancy or postpartum during the COVID-19 pandemic (Atmuri et al., 2022; Aydin & Aktaş, 2021; Jin & Murrey, 2023; Keating et al., 2021; Mari et al., 2022). Atmuri et al. (2022) underlined that staying more at home and having the possibility of working from remote was considered by some women as a benefit consequent to COVID-19 spread. Other studies suggested that having time to rest during pregnancy and having a "safe" place where enjoy the baby and the family during postpartum could

represent a social resource for the mothers (Keating et al., 2021; Mari et al., 2022). Kumari et al. (2020) added to these resources the possibility of dedicating themselves to hobbies and personal pleasure activities.

All these qualitative studies accessed the women's experience in a specific phase of the perinatal journey (pregnancy or postpartum) and of the COVID-19 spread (mainly lockdowns). However, no qualitative study has tried to capture the maternal perinatal experience and the maternal psycho-social needs along the perinatal journey and the different phases of the COVID-19 pandemic.

To the best of my knowledge, the current study was the first longitudinal qualitative study on maternal perinatal experience during the COVID-19 pandemic. In fact, longitudinal qualitative research can provide a unique way to capture relationships between experiences, time, and change (Calman et al., 2013).

4.1.1 Aim of the study

This study aimed to in-depth explore the longitudinal trajectories of the perinatal experience, from pregnancy to postpartum, lived by women in the frame of the second and third waves of the COVID-19 pandemic in Italy. Hence, this study had an explorative objective aimed to highlight the women's needs during different phases of perinatal experience, from the middle to the last phase of the COVID-19 public health emergency in Italy.

4.2 Materials and methods

The framework of this study is that of the Interpretative Phenomenological Analysis (IPA) in integration with a psychodynamic perspective. IPA cannot be reduced to a method of analysis. It represents a broad approach to qualitative research that determinates its epistemological and ontological basis, as well as it orients all the methodological choices. In Smith's words – the developer of IPA methodology - : "Without the phenomenology, there would be nothing to interpret; without the hermeneutics, the phenomenon would not be seen." (Smith, 2009, p. 37). The phenomenological/hermeneutical framework and the psychodynamic perspective share some epistemological assumptions: the knowledge can only be accessed through the interpretation of subjective meanings. This means that the human being and his experience – that is ontologically historically contingent and contextually bounded - can be "known" only through his experience and the ways through which himself and the others can interpret it. From a psychodynamic perspective, through narration, people access to a first form of emotional awareness. Hence, the specific contribution of the psychodynamic perspective applied to the IPA approach, lies in considering the narrative process as an attempt to give meaning to one's emotions (Margherita, 2015; Margherita 2017a; 2017b; Troisi et al., 2021).

In methodological terms, the IPA attributes importance to the narrative truth, considering the participants as the real experts of the phenomenon under research. Specifically, the current study followed the qualitative approach of Longitudinal Interpretative Phenomenological Analysis (LIPA) (Farr & Nizza, 2019; Smith, 1994). LIPA represents an evolution and adaptation of the IPA to the analysis of longitudinal qualitative data. LIPA assumes an idiographic perspective; hence, it is focused on the importance of the subjective meanings that a person attributes to her own experience, and involves a double hermeneutic

process (Margherita et al., 2015; 2017a; McCoy, 2017; Troisi et al., 2021). The double hermeneutic process requires the researcher to give sense to the meaning that people give to their experience. In particular, with LIPA, the researcher has to move through different time-points of the personal narratives of the participants. This movement gives the possibility to track the changes in meanings through an arc of time in the subjective experience (Farr & Nizza, 2019). A specific characteristic of LIPA is, in fact, the perspective on time. From a linear time, it moves to the time of subjective experience (Finlay, 2009), in which past and future expectations are reorganized in the narration (Ashworth, 2016). This approach allows the capture of the temporal experience along the flow of subjectivity.

LIPA orients all the stages of qualitative research, including procedures and analysis (Farr & Nizza, 2019). It assumes reflexivity and needs that the researcher remains on the inductive level of analysis (Snelgrove, 2014). LIPA is a method suggested in the investigation of dynamic phenomena such as life transition, illness experiences, and health interventions (McCoy, 2017) and found its first application in the analysis of the transition to motherhood (Smith, 1994). In this sense, LIPA allows to study of personal transitions within the unfolding of historical and social events. From a psychodynamic perspective, through narration, women could access to a first form of awareness to deal with the crisis and its consequences at the intra-psychic, relational and social levels. Hence, in the current study, it was used as a method to explore maternal perinatal experiences during the waves of the COVID-19 pandemic.

For the report of the current study, Standards for Reporting Qualitative Research (SPQR) (O'Brien et al., 2014) were followed, as recommended by the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network (Moher et al., 2010). The SPQR Checklist was provided in Appendix Chapter 4 (A.4.1).

4.2.1 Researcher characteristics and reflexivity

A gender-sensitive psychodynamic perspective and the perinatal clinical psychology background - described in the first part of this dissertation - oriented the research.

I directly conducted interviews. During my PhD training, I attended specific programs focusing on conducting in-depth research interviews. In addition, my education on perinatal psychology was both theoretical and clinical, via past training in the maternal-infant unit in a public healthcare organization in Italy. Qualitative studies - even more than other types of studies - considers the researcher as an active participant in the research process who can actively influence the results. Hence, in this context, a reflection on researcher's possible personal and theoretical biases is needed. Some of my personal assumptions and beliefs may have influenced the analysis and interpretation of the results, hindering the inductive process suggested by IPA. First, being a young woman researcher that embrace a gender-sensitive position – hence the idea that implicit/explicit sociocultural norms and discriminations determine the different rights, roles, and responsibilities of women and men in the community and the relationships between them - has probably led my attention to focus on and to recognize those contents of mothers' narratives related to gender biases and discriminations. Being gender biases and discrimination structural elements of society, they inevitably

affect also my personal experience. Although I am not a mother, I belong to an age group in which there are several questions about the choice of motherhood. I have had the indirect experience of friends and close ones who have had children or planned or terminated a pregnancy in the recent years. Hence, motherhood is an experience that at some levels involves my identity as a woman directly and indirectly (through my relationships and social norms), and activates a wide range of emotions in me, such as hope, tenderness, understanding but also fear and sadness. Second, like the participants in the study, I have also experienced the pandemic, sharing some of the transversal thoughts and emotions reported by the interviewed women such as loneliness, helplessness and fear. Third, the theoretical background presented in the first chapters also represents a system of prior believes that might promote deductive interpretations. However, to promote the maintenance of an inductive standpoint in conducting, analysing and interpreting the interviews, some informal and formal resources have been activated. Several relational competences learned via my training in clinical psychology has helped me in the research. Among them, there were: an active listening (that helps to actively process and seek to understand the meaning of the words of the other through an empathic attitude) (Gordon, 1975; Rogers, 1951), a free-floating attention (that helps to go beyond the preconceived ideas and biases and remain open for new contents) (Freud, 1912; Laplanche et al., 1988), and a not knowing stance (a position that involves an authentic curiosity towards the other's experience, aimed at helping the other to disclosure and reflect) (Bateman & Fonagy, 2016). All these clinical stances applied to research have helped me to consider the participants as the real experts of the phenomenon under research, and to maintain an inductive approach. In addition, my personal analysis, has equipped me with an "internal setting" that has helped me to distinguish between what was mine (personal believes and emotions, prior knowledge) and what was of the other person.

Furthermore, I have run the entire research with the supervision of Prof. Giorgia Margherita (clinical psychologist and psychotherapist), whose research activity is, among others, concerned with motherhood in at-risk conditions and the use of qualitative research with different vulnerable populations (forced migrants, victims of violence, people with chronic illnesses). Both of us (AC, GM) were involved in the analysis and interpretation of the results. Her long experience in clinical field has been fundamental to reduce biases and to maintain an inductive level in the process of research A third in-training researcher, Nadia De Maio, participated in the discussions on the analysis of the interview to guarantee triangulation. The research group has involved researchers of varying ages and clinical/research experience, and this has been important to promote reflective practice.

4.2.2 Context

The social context was Italy during the "second" and the "third" waves of the COVID-19 spread. In brief, the "second wave" (from November 2020 to May 2021) corresponded to a second partial lockdown. Instead, the "third wave" (from January 2022 to May 2022) represented the last phase of the COVID-19 public health emergency in Italy, involving a progressive abolition of all restrictive anti-contagion measures.

In March 2022, in fact, the Italian government declared the end of the COVID-19 health emergency (DL n. 24, 24/03/2022). Details on this topic can be found in Chapter 2.

4.2.3 Participants

Women were enrolled in the current study on the basis of the following inclusion criteria: being in the second or the third trimester of pregnancy (1), being more than 18 years old (2), being Italian speaking (3), and having been living in Italy during the COVID-19 health emergency (4).

On the other hand, the following exclusion criteria were used: being in the first trimester of pregnancy (1), having at-risk levels for anxiety, depression, or stress (2), having an organic disorder (3), having a medical at-risk pregnancy (4), and undergoing medically assisted reproduction (5). In particular, women in the first trimester of pregnancy were excluded because they are generally more exposed to the risk of spontaneous abortion, and they are psychologically involved in a process of acceptance or rejection of the pregnancy (Imbasciati & Cena, 2020). Having at-risk levels of psychological distress, in terms of anxiety, depression, or stress was used as an exclusion criterion because the interest of the researcher was the exploration of a "typical" experience of motherhood during the COVID-19 pandemic. Indeed, the literature showed that the maternal representations in mothers with at-risk levels of distress can be largely different from the maternal representations of mothers with no at-risk levels (Ammaniti et al., 2013). To screen for perinatal depression, anxiety, and stress levels, the Depression Anxiety Stress Scale – 21 items (DASS-21) (Lovibond and Lovibond, 1995; Bottesi et al., 2015) was used. In particular, only women who did not present severe or extremely severe levels of depression, anxiety, and stress were included. Hence, women that scored <20 for depression; <14 for anxiety; and <25 for stress (Lovibond and Lovibond, 1995) were included. For similar reasons, having an organic disorder, and having a medical at-risk pregnancy were used as exclusion criteria. The experience of motherhood in these cases can assume different meanings and involve different challenges (Ammaniti et al., 1995; Carlino & Margherita, 2015; 2016; 2017a; 2017b). For the same reason, women undergoing medically assisted reproduction were excluded considering the specificity of their experience and motherhood representations (Langher et al., 2019), and the impact of COVID-19 on the shutdown or limitations in the activity of infertility services (Alviggi et al., 2020). IPA approach, in fact, does not require random or representative samples but suggests paying attention to homogeneity within the group of participants. No exclusion criteria based on parity were used because as well as for primiparous women, for multiparous women the perinatal experience during the COVID-19 pandemic represented a "new" transition to motherhood due to the specific conditions in which it took form.

In total, 14 women who respected the inclusion criteria participated in the first interview. Among those, 8 women decided to be re-interviewed at T2, with a response rate of 57.14%. This great reduction in the number of participants may derive partially from the difficulty in scheduling the second interview postpartum in a phase of the re-opening of work and social activities in Italy, which presented women with hard challenges in the integration of duties and roles. On the other side, women are generally more open about their emotional and internal states during pregnancy compared to postpartum, as pregnancy is

characterized by a “psychic transparency” that decreases defenses and increases emotional disclosure (Bydlowski, 2000; Bazan et al., 2019). This may explain the greater availability of women participating at T1 than at T2.

4.2.4 Procedure

In line with LIPA principles, interviews were used to collect women’s narratives. The women were recruited through a snowballing strategy. The participants were reached through the contacts suggested by other participants. Each woman was contacted by a researcher (AC) to be informed about the aim and the procedure of the research and to arrange the first interview (T1). One year later, they were re-contacted for the second interview (T2). Considering the time continuum of the COVID-19 pandemic, T1 corresponded to the “second wave” of COVID-19 spread in Italy (March-May 2021), whereas T2 corresponded to the “third wave”, after the declaration of the formal end of the COVID-19 public health emergency in Italy (March-May 2022). Considering the perinatal continuum, at T1 women were in their second/third trimester of pregnancy and at T2 they were between 8 and 12 months postpartum.

The first interview covered the following areas of interest: (1) the experience of pregnancy during the COVID-19 pandemic; (2) representations of themselves as mothers and of their unborn child; (3) vulnerabilities and resources of motherhood during the COVID-19 pandemic. The second interview was focused on: (1) the experience of pregnancy, childbirth, and postpartum during the COVID-19 pandemic; (2) representations of themselves as mothers and of their children; (3) vulnerabilities and resources of motherhood during the COVID-19 pandemic. A script of the interviews (T1, T2) was provided in Appendix Chapter 4 (A.4.2).

Accordingly, all interviews were conducted through videoconference. The remote modality was necessary to respect social distance restrictions in force in Italy at T1. Therefore, to maintain coherence and continuity, the same modality was used at T2. Although visual content was not directly analyzed, the videoconference tool was used to promote a more vital and richer communication between the participants and the researcher. The researcher conducted all the online interviews in the same setting, a reserved private room with a high-quality Internet connection, and far from any possible interruptions. The participants were free to choose their location. However, participants were asked to connect from a place that could guarantee them privacy and good connection. The timetable of the interviews followed the women’s preferences and availability.

The interviews lasted approximately 45 minutes.

To control theme saturation at T1, the Guest et al. (2020) indications were followed, comparing the number of emerged themes in the 8 interviews (themes=6) included in the current analysis with the total number of themes that emerged in the total of 14 interviews (themes=7) collected at T1. Differently, theme saturation at T2 could not be controlled due to the longitudinal design of the study. It was not possible to collect the interviews beyond the time schedule because it would involve a change in the perinatal and COVID-19 phases and thus in the homogeneity of the timing-experience lived by participants. Applying the

criterion of saturation to temporality, a second interview after a year was considered sufficient to embrace a great part of women's perinatal experience (at least pregnancy and 8 months of postpartum) until the end of the COVID-19 pandemic.

After each interview, women were asked to fill out a form, created and accessed via Qualtrics link, to collect some basic socio-demographic and perinatal experience information. At T1, women self-reported information on age, number of children, relational and employment status, experience of previous abortion, months of gestation, and if they had been infected by the COVID-19 virus. Women were also asked to answer DASS-21 items. At T2, women reported months of postpartum, the eventual participation in the prepartum course, information on childbirth (type of childbirth, the type of facility where they gave birth, the possibility of having had support of significant others in clinic/hospital after partum), employment status, if they had been infected by the COVID-19 virus, and if they had received the vaccine against COVID-19.

Informed consent was gained from all participants after both interviews. Women voluntarily participated and were free to interrupt the interview and withdraw from the study at any time. Audio recordings, transcripts, and personal information were safely stored in a password-locked archive. Respondents did not receive any incentive for their participation. To report the data, the real names of the participants were substituted with pseudonyms, and the reported quotes were translated into English from Italian.

4.2.5 Analysis

The narratives of women who completed both the first and the second interviews were included in the analysis (8 interviews at T1 and the specular 8 interviews at T2).

The analysis was performed by two independent researchers (AC, GM) to guarantee rigor and credibility of the procedure. Conflicts were discussed and solved through a final consensus between the researchers in meetings organized to promote reflexivity, which included the participation of one researcher (NDM) not involved in the study to guarantee triangulation.

The procedure of analysis of women's narratives followed the LIPA *themes spanning time* method that consists in an organization of the body of text in a set of themes that changes and assumes different meanings through different time-points (Farr and Nizza, 2019).

In summary, the analysis involved the following stages:

- familiarization with the text (interviews were transcribed *verbatim* and re-read multiple times);
- a paraphrasing of the contents presented in the narratives to create connections and associations among different narrated experiences;
- extrapolation of the emerging themes;
- organization of the emerging themes in superordinate theme categories declined through different subjective time-periods (ST) that emerged from women's narratives.

4.3 Findings

Women had a mean age of 31 years. All 8 women had infants with good health at birth. They were all Italian, and all married or cohabitating with the partner/father of the child.

The majority of them (n= 6) were first-time mothers, except for 2 women who had more than one child. Between T1 and T2, the number of unemployed women increased from 3 to 5. Considering the childbirth experience, most of the women did not attend a prepartum course (n= 6/8) and gave birth in public hospitals (n= 7/8). Among all, 4 women had an unplanned cesarean childbirth, 1 had a scheduled cesarean childbirth, and 2 had a natural childbirth. Details on participants' characteristics are reported in Table 4.1.

Table 1.
Characteristics of women's experience

Pseudonyms	Age	Months of gestation at T1	Months of pp at T2	N of children	Previous abortion	Type of childbirth	Type of sanitary structure	Attendance to the prepartum course	Significant others in the clinic/hospital after childbirth	Relational status	Employment status		Having been infected by the COVID-19 virus		Vaccine against COVID-19
	T1	T1	T2	T2	T1	T2	T2	T2	T2	T1	T1	T2	T1	T2	T2
Sara	33	5	8	2	No	Scheduled Cesarean	Public	No	No	Married	Unemployed	Unemployed	No	Yes	Yes
Maria	33	5	8	1	No	Unplanned Cesarean	Public	No	No	Married	Lost the job because of the COVID-19 pandemic	Unemployed	No	Yes	No
Lina	30	5	8	1	No	Unplanned Cesarean	Public	No	No	Cohabitant with the partner	Employed	Employed	No	Yes	Yes
Federica	30	4	8	1	No	Scheduled Cesarean	Private	Yes	No	Married	Employed	Unemployed	Yes	-	Yes
Tania	34	4	8	1	No	Unplanned Cesarean	Public	No	Yes	Married	Employed	Employed	No	No	Yes
Flora	28	8	12	1	Yes	Natural Childbirth	Public	Yes	No	Married	Employed	Unemployed	No	Yes	Yes
Angela	32	7	10	2	No	Unplanned Cesarean	Public	No	No	Married	Unemployed	Unemployed	No	No	No
Sabrina	33	7	10	1	Yes	Natural Childbirth	Public	No	No	Married	Employed	Employed	No	No	Yes

Notes: T1= Information collected during the 1st interview; T2= Information collected during the 2nd interview.

From the LIPA analysis, 3 superordinated themes emerged: *Maternal functions during the COVID-19 pandemic* (1); *"Care" needs of women in maternal services* (2); *Unspeakable: obstetric violence and gender inequality in the working field* (3). Shades of meaning had been organized in different subjective time-periods (ST) (Table 4.2).

Table 4.2
Superordinated and emerging themes

	Sara	Maria	Lina	Federica	Tania	Flora	Angela	Sabrina
Maternal functions during COVID-19								
The total lockdown: the time to have a baby (ST0)		T1	T1-T2	T1	T1-T2	T1	T1	
Being a "living incubator" (ST1)	T1	T1	T1-T2	T1-T2	T1-T2	T1-T2	T1	
Partum and trauma (ST2)	T2	T2	T2		T2		T2	T2
Postpartum: managing the progressive openness (ST3)	T2	T2		T2	T2	T2	T2	T2
"A forever mark": pandemic child (ST4)	T1	T1		T2	T1			
"Care" needs of women in maternal services								
Before childbirth (ST1)								
The fear that COVID-19 disorganizes prenatal visits or birth	T1	T1				T1	T1	
Searching for support: between the gynecologist and online	T1		T1	T1	T1	T1-T2	T1	T1
Childbirth-related praxes (ST2)								
Father in – Family out		T2		T2		T2	T2	T2
Boomerang effect of rooming-in	T2		T2			T2	T2	
Unspeakable: obstetric violence and gender inequality in the working field								
"On the borders of obstetric violence"			T2		T2			T2
The disruption of job paths		T1-T2		T1-T2		T2		

Notes: ST= subjective time-period; T1= Theme emerged during the 1st interview; T2= Theme emerged during the 2nd interview.

4.3.1 Maternal functions during the COVID-19 pandemic

The first superordinated theme was called "Maternal functions during the COVID-19 pandemic" because it expressed the main representations and meanings women attributed to their maternal function over time.

> "What was COVID-19 for me? There is not a single answer. There is one "before her" [her daughter], one "during her", and one "post her". Before her, there was the lockdown, that hardy impacted everyone's life. COVID-19 during pregnancy assumed another meaning, which was to

protect the pregnancy and her from infection. The "post" always protects her but trying not to make her miss the interaction with other people" (Tania T2)

The first subjective time-period identified in women's narratives was "The total lockdown: the time to have a baby (ST0)". The majority of women's histories started from the first total lockdown when they and their partners desired and conceived a child. The experience of pregnancy was born after a "troubled" and "overwhelming" period that trapped different personal life trajectories, unlike the intimacy with the partner and the desire to have a child. Beyond the "madness" of the lockdown, the home confinement was also described as a "moment-space" to desire and conceive the child.

"Total madness. Last year totally changed everything. I hadn't been going to work for months, I was confined at home. There was the fear of going out, the fear of dying, the fear of everything. It's a bad memory that also marked her birth or at least her conception which happened because I was confined at home with my husband" (Tania T1)

"[The lockdown] was the moment in my life when I decided to have a child [laughs]. I mean, the getting through a pandemic, because I came out alive in the end, made me feel ready to have a child" (Lina T1)

"For me, it [the lockdown] was a troubled period because I had to get married. I had to postpone the wedding twice [...] It's been a year that I have been stuck, with the fear of not knowing what I'm going to do with my job and the will to want to deal with the pregnancy so that we don't stay stalled in this limbo that unfortunately we can't command and that is imposed on us." (Maria T1)

"It may sound strange to you, but the mental space for having a child was created during the first COVID wave. The lockdown was crucial for me. It was very important for me because I recovered my daily life with food, my mental balance, my peace of mind, and my serenity. My husband was staying at home, so I discovered new things with him during that period. We calmed down, we were trying to think only about good things. And so, we started thinking about having a child. […] I realized that, when we started to put in the thought, not the thought, the commitment, I was already in favor of it because I was fine. We just had to wait." (Flora T1)

The second theme identified in women's narratives ("Being a "living incubator" (ST1)") regarded the experience of pregnancy. The "safeguard" of the unborn child from the risk of COVID-19 infection emerged as the main maternal duty during pregnancy. Some metaphors were used by women to describe their experience, such as being "closed in a bell jar" or feeling like a "living incubator" creating a representation of women isolated in their experience of pregnancy. This "safeguard" involved anxiety,

loneliness, and fears. On the other hand, some women described the difficulties of pregnancy exclusively at T1, whereas at T2 they attributed only positive aspects to their pregnancy experience.

> "I'm still in a situation of total protection, safeguarding my child, the pregnancy, and every responsibility that I have as a woman, as a mother, as a living incubator [...] I have no reason to be objectively worried, unlike the fact that we live in the middle of a pandemic and that I'm basically alone all the time" (Lina T1)

> "If you already had to be careful before, now you would like to lock yourself in a bell jar because you always think that you have to safeguard another life in you" (Sara T1)

> "I have the same fears of the other mothers. I am in contact with some pregnant women, and they have the same fear, too: the infection. They limit themselves in social life" (Annalisa T1)

> "This period is a constant stress" (Federica T1) - "Pregnancy was a fairytale" (Federica T2)

The recovery in clinics or hospitals for giving birth occupied a broad space in women's narratives ("Partum and trauma (ST2)"). "I lived the birth badly from a psychological point of view", "It's very easy…it's very easy to fall", "it was traumatic" were some quotes extracted from women's narratives that referred to their experience of childbirth. The traumatic aspects of the childbirth experience were referred to some medical procedures, bad relationships with healthcare professionals, and absence of support from significant others. These conditions led to emotional experiences, characteristic of psychological birth trauma such as helplessness, loneliness, and loss of control. In particular, women used terms that clearly referred to the intensity of these emotions and the difficulty they lived in dealing with them, such as "I was very unstable", "extremely tragic", "I felt very bad", "it was more painful […] I though "I can't do it"". In some cases, giving birth to a healthy child assumed a "recovery" function towards "trauma", downsizing the reactivation of the emotional response, whereas, in other cases, the traumatic experience created problems in "feeling like a mother" and in the relationship with the child.

> "I didn't participate in my childbirth and... during surgery and after I was alone [...] (the next day) I was really sick, I started freaking out, so much so that they send me to psychiatric counseling. I was very unstable [...] for me it's still difficult. I believe I experienced trauma in clinical terms. [...] I didn't fall in love with my son immediately. I couldn't hold him [crying] I didn't feel like a mother." (LinaT2)

> "The only tragic phase for me, but really extremely tragic, was childbirth because I had a really bad experience from a clinical point of view, of interacting with the people who were supposed to take

care of me. […] I was able to downsize and process it because when they bring the child close to you everything is downsized [...] when they showed me my daughter, I said to myself: "okay she's fine I can even die now."" (Tina T2)

"With Aldo [the second child that born during the pandemic] the c-section was very bad. I mean, more painful, the recovery...I thought: "I can't do it". I lived it very badly, psychologically. The fact that there was no one next to me made me think "I don't feel good with who..." and I'm not generally a person who complains, absolutely not [...] I have to tell you the truth, it wasn't the childbirth I expected. However, the important thing is that he is fine. Everything went well. We are at home now. We went back to his sister" (Angela T2)

During postpartum ("Postpartum: managing the progressive openness (ST3)") the fundamental maternal duty expressed by the mothers was the issue regarding both "protecting" the infant from possible contagions and encouraging the relationship of the infant with others. The progressive openness of the child to the outside was linked to the progressive openness of the mother and nuclear family to the world after periods of isolation. Hence, the mothers narrated about two parallel developmental trajectories, the one of the child and the one of themselves as mothers and as women that lived a perinatal experience during a pandemic.

"Paola initially was afraid of seeing people, because she was used to watching a video camera. The child can't understand that there is a person in the phone that she can't physically see. Since she is the first child, born during a pandemic, now I'm not working, so I'm a full-time mother, obviously, Paola does not make a lot of efforts and now she has difficulty in walking because I'm always close to her. You feel I little bit guilty." (Federica T2)

"If someone comes to visit us, he [the child] isolates and he doesn't move, however, when he is in his "habitat" he is a completely different person [...] I still tried to protect him even after birth by limiting people's visits and this did not help him with his shyness. He always sees me, my husband, his little sister, and the grandparents sometimes. So, he is very shy with people. I can think COVID-19 could have influenced this thing" (Angela T2)

"Sara was born in June, and we hadn't gone out for the first months. We only met family members, only after a negative test for COVID-19, only wearing the mask [...] It was a deprivation. I mean, it continued to be a deprivation both in pregnancy and afterward. At first, everyone who came into the house wore the mask, then slowly they started to take it off. Now when she sees someone wearing the mask, she always looks at them suspiciously" (Sabrina T2)

In the narratives, another theme-period referring to the expectations and fears for the future, named ""A forever mark": pandemic child (ST4)" can be found. Birth during the COVID-19 pandemic emerged as an experience that could "mark" the future development and personality of the child.

> "My son will be marked forever! This thing will remain on us forever." (Sara T1)

> "It will not be a normal childhood [...] COVID has brainwashed us […] We will be much more morbid, overly apprehensive as mothers, and they will be more fragile children [...] You prefer to keep a child at home, playing with PlayStation or watching television. You feel safer to have him bamboozled than in the middle of the street. It is wrong, though, because it is even worse" (Federica T2)

4.3.2 "Care" needs of women in maternal services

The second superordinated theme mainly focused on *""Care" needs of women in maternal services"* in two time contexts: "Before childbirth (ST1)" and "Childbirth-related praxes (ST2)".

"Before childbirth (ST1)", one of the themes that emerged was "The fear that COVID-19 disorganizes prenatal visits or birth". Women were afraid that the public health emergency might unpredictably change the medical assistance of the pregnancy, such as antenatal visits, ultrasound checks, and birthing procedures. In this sense, the unpredictability of the COVID-19 pandemic required women the activation of great personal resources to tolerate the uncertainty.

> "One of my biggest fears right now is: "If I get infected by COVID-19, where will I go to give birth? Will they separate me from the child?"" (Angela T1)

> "My sister tested positive for COVID-19 [...] At that moment I panicked because I had the translucency the next day, which unfortunately is an important visit that you have to do in that specific period. You cannot postpone it. So, there I panicked. However, fortunately, we were all negative" (Maria T1)

> "When I found out that I was pregnant, I was afraid because you should have a surgery, you have to go to the hospital, you have to be in contact with healthcare staff [...] I am worried about childbirth. The fact that there are all these extreme restrictive measures" (Sara T1)

"Before childbirth (ST1)" another recurrent theme was: "Searching for support: between the gynecologist and online". Women considered both the gynecologist and Internet two different sources of information and support. For women, the gynecologist had to be "trustworthy", able to answer the doubts of future mothers, and "advanced" in using online and remote tools. Otherwise, women considered the Internet

as an inescapable source of information that can lead to “sick” and “psychopathic” research or become a way to enter contact with health care services and professionals. Hence, women attempted to manage uncertainty through both functional and dysfunctional online behaviors.

> “I met a young and advanced gynecologist. She doesn’t reassure me by saying “don’t worry”, she tells me “don’t worry because...” and explains everything. I had a gynecologist before, a woman with values and experience, but when I asked her a question, she said “don’t worry” anything else […] This new gynecologist is very “social” and I like what she does, such as live broadcasts and online chats” (Federica T1)

> “What happens if I tested positive for COVID-19? What do I have to do? I get this information on the Internet. I go to the clinic’s website, I check if they put ads, if dads can participate during childbirth, what to do in case of positivity [...] Online you can have an answer to all these questions. At least, where I am going to give birth because they are always updating the website home page. They update everything.” (Angela T1)

> “In my opinion, a sick use of the Internet is to search for information on each symptom. I’ve done it on everything, and I know I don’t have to do so. I’m trying to hold myself back a lot. For example, even this morning I thought “Now I search on the Internet what it means if a pregnant woman has back pain”“ (Lina T1)

> “That’s another thing the gynecologist recriminates to me, always, every time: “Will you stop with this phone, or do I have to throw it away? You on the Internet should not go because it confuses your ideas.” [...] I always do. I always have to go and search online, anything.” (Sara T1)

Among “Childbirth-related praxes (ST2)” one specific theme called “Father in – Family out” emerged. The absence of the partner/father of the child during and after childbirth was considered one of the main negative aspects of giving birth during the COVID-19 pandemic. Otherwise, the women appreciated the limitation on relatives’ visits after childbirth. Psychologically, women seemed to feel both a need of support and a need of protecting mother-infant unit from possible intrusions.

> “I really missed the presence of the father in the clinic […]. Apart from that, not having the invasion of relatives, the restrictions on visitors, allowed me to better enjoy the moment” (Sabrina T2)

> “I’m honest, I don’t mean the other family members because the others are extra, but the father should have been at least one hour a day or just one day in contact with the mother and the baby [...] I was on a stretcher with a nurse when the father arrived. He could only stay for 3 minutes. He was

moved, very excited but yet sad because he could only look at her [the daughter] through the glass. I mean, it's not a nice thing" (Federica T2)

"I wasn't overwhelmed by visitors as usually happens with newborns who, apart from COVID, are generally very delicate [...] (my husband) didn't experience it very well [...] He could stay for 5 minutes, saw her through the nursery's glass, and then they kicked him out" (Maria T2)

On the other hand, the rooming-in, implemented for promoting the skin-to-skin relationship, resulted in a challenge for women who had a cesarean or difficult childbirth ("Boomerang effect of rooming-in"). These women had to look after the infant alone in a state of physical and psychological distress. The fatigue and powerlessness of women against this condition emerged clearly.

"The prospect of being alone with the baby all day was impossible for me... because I had stitches, I couldn't move. There wasn't a nursery in the hospital, there was the rooming-in, so I didn't have time to rest. Since he was born, since I woke up from anesthesia, he had always been with me" (Lina T2)

"Due to the pandemic, we were forced to be alone, without any visits. I had a C-section, so you can imagine, it's not easy to be alone. Unlike the first pregnancy where I had a thousand helpers, this time I was totally alone. If the first time I got up after the second day, in this case, I had to be active 3 hours after childbirth. After 3 hours, I already had the baby sit on my belly." (Sara T2)

"During the first nights, I was alone with the baby, and I didn't know what I had to do. Two hours to change her diaper. I can't tell you. But then, the next day, they brought me in a part of the clinic where there was a nursery. You would press a button and they suddenly arrived. I had a very good time there." (Federica T2)

4.3.3 Unspeakable: obstetric violence and gender inequality in the working field

A transversal superordinated theme that emerged from women's narratives was called "Underestimated areas: obstetric violence and gender inequality in the working field".

The narratives on giving birth comprehended experiences of "suffering" involving the "human" interaction with health care professionals. Blaming attitudes and rude verbal attacks were reported in three women's interviews. Women also narrated feeling uninvolved in the decisions on medical procedures acted on their bodies. This led to emotions of shame in regard to their experience of pain and fatigue, lived as expressions of not being good in "giving birth", creating also a sense of guilt towards the child due to the induced perception of ineffectiveness. These experiences increased the possibility of living the childbirth as "traumatic".

“Each maneuver was given by three/four people and I assure you that I think I was really on the border of obstetric violence [...] the core was that I wasn’t good enough, that I wasn’t able to push, that I wasn’t good...a person was maneuvering me vaginally, another was pressing on my belly. I mean, it was an absurd situation. Then, at 8 a.m. I remember I was practically fainting. I said “I’m fainting” and I heard them say in the background: “Do not listen to her”. They thought I was pretending. I also remember these patches of cold water thrown in my face, rudely. At 8 a.m. I said, “Enough, I have enough!”, I wanted to have the C-section and they told me: “we are not waiting for you” that meant “there is a list of people who need surgery and you can’t decide when it would be your turn” [...] And then I lived the post-op alone in a room, crying after waking up from the anesthesia. I couldn’t tell this to anyone for a whole day because I didn’t feel psychologically ready to speak up” (Tania T2)

“There was this midwife who was the older one. I don’t know if she was a healthcare assistant or a midwife. At that time, I didn’t care. All I knew was that my son would occasionally have coughing fits almost to the point of shortness of breath [...] so I was panicking, screaming, and calling for help. However, there wasn’t much staff. There was only this midwife who yielded at me for using the changing table that was in the room. Then I rang the doorbell because my son had this cough and she said: “Why are you calling me? It’s normal for the baby to do that, place him on the side”. It was hard for me” (Lina T2)

“What I regretted was what happened in the hospital during childbirth, which I processed in hindsight [...] How I was treated by the gynecologist. He ruined that moment. Now I can tell it calmly, but in the first months, this thing bothered me. Not to have experienced with serenity the childbirth because there was this doctor who addressed badly [...] I arrived in the room when I was already exhausted from the pain of labor that lasted all day long. The doctor wanted to hurry quickly, so he said “Come on Madam, what do we have to do with this baby, come on!!!”, and I said, “I can’t take it anymore! I have enough! I can’t take it anymore!”. If my gynecologist had been there even just calling me by my name probably would have been different... [...] It’s not easy to recover. I did natural childbirth. During childbirth, they cut me, without telling me [...] I thought they would tell me “Look we are doing this thing” and there I could say “I don’t want to do it”, right? Instead, they did everything without telling me anything and when they finished, the midwife told me “You have to stay down for a moment because the doctor has to stitch you up” “Stitch me up, I mean...why? What?”. (Sabrina T2)

On the other hand, “The disruption of job paths” emerged as another risk for women during the COVID-19 pandemic. Women narrated difficulties in managing maternal care duties and job positions. In

some cases, the "sexist" attitude and requests of the employers forced women to leave their jobs. This aspect created anxiety and frustration in women, forcing some of their lives' choices.

> "I have two male employers. One of them, is a little bit sexist. I wouldn't know how to tell him I was pregnant." (Federica T1)
> "Two months after giving birth I came back to work part-time, but due to bronchiolitis, the baby and I needed hospitalization, so I missed work for a week. After this episode, my employers simply told me "Can you come back to work full-time? We cannot think that you will not be there overnight". [...] I couldn't live with the anxiety of telling people at work that my daughter was sick…so I quit my job." (Federica T2).

> "COVID-19 is disruptive for the job, so I try not to think about it. I say, whatever, I'm on maternity leave now, it's ok like this." (Maria T1) – "I, unfortunately, did not start working again. Because I used to be a travel agent and it is complicated to find a job nowadays. I am still blocked. But it is also a personal choice. I mean, I have not looked for a new job until now. In September I will commit because the baby will go to school, and I will have more free time to look for" (Maria T2)

> "Honestly, the fear made me quit my job." (Flora T1) - "I haven't worked anymore. I was self-employed and I chose not to go to work for the first period due to breastfeeding. Now I could...however, as a consultant, once I got out of the business it was difficult starting over again since more than a year had passed" (Flora T2)

4.4 Discussion

The current study explored in-depth the emotional perinatal experience, from pregnancy to postpartum, lived by women during the COVID-19 pandemic in Italy. The results highlighted the affective and interpersonal main challenges lived by women, from the "home confinement" of the first lockdown when they decided and conceive a son, through the isolation and fears of pregnancy and the struggle in managing the infant's encounter with others during the postpartum, to the fear for the long-term effects of the COVID-19 pandemic on their maternal role and the child's development. Within this journey, the representations and the affects lived by women about the praxis imposed by maternal healthcare services during the COVID-19 pandemic emerged. Among them were the unpreparedness and the uncertainty on prenatal visits and childbirth procedures, the need for constant reassurance and answers from the health care professionals, the loneliness and the fatigue related to the rooming-in praxis in the absence of a "caregiver" – in particular the partner, father of the child - and the fear for the intrusiveness of visitors after partum. In addition, some at-risks conditions of gender-based social injustice, such as episodes of obstetric violence and job forced abandonment emerged.

Moving from a linear time to the time of subjective and emotional experience, the LIPA approach (Farr & Nizza, 2019) allowed the observation of changes in meanings over time, and to contextualize main representations considering at least three temporalities, the stages of the perinatal period, the phases of the COVID-19 pandemic, and the temporality of the research in integrated trajectories of meaning.

In women's narratives, the lockdown emerged as a "stuck" period that disrupted some personal life trajectories (such as working life, and marriage organization) as well as a "waiting time" (Baraitser & Salisbury, 2020) in terms of a fruitful period in which the idea of having a child grew in women's minds and bodies. In continuity, the representations of pregnancy provided by women (e.g., living incubator, the bell jar) reminded of an image of a lonely woman with a saving function. In fact, the caregiving of the unborn child was associated in narratives with feelings of loneliness and anxiety, confirming results shown in literature from different countries such as Italy, Turkey, Canada, Poland, and USA (Akgor et al., 2021; Çalık et al., 2022; Dymecka et al., 2021; Fumagalli et al., 2021; Giesbrecht et al., 2022; Harrison et al., 2022; Perzow et al., 2021; Ravaldi et al., 2020a; Ravaldi et al., 2020b; Sahin & Kabakci, 2020; Salehi et al., 2020; Takeda et al., 2021). Otherwise, the current results highlighted some continuity and discontinuity aspects in women's narratives of pregnancy, not accessible through cross-sectional methods. In some cases, women described directly and retrospectively their pregnancy as a difficult emotional challenge, whereas, in other cases, the intense fears expressed during pregnancy were unrecognized during postpartum. It partially confirmed the studies that showed a tendency in women to deny negative feelings referred to their pregnancy experience (Adlington et al., 2023; Rokach, 2004; 2005; 2006). This process of denying could be also interpreted considering the "dissociative" process in which the emotional burden of stressful and traumatic experiences was not integrated into memory (Van der Kolk et al., 2005).

In addition, coherently with previous studies, the unpreparedness and the uncertainty of medical procedures characterized the pregnancy experience during the COVID-19 pandemic (Atmuri et al., 2022; Javaid et al., 2021). In face of this uncertainty, Internet was represented as a container of answers for mothers' doubts used as a substitute of or in addition to gynecologist's suggestions (Conrad, 2022; Hsiao et al., 2023). On the other hand, the availability of gynecologists in using online or remote tools for providing information and for interacting with women increased women's trust in professionals (Conrad, 2022).

Childbirth, instead, emerged as an experience narrated in discontinuity with the pregnancy period. This common aspect in women's narratives could be interpret as a consequence of a possible "traumatic" childbirth lived by most of the interviewed women. As above-mentioned, "traumatic" led, in fact, to a disorganization of symbolic process as reflection of a difficulty in processing intense emotions (Mucci, …). Explicitly, women, prevaricating on physical aspects of childbirth, focused their narratives on the psychological childbirth-related issues linking them to the praxes activated by clinics and hospitals to limit COVID-19 contagions. A scoping review that summarized the findings of qualitative studies on perinatal experience during the COVID-19 pandemic, described with the terms "birth in crisis" the recurrent mentioned in women's experience of difficult childbirth during the pandemic (Jin & Murrey, 2023). In some cases, the intensity of the emotional response can transform difficult experiences in "traumatic" experiences.

In particular, the findings of the current study showed the eventual burden effect of rooming-in praxis on maternal well-being for women who had to take care of infants alone after childbirth. The absence of the partner after the birth was declined as an experience of loneliness and fatigue for women (Prokopowicz et al., 2023), and an experience of exclusion for fathers (Aydin et al., 2022). In this context, as was previously shown (Mari et al., 2023), women considered the limitation of visits from relatives and friends in clinics and hospitals, as a benefit created by the COVID-19 pandemic. As well as in the Mari et al. (2023) study, this result has to be interpreted considering cultural aspects. In fact, frequent visits from relatives and friends after childbirth are a common cultural ritual in Italy, especially in the South. The results of the current study sustained that women after birth needed significant others who could assume the function of "caregivers", unlike "visitors", which could be lived as potential intrusion threats for the mother-child unit. In the absence of designated close-family caregivers, the women's "care" needs were greatly projected on maternal healthcare professionals. On the other hand, high psychological distress and burnout were also found in perinatal healthcare workers during the pandemic (Haidari et al., 2021). In particular, in Italy, of a total of 195 perinatal healthcare workers, 18.7% showed anxiety and depression symptoms, 21.5% sub-clinical levels of stress, and 6.2% risk of burnout after the lockdown (June-October 2020) (Cena et al., 2021c). A dramatic increase in psychological distress was found during the first year of the COVID-19 pandemic in Italy, with 91% of professionals in neonatal units experiencing symptoms of anxiety and 50% at least one psychosomatic symptom (Gagliardi et al., 2022). Moreover, studies underlined that the priority of preventing infection in maternal care services exceeded the possibility of midwives responding to the emotional support needed from women during the COVID-19 pandemic (Fumagalli et al., 2023; Power et al., 2022; Wang et al., 2023). In addition, a tendency to "controlling" attitudes was observed in healthcare workers towards women during childbirth (Jin & Murray, 2023). The current study leads to hypothesize that healthcare emergency influenced the Quality of Provider Interactions (QPI), defined as the verbal and nonverbal behaviors of healthcare providers about meeting the patient's stated and implied needs (Sorenson & Tschetter, 2010). Although the guidelines promoted in Italy in 2021 recommended assuming a "women-centered" approach (ISS, 2021; WHO, 2017), the findings of the current study showed that the policies applied by maternal care services frequently deviated from this purpose. The extreme drift of this complex situation can be found in obstetric violence episodes. Obstetric violence is, in fact, a form of interpersonal gender violence, validated and perpetuated within biomedical systems, based on a representation of women as a reproductive medium, whose will, emotions, and needs are unrecognized (Sadler et al, 2020). During the last years, in Italy, obstetric violence has assumed the characteristic of a health and social crisis, involving 78.4% of women in the perinatal period who mainly lived experiences of non-consented care (55.5%) and abuses (66.4%) (Scandurra et al., 2022). The findings of the current study confirmed the multiple forms of obstetric violence that the women in obstetric and gynecological services can live (Sadler et al, 2020; Paes et al., 2021) and the necessity of promoting structural changes which could prevent this phenomenon.

On the other hand, from a continuity perspective, in women's narratives, other factors highlighted by the scientific literature as predictors of a traumatic birthing experience can be found, such as the perception

of living in an unsafe world and intense fears during pregnancy, as well as cesarean section (Simpson & Catling, 2016). These findings, thanks to the longitudinal methodology, traced in-depth how a pregnancy full of concerns and a traumatic childbirth experience could drive women, in some cases, to affective and trauma-related difficulties postpartum (Seng et al., 2014). Several consequences of traumatic childbirth experiences were highlighted in scientific literature, such as problems in mother-child bonding (Ayers et al., 2007), a decrease in the quality of the relationship with the partner (Iles et al., 2011; Simpson & Catling, 2016), till risks for postpartum depression or PTSD (Seng et al., 2014). For example, in Lina's narrative, a pregnancy full of intense fears and anxious thoughts, and a traumatic childbirth led to difficulties in recognizing herself as a mother and in creating a relationship with the child during the postnatal period. In other cases, as the current findings showed, the birth of a healthy child can represent a "reparative" experience towards trauma (Fornari, 1981; Imbasciati & Cena, 2020; Ketley et al., 2022).

As well as in other studies, from these findings emerged that women during the postpartum showed a tendency to self and nuclear family isolation, even in the re-opening phases of the pandemic and at the end of the health emergency (Jin & Murray, 2023). Nevertheless, different from other studies, where postpartum isolation was associated with feelings of loss of identity and independence (Jackson et al., 2021; 2022), in the findings of the current study the postpartum isolation-related struggles were mainly referred to the interpersonal domain. During postpartum, the COVID-19-related interpersonal fear for the child's health met the fear, on the behavioral domain, of not promoting contact between the child and the outside (Schimmenti et al., 2020). According to the women, such conflict, attributed to COVID-19, could lead them to be anxious mothers of shy children. Some difficulties were found in the communication and behavioral development of children born during the COVID-19 pandemic (Deoni et al., 2021; Hessami et al. 2022), though more studies are needed to firmly define the COVID-19 pandemic as a direct factor that influenced children's development (Sperber et al., 2022; Shakiba et al., 2022). It is more plausible that the effect of the COVID-19 pandemic on maternal and family experiences might influence children's development (Duguay et al., 2022; Manning et al., 2022; Provenzi et al., 2021b).

Nevertheless, this social conflict between the fear for the child's health and the fear of inaction in promoting contact between the child and the outside ascribed to COVID-19, required an internal challenge for mothers, which was to re-consider their omnipotent "saving function", restoring trust in the social environment. The same social environment which in some cases provoked the disruption of women's jobs and career paths. From previous literature, unemployment and losing jobs emerged as risk factors for depression, stress, and anxiety for women in their perinatal period during the COVID-19 pandemic (Luo et al., 2022; Zhang et al., 2023). Despite these data, the current study is the only one that tracked the conflictual changes in the working status of women over time, showing the coercive choice between job and maternity which women had to take, due to the interplay between the COVID-19 crisis, and traditional gender discrimination in the working field (Byron & Roscigno, 2014).

4.4.1 Limits

This study is not free from limitations. Methodologically, the snowball sampling limited the possibility of controlling the representativeness of the participants' profiles. In addition, the low response rate limited the themes' saturation at T2 which could not be controlled considering the study design. Moreover, women diverged from the homogeneity of experience (Smith, 2007), for the trimester of pregnancy at T1 and the type of childbirth at T2. This variety might influence the representations and meanings attributed to the perinatal experience. Moreover, the interviews did not include questions on the past gynecological or eventual psychopathological history of women, which could influence the perinatal experience. In addition, the awareness of the background of the researcher could have influenced women to focus on the psychological aspects of motherhood more than concrete and medical aspects.

4.4.2 Highlights and implications

To the best of my knowledge, the current study is the only one that investigated the subjective experience of motherhood during the COVID-19 pandemic with a qualitative longitudinal approach. It was able to highlight that the recognition of risk factors for women's well-being is sensible to the individual and social "temporalities". Methodologically, the LIPA approach could help to explore paths of different forms of parenting that involved different temporalities, such as medically assisted reproduction experiences, gestational surrogates, and intended parents' experiences.

The current study suggests promoting "caring" environments for pregnant and postpartum women and "re-centering" (Rice, 2022) on parents' needs the maternal care services, guaranteeing the rights of both parents of assisting childbirth, promoting a good quality of relationship with health care professionals and incentivizing psychological support for parents.

Chapter 5

COVID-19-related fears and perinatal psychological distress: the mediation role of COVID-19-related post-traumatic impact and loneliness in a cross-sectional study at the end of the COVID-19 health emergency in Italy (2022)

Chapter 5 - Overview

This "step" of the PhD project is a quantitative cross-sectional study performed at the formal end of the COVID-19 pandemic public health emergency in Italy. The aims and the hypotheses of the current study have been formulated based on the results of the studies presented in the previous chapters and considering the phase of the COVID-19 pandemic in which the data were collected.

In general, this study aims to explore the psychological health of pregnant and postpartum women at the end of the COVID-19 public health emergency.

In the systematic review presented in the first chapter, at the end of the first year of the virus spread in Italy, an increase in psychological distress, lack of social support, and fear for others' health emerged in pregnant and postpartum women. At the same time, via the longitudinal qualitative study, an in-depth exploration of the affective experiences lived by women during the pandemic was carried out. In particular, the results of the qualitative study showed different aspects of the COVID-19-related fears lived by the mothers, considering the timing of the pandemic and the perinatal path. From the qualitative study, different loneliness experiences lived during the COVID-19 pandemic also emerged (e.g. the isolation during pregnancy, the loneliness lived in clinics, the interpersonal struggle related to mediating between protecting the infant from infection and let him enter in contact with others during the postpartum period). Building on these suggestions from previous studies, the current study takes form. Thus, the following research question emerged: what remained of the impact of the COVID-19 pandemic on the experience of pregnant and postpartum women at the formal end of the COVID-19 health emergency in Italy? In particular, the researcher wondered if COVID-19-related fears had still an effect on perinatal psychological health and if this effect could be mediated by COVID-19 post-traumatic impact and loneliness. Although this study involves inference-based hypotheses and tests, it should be considered exploratory due to the relatively small sample size and the cross-sectional study design.

5.1 Introduction

As above mentioned, psychological distress, mainly in terms of depression and anxiety, represents one of the main risks for the overall health of pregnant and postpartum women, which has increased during the COVID-19 pandemic (Ceulemans et al., 2021; López-Morales et al., 2021; McNab et al., 2022). At the same time, loneliness and COVID-19-related fears emerged as two of the main affective transversal domains in the experience of women in the perinatal period during the COVID-19 pandemic (Caffieri & Margherita, 2021/Chapter 3; 2023/Chapter 4). While some studies focused on the post-traumatic impact of the COVID-19 pandemic on the psychological health of pregnant and postpartum women during the first and acute phases of the virus spread (Basu et al., 2021; Berthelot et al., 2020; Motrico et al., 2023b; Wu et al., 2020), in particular, in Italy, no study has studied the impact of the pandemic on pregnant and postpartum women at the end of the health emergency.

Since the onset of the COVID-19 pandemic, fear of contagion and pandemic-related concerns have been high in women during pregnancy and postpartum and played an important role in increasing perinatal psychological distress (Chen et al., 2022; Liu et al., 2020; Motrico et al., 2022; Shuman et al., 2021; Usmani et al., 2021). As it emerged from studies conducted and cited before, COVID-19-related fears in mothers assumed multifaceted forms. In particular, specific fears were found in mothers, such as the fear for others' health and fear of the consequences of COVID-19 on their own and children's interpersonal relationships (Caffieri & Margherita, 2021; 2023; Naurin et al., 2023).

Although the emergency traits of the pandemic have decreased over time, it is here hypothesized that COVID-19-related fears would continue to influence perinatal psychological health, via other pathways. In particular, it is possible that as a health emergency, the COVID-19 pandemic assumed the characteristic of a "collective crisis" with possible post-traumatic consequences on the psychological health of women in the perinatal period (Basu et al., 2021; Hocaglou et al., 2020; Zhang et al., 2023c; Wang et al., 2020). In the previous chapters, the high global and national heterogeneity of the COVID-19-related post-traumatic risk in women in the perinatal period during the pandemic was reported (Caffieri & Margherita, 2021; Delanarolle et al., 2021). On one hand, robust results showed that COVID-19-related fears were among the best predictors of COVID-19-related post-traumatic distress in different phases of the COVID-19 pandemic (Basu et al., 2021; Shiffman et al., 2023). On the other, in turn, COVID-19-related post-traumatic impact appeared as a predictor for typical forms of perinatal distress, such as perinatal depression and anxiety, during the lockdown periods (Zhang et al., 2020).

Among the several consequences of the COVID-19 pandemic on women's perinatal affective experience, an increase in loneliness also emerged (Basu et al., 2022; Harrison et al., 2022; Miyoshi et al., 2021). From a psychodynamic perspective it is possible to hypothesize that, beyond lockdown periods, that involved mandatory social isolation, the COVID-19 pandemic disrupted the ways through which people lived social relationships. The fear of the virus infection through contact, the habit of limiting contact with others, and wearing masks changed how people, and in particular pregnant and postpartum women perceived the encounter and the bond with significant others. Due to COVID-19-related fears, the closeness with others

became something potentially dangerous for women's and children's health in mothers' representations (Caffieri & Margherita, 2023). In this sense, it is possible to hypothesize that the post-traumatic impact of COVID-19 may affect women's sense of loneliness, considered as a "bridge" dimension between intrapsychic and interpersonal areas of experience. Loneliness, in turn, emerged as a risk factor for perinatal depression, anxiety and stress both before (Zaidi et al., 2017; Luoma et al., 2015; 2019) and during the COVID-19 pandemic (Giurgescu et al., 2021; Harrison et al., 2022; Perzow et al., 2021; Scandurra et al., 2023). In this sense, loneliness could be a mediator between the COVID-19 post-traumatic impact and the perinatal psychological distress.

To the best of my knowledge, no study has assessed psychological distress, in terms of anxiety, depression, and stress, COVID-19-related fears, and loneliness in pregnant and postpartum women at the end of the COVID-19 pandemic in Italy. At the same time, no study in Italy assessed the post-traumatic impact of the COVID-19 pandemic on women in the perinatal period at the end of the COVID-19 pandemic. In addition, no study has studied the direct and indirect paths through which COVID-19-related fears influenced perinatal psychological distress at the end of the health emergency.

5.1.1 Aim of the study

The study aimed to investigate the psychological health of women in the perinatal period at the end of the COVID-19 public health emergency in Italy. In particular, the study was aimed to:

- Explore the domains of COVID-19-related fears, the at-risk levels of COVID-19-related post-traumatic impact, loneliness, and the main dimensions of psychological distress (depression, anxiety, and stress), in Italian pregnant and postpartum women at the end of the health emergency;
- Compare pregnant and postpartum women regarding sociodemographic and perinatal experience characteristics, and explore differences among these two groups for psychological health and affective experience, with an exploratory aim;
- Test the following hypothesis: at the end of the COVID-19-related health emergency in Italy, COVID-19-related fears increased depression, anxiety, and stress in women in the perinatal period via the serial mediation of COVID-19-post-traumatic impact and loneliness.

5.2 Method

5.2.1 Participants

The survey was directed to pregnant and postpartum women (up to 1 year postpartum). Coherently with the orientation of the entire PhD project, the following inclusion criteria were applied: being more than 18 years old (1), being Italian speaking (2), and having been living in Italy during the COVID-19 health emergency (3).

5.2.2 Procedure

An *ad hoc* cross-sectional online survey was developed considering the purposes of the study. Participants were recruited using a snowball sampling procedure, by sharing a link to the questionnaire via social media and chats. *Qualtrics* platform was used to create and collect the questionnaires. Participants were recruited in a specific phase of the COVID-19 virus spread in Italy, between 31 March 2022 and 30 June 2022, the first months after the declaration of the "formal end" of the COVID-19 public health emergency in Italy. The online recruitment strategy was previously considered valid for accessing the psychological health of women in the perinatal period (Leach et al., 2017). It permitted to improve the feasibility and accessibility for pregnant and postpartum women who were usually time-poor and had highly restricted mobility during the COVID-19 pandemic. In addition, the limits imposed by the COVID-19 pandemic for access to health and medical clinics represented also an obstacle for the researcher who was not able to create contact with healthcare facilities to collect data in person. Informed consent was gained from all participants. No IP addresses or identifying data were retained. Respondents did not receive any incentive for their participation. The questionnaires' data were safely stored in a password-locked archive. For the report of this study, the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) (von Elm et al., 2008) (A.5.1) were followed, as recommended by the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network (Moher et al., 2010).

5.2.3 Measures

The first part of the survey included information about the study, its aims, and procedures, the researcher's contacts, and asked the participants to sign the informed consent.

The second part of the survey was composed of a socio-demographic schedule, which included information on the perinatal experience (pregnancy/postpartum, parity, at-risk pregnancy, medical assisted procreation), and COVID-19-related descriptive variables, such as if the virus had infected the woman, if she had been infected during pregnancy, if any significant others died due to COVID-19, and vaccine-related information, for a total of 13 questions.

The third part of the survey included the scales, according to the following order: Depression Anxiety Stress Scale – 21 items (DASS-21) (Lovibond and Lovibond, 1995; Bottesi et al., 2015) to measure psychological distress; UCLA Loneliness Scale (Russell, 1996; Boffo et al., 2012) to assess loneliness; and then the scales more related to the COVID-19 pandemic, such as the Impact of Event Scale-Revised (IES-R) (Christianson & Marrenn, 2012; Craparo et al., 2013) adapted for the COVID-19 pandemic to assess the COVID-19-related post-traumatic impact and the Multidimensional Assessment of COVID-19-Related Fears (MAC-RF) to measure COVID-19-related fears (Schimmenti et al., 2020b), for a total of 71 items.

In detail, the survey included the self-report questionnaires as follows:

- The Depression Anxiety Stress Scale – 21 items (DASS-21) (Lovibond and Lovibond, 1995; Bottesi et al., 2015). The DASS-21 was intended for use as a self-report tool for the screening of psychological distress, in three components: depression, anxiety, and stress. It includes 21 items

measured on a 4-point Likert scale, from "not at all" (0) to "very high" (3). The questionnaire included three subscale scores, for depression, anxiety, and stress, respectively (7 items for each). For descriptive purposes, the intervals suggested by the creator of the scale were used to discriminate between different levels of depression, anxiety, and stress, respectively (Lovibond and Lovibond, 1995). For the depression subscale, scores ≤9 indicated no at-risk levels, 10-12 mild, 13-20 moderate, 21-27 severe, and 28-42 extremely severe levels. For the anxiety subscale, scores ≤6 indicated no at-risk levels, 7-9 mild, 10-14 moderate, 15-19 severe, and 20-42 extremely severe levels. For stress subscale, scores ≤10 indicated no at-risk levels, 11-18 mild, 19-26 moderate, 27-34 severe, and 35-42 extremely severe levels. For the comparison and regression analyses, the scores as continuous were used: higher scores of the three sub-scales corresponded to a higher frequency of symptoms of depression, anxiety, and stress, respectively. The DASS-21 was typically used in the perinatal population (Xavier et al., 2016; Cerioli et al., 2023). In particular, it was considered appropriate and valid to assess both anxiety (Meades & Ayers, 2011) and depression in pregnant and postpartum women (Moya et al., 2022; Xavier et al., 2016). In the current study, the Cronbach's α was 0.874, 0.717, 0.896 for depression, anxiety, and stress, respectively.

- The UCLA Loneliness Scale (Russell, 1996; Boffo et al., 2012). This scale assessed loneliness through 20 items. For each item, women were asked to indicate how often a particular statement applied to them on a 4-point Likert scale from "never" (1) to "often" (4). For the study, the overall score was calculated as an index of general loneliness. Russell (1996), in fact, considered loneliness as a unidimensional construct, though the scale involved items related to social loneliness (the feeling of isolation from others) (Hawkley et al., 2005; Weiss, 1973), emotional loneliness (lack of emotional closeness with the others) (Weiss, 1973), and aspect of "trait loneliness" (feeling shy and not friendly) (Badoux-Levy et al., 2004; Boffo et al., 2012). Hence, this instrument was considered the most appropriate for operationalizing loneliness in terms of a unique affect domain that integrates intrapsychic and interpersonal components. This scale was previously used to assess loneliness in the pregnant and postpartum population (Basu et al., 2021; Juntila et al.; 2013; Scandurra et al., 2023). Higher scores represented a higher level of loneliness. In the current study, the Cronbach's α was 0.910.
- The Impact of Event Scale-Revised (IES-R) (Christianson & Marrenn, 2012; Craparo et al., 2013) adapted for the COVID-19 pandemic. The IES-R was a self-reporting measure that assesses psychological distress caused by traumatic events. For the current study, it was used to assess how women in the perinatal period were affected by COVID-19 in terms of post-traumatic impact. IES-R version adapted for COVID-19 was widely used with different populations such as adults, children (Aljaberi et al., 2022; Davico et al., 2021; Favre et al., 2022; Sharif Nia et al., 2021), healthcare workers (Lasalvia et al., 2020), and pregnant and postpartum women worldwide (Hocaoglu et al., 2020; Ho-Fung et al., 2022) and in Italy (Ionio et al., 2022; Saccone et al., 2020). The adapted version of the scale involved the following instruction: *"Below is a list of difficulties people*

sometimes have after stressful life events, such as the COVID-19 pandemic. Please read each item, and then indicate how distressing each difficulty has been for you during the past seven days. Thinking about the COVID-19 pandemic, how much were you distressed or bothered by these difficulties?". No changes were applied to the original items. The scale was a self-reported questionnaire composed of 22 items, each with a Likert rating scale from "not at all" (0) to "often" (4). Although the scale was also composed of three subscales, which measured avoidance (8 items), intrusion (8 items), and hyperarousal (6 items), for the current study, only the total score, as a general index of COVID-19-related post-traumatic impact, was calculated. The overall score ranged from 0 to 88, with higher scores that represented a higher level of COVID-19 post-traumatic impact. The cut-off of 33 was used to discriminate between no and at-risk levels of COVID-19 post-traumatic impact only for descriptive purposes. In the current study, the Cronbach's α was 0.931.

- Multidimensional Assessment of COVID-19-Related Fears (MAC-RF) (Schimmenti et al., 2020b). MAC-RF assessed COVID-19-related fears according to the Schimmenti et al. (2020a)'s model, in which COVID-19-related fears were organized around four domains (bodily, interpersonal, cognitive, and behavioral), dialectically. Each of the 8 items that composed the scale assessed a specific fear. The bodily domain was characterized by the fear of the body (item 1), that was the fear that the body would not protect the individual against the COVID-19 infection, and the fear for the body (item 2), hence the fear that the body could enter in contact with infected objects. The interpersonal domain included the fear of others (item 3) (the fear of being infected by others) and the fear for others (item 4) (the fear that relatives and friends could be infected). The cognitive domain was represented by the fear of knowing (item 5), hence the fear of feeling anxious after exposure to information about the virus, and the fear of not knowing (item 6), which was the fear of not being able to collect information about the virus. Finally, the behavioral domain included the fear of action (item 7), hence feeling paralyzed by the fear of doing something wrong, and the fear of inaction (item 8) as the feeling of having always something to do. Each item was measured on a Likert rating scale from "very unlike me" (0) to "very like me" (5). The multicomponent aspect of this scale was considered useful to assess the several fear dimensions lived by pregnant and postpartum women during the COVID-19 pandemic. For the current study, each item was considered as a specific fear experience lived by pregnant and postpartum women and used for descriptive purposes. The overall score of the scale instead was used as an index of clinically significant COVID-19-related fears (Schimmenti et al., 2020b). Scores of the MAC-RF can range from 0 to 32, with higher scores indicating higher COVID-19-related fears. In the current study, the Cronbach's α was 0.873.

5.2.4 Data analysis

Responses were analyzed if women completed at least 40% of the survey, which included all the first part (socio-demographic schedule) and all the items of the DASS-21.

Considering the presence of some missing data in the dataset, Little's Missing Completely At Random (MCAR) test was first performed to test them being completely at random – that is, whether the missingness pattern was completely unrelated to the considered variables (Newman, 2014). Then, missing data were imputed through Expectation Maximization (EM).

Descriptive statistics were computed for all included variables (mean, standard deviation, median, skewness, kurtosis). Bivariate analyses (*t-test*, *chi-squared test*, and *Mann-Withney U test*) were performed to explore whether there were differences between pregnant and postpartum women for socio-demographic, perinatal variables, psychological health, and affective dimensions. Pearson correlation coefficient (r) and Spearman rank (rho) were computed to evaluate the relationships between variables in the whole group of participants. The internal reliabilities were assessed by computing Cronbach's α coefficients.

Considering that the survey included variables that used not to be normally distributed (depression, anxiety, and stress, post-traumatic levels) in the population of interest, robust mediation analysis (Alfons et al., 2022) were performed to test the hypotheses. This analysis procedure is robust against deviations from normality including outliers, heavy tails, or skewness. It uses a robust MM-regression estimator (Salibian-Barrera & Yohai, 2006; Yohai, 1987) and involves fast-and-robust bootstrap methodology (Salibian-Barrera& Van Aelst, 2008; Salibian-Barrera& Zamar, 2002).

Specifically, the direct and indirect effects of COVID-19-related fears (Independent variable) on the psychological distress components separately (depression, anxiety and stress/Dependent variables) were estimated, considering the serial mediation effect of the COVID-19-related post-traumatic impact (the first mediator) and loneliness (the second mediator). A 5000 fast-and-robust bootstrap resampling procedure was applied to test the indirect effects' significance. In addition, bootstrap analyses were also applied to pairwise contrasts of the indirect effects to investigate whether specific indirect pathways were stronger than each other.

The robust mediation model was tested on the overall group of women who were enrolled in the study, regardless they were pregnant or postpartum. This choice was taken considering two issues. One, the theoretical paradigm that oriented the entire project, i.e., the perinatal clinical psychology, suggests studying maternal psychological health during the entire perinatal journey, considering the overall perinatal experience as an intrapsychic and interpersonal crisis (Imbasciati & Cena, 2020). Two, considering the literature on perinatal psychological health during the COVID-19 (Ceulemans et al., 2020; 2021; Fallon et al., 2020; Chapter 6), no motivation emerged to hypothesize that the effect of COVID-19-related fears on COVID-19-related post-traumatic impact, loneliness, and perinatal psychological distress, could be different for pregnant and postpartum women.

Descriptive analyses were performed using IBM SPSS (Version 29). Mediation analyses were tested via *Robmed* module in R software (Alfons et al., 2022).

5.3 Results

A total of 206 responses to the online survey were collected. Among the total, 6 women completed less than 40% of the questionnaire, responding only to the socio-demographic part of the survey. For this reason, they were excluded from the analyses. Hence, a total of 200 valid responses to the survey were analyzed.

The results are organized in the following order: (a) a description of the whole group of participants; (b) differences between pregnant and postpartum women; (c) results of the bivariate correlations; (d) mediation analyses results separated for outcomes: depression, anxiety, and stress, respectively.

5.3.1 Perinatal women's characteristics and psychological health

The group of participants consisted of 200 Italian women in the perinatal period, ages 18-43 (M= 31, SD= 4.62). The group of participants was composed of 125 pregnant women and 75 postpartum women. All women had a partner. Most of the women had a job (n= 139 (69.5%)), were primipara (n= 130 (65%)), had no at-risk pregnancy (n= 153 (76.5%)), and did not present previous psychopathological diagnosis (n= 193 (96.5%)). Among the total, 5% (n= 10) had a medically assisted pregnancy. Most of the women had been infected by COVID-19 during pregnancy (n= 129 (64.5%)), and most of them received the vaccine against the virus (n= 181 (90.5%)). Among the total, 9.5% (n= 19) lost a significant other due to COVID-19 infection.

Regarding depression, most of the women had no at-risk levels of depression (n= 137 (68.5%)), while 3% (n= 6) and 2.5% (n= 5) showed severe and extremely severe levels, respectively. Similarly, 66.5% (n= 133) of women showed no at-risk levels of anxiety. At the same time, 15% (n= 30) of women showed moderate levels of anxiety, whereas 5.5% (n= 11) and 3.5% (n= 7) showed severe and extremely severe levels, respectively. Regarding stress, 48.5% (n= 97) showed no at-risk levels, 36% (n= 72) showed mild levels, whereas 4.5% (n= 9), and 2% (n= 4) reported severe and extremely severe levels, respectively. Most of the women did not report at-risk levels of COVID-19-related post-traumatic symptoms (n= 161 (84.7%)). Among the COVID-19-related fears the women in the perinatal period showed higher mean levels for the fear of being infected by the virus (fear of others) (M= 1.87, SD= 1.27) and the fear that relatives and close friends could be infected by the virus (fear for others) (M= 1.89, SD= 1.23). At the same time, they presented the lowest mean levels for the fear of not collecting necessary information about the virus (fear of not knowing) (M= 0.99, SD= 0.97).

Characteristics of participants were reported in detail in Table 5.1. Descriptive results for psychological health variables were additionally reported in Table 5.2.

Table 5.1.

Characteristics of participants

	N	%
Demographic		
Age [mean (SD)]	200 [31.05 (4.62)]	100 %
Age		
18-30	95	47.7%
30-45	105	52.5%
Level of education		
Secondary school/ High school	112	56%
University studies	88	44%
Previous psychopathology		
No	193	96.5%
Yes	7	3.5%
Relationship status		
Partnered	200	100%
Job		
No	61	30.5%
Yes	139	69.5%
Primigravida/primiparous		
No	70	35%
Yes	130	65%
At-risk pregnancy		
No	153	76.5%
Yes	47	23.5%
Medically assisted pregnancy		
No	190	95%
Yes	10	5%
COVID-19-related descriptive variables		
COVID-19 diagnosis		
Not having been infected by the virus at all	20	10%
Not being infected during pregnancy	129	64.5%
Being infected during pregnancy	51	25.5%
Significant others died due to COVID-19		
No	181	90.5%
Yes	19	9.5%
Vaccine against COVID-19		
No	19	9.5%
Yes	181	90.5%
Received vaccine during pregnancy		
No	97	48.5%
Yes	103	51.5%
Psychological health levels		
Depression		
No at-risk	137	68.5%

Mild	33	16.5%
Moderate	19	9.5%
Severe	6	3.0%
Extreme Severe	5	2.5%
Anxiety		
No at-risk	133	66.5%
Mild	19	9.5%
Moderate	30	15.0%
Severe	11	5.5%
Extreme Severe	7	3.5%
Stress		
No at-risk	97	48.5%
Mild	72	36.0%
Moderate	18	9.0%
Severe	9	4.5%
Extreme Severe	4	2.0%
COVID-19-related impact		
No	161	84.7%
At-risk	29	15.3%

Table 5.2

Mean, standard deviation, median, skewness, and kurtosis for psychological health variables.

	Mean	SD	Median	Skewness	Kurtosis
Depression	6.91	7.31	4.00	1.73	3.82
Anxiety	6.08	6.00	4.00	1.64	3.64
Stress	12.26	8.14	12.00	1.11	1.49
COVID-19-related post-traumatic impact	17.96	12.81	17.96	1.12	1.30
Loneliness	42.11	9.54	42.00	-0.3	-0.40
COVID-19-related fear	11.15	6.68	10.79	0.18	-0.47
Fear of the body	1.39	1.11	1.29	0.43	-0.49
Fear for the body	1.52	1.23	1.52	0.44	-0.75
Fear of others	1.87	1.27	1.85	-0.03	-1.04
Fear for others	1.89	1.23	1.86	-0.06	-0.99
Fear of knowing	1.30	1.15	1.27	0.60	-0.44
Fear of not knowing	0.99	0.97	0.96	0.82	0.16
Fear of action	1.13	1.15	1.00	0.83	-0.29
Fear of inaction	1.08	1.02	1.00	0.81	0.14

5.3.2 Differences between pregnant and postpartum women

Pregnant and postpartum women did not differ in age, level of education, job occupation, parity, and at-risk pregnancy experience. In addition, they did not differ in having received the anti-COVID-19 vaccine during pregnancy, and having lost someone due to the COVID-19 pandemic (Table 5.3). Hence, considering the socio-demographic, perinatal-related, and COVID-19-related characteristics the pregnant and postpartum groups could be considered similar.

Pregnant and postpartum women did not differ in depression, stress, COVID-19-related post-traumatic impact, and loneliness levels (Table 5.3). On the other side, anxiety appeared significantly higher in pregnant women than in postpartum women. Differently, COVID-19-related fears were significantly higher in postpartum women than in pregnant women. In particular, postpartum women showed higher levels of fear of being infected by others (fear of other) and feeling paralyzed by the fear of doing something wrong during the pandemic (fear of action) than the pregnant group.

Table 5.3
Comparison between pregnant and postpartum women

	Pregnant women (N=125)	Postpartum women (N=75)	P value
	N (%)	*N* (%)	
Demographic			
Age [mean (sd)]	30.66 (4.40)	31.69 (4.93)	0.125[a]
Age			
18-30	63 (50,4%)	32 (42,7%)	0.28[b]
30-45	62 (49,6%)	43 (57,3%)	
Level of education			
Secondary school/ High school	69 (55,2%)	43 (57,3%)	0.76[b]
University studies	56 (44,8%)	32 (42,7%)	
Relationship status			
Partnered	125 (100%)	75 (100%)	
Job			
No	44 (35.2%)	17 (22.7%)	0.06[b]
Yes	81 (64.8%)	58 (77.3%)	
Previous psychopathology			
No	120 (96%)	73 (97.53%)	NA[d]
Yes	5 (4%)	2 (2.7%)	
Primigravida/primiparous			
Yes	85 (68%)	45 (60%)	0.25[b]
No	40 (32%)	30 (40%)	
At-risk pregnancy			
No	97 (77.6%)	56 (74.7%)	0.64[b]
Yes	28 (22.4%)	19 (25.3%)	
Medically assisted pregnancy			
No	118 (94.4%)	73 (97.3%)	NA[d]
Yes	7 (5.6%)	2 (2.7%)	
COVID-19-related variables			
COVID-19 diagnosis			
Not having been infected by the virus at all	3 (2.4%)	17 (22.7%)	NA[d]
Not being infected during pregnancy	86 (68.8%)	43 (57.3%)	
Being infected during pregnancy	36 (28.8%)	15 (20%)	
Significant others died due to COVID-19			

No	112 (89.6%)	69 (92%)	0.57[b]
Yes	13 (10.4)	6 (8%)	
Vaccine against COVID-19			
No	15 (12%)	4 (5.3%)	NA[d]
Yes	110 (88%)	71 (94.7%)	
Received vaccine during pregnancy			
No	58 (46.4%)	39 (52%)	0.44[b]
Yes	67 (53.6%)	36 (48%)	
Psychological health variables			
Depression [mean (sd) median]	6.60 (6.50) 4.00	7.41 (8.51) 4.00	0.92[c]
Anxiety [mean (sd) median]	6.49 (5.38) 6.00	5.38 (6.91) 4.00	0.01[c*]
Stress [mean (sd) median]	11.48 (7.27) 10.00	13.54 (9.33) 12.00	0.30[c]
COVID-19-related impact [mean (sd) median]	17.51 (14.57) 17.00	18.75 (14.40) 17.96	0.32[c]
Loneliness [mean (sd)]	41.13 (9.56)	43.82 (9.79)	0.06[a]
COVID-19-related fear [mean (sd)]	10.37 (6.63)	12.46 (6.61)	0.03[a*]
Fear of the body [mean (sd)]	1.39 (1.12)	1.39 (1.10)	0.98[a]
Fear for the body [mean (sd)]	1.40 (1.26)	1.71 (1.16)	0.08[a]
Fear of others [mean (sd)]	1.68 (1.29)	2.18 (1.17)	0.006[a**]
Fear for others [mean (sd)]	1.76 (1.25)	2.10 (1.19)	0.056[a]
Fear of knowing [mean (sd)]	1.24 (1.15)	1.39 (1.15)	0.38[a]
Fear of not knowing [mean (sd)]	0.96 (0.91)	1.03 (1.07)	0.58[a]
Fear of action [mean (sd)]	0.95 (1.07)	1.43 (1.22)	0.004[a**]
Fear of inaction [mean (sd)]	0.99 (0.97)	1.22 (1.10)	0.12[a]

Notes: [a]T test (two tails); [b]Chi-squared test; [c]Mann-Withney U test; [d]Chi-squared test was not calculated because more than 20% of the cells of the contingency table have a predicted cell count of less than 5. Hence, Chi-square results may be invalid; * $p < 0.05$; **$p< 0.01$.

5.3.3 Results of bivariate correlations

Results of the correlation analysis showed that COVID-19-related fears were positively correlated with depression (*rho*= 0.211, p= 0.003), anxiety (*rho*= 0.201, p= 0.004), stress (*rho*= 0.196, p= 0.005), COVID-19-related post-traumatic distress (*rho*= 0.608, $p \leq 0.001$) and loneliness (*r*= 0.174, p= 0.014) (Table 5.4). In turn, COVID-19-related post-traumatic distress was positively correlated with depression (*rho*= 0.387, $p \leq 0.001$), anxiety (*rho*= 0.334, $p \leq 0.001$), stress (*rho*= 0.392, $p \leq 0.001$), and loneliness (*rho*= 0.283, $p \leq 0.001$) (Table 5.4). In addition, loneliness was positively associated with depression (*rho*= 0.581, $p \leq 0.001$), anxiety (*rho*= 0.335, $p \leq 0.001$), and stress (*rho*= 0.479, $p \leq 0.001$).

Table 5.4.

Correlation matrix

	Depression	Anxiety	Stress	Loneliness	COVID-19-related post-traumatic impact	COVID-19-related fears
Depression	--					
Anxiety	0.634[b]***	--				
Stress	0.696[b]***	0.569[b]***	--			
Loneliness	0.581[b]***	0.335[b]***	0.479[b]***	--		
COVID-19-related post-traumatic impact	0.387[b]***	0.334[b]***	0.392[b]***	0.283[b]***	--	
COVID-19-related fears	0.211[b]**	0.201[b]**	0.196[b]**	0.174[a]*	0.608[b]***	--

Notes: [a]Pearson r; [b]Spearman rho. *p<0.05; **p< 0.01; ***p ≤ 0.001.

5.3.4 Results of the serial mediation analyses

Results of the serial mediation analyses will be presented for the three different outcomes - depression, anxiety, and stress - separately.

5.3.4.1 Depression

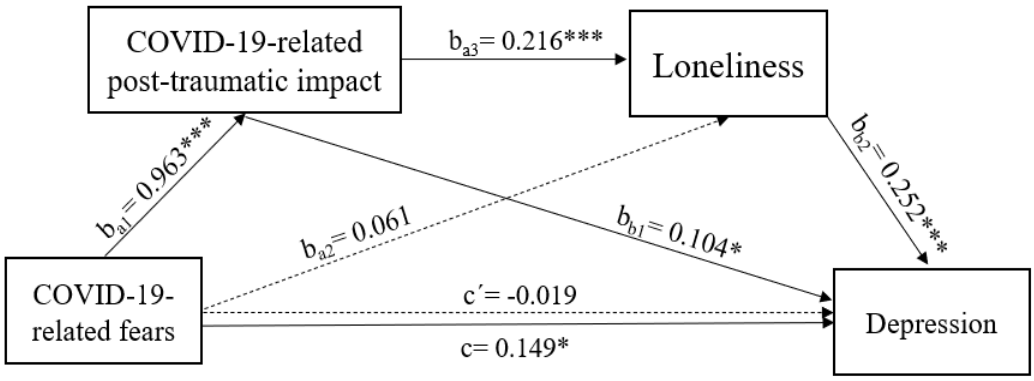
In the first model (Figure 5.1), the total effect of COVID-19-related fears on depression was significant (c= 0.149; SE= 0.071; p= 0.036). Considering the effect of COVID-19-related fears on the mediators, COVID-19-related fears predicted COVID-19-related post-traumatic impact (b_{a1}= 0.963; SE= 0.112; p≤ 0.001), but not loneliness (b_{a2}= 0.061; SE= 0.173; p= 0.724). On the other side, the effect of the COVID-19-post-traumatic impact (the first mediator) on loneliness (the second mediator) was significant (b_{a3}= 0.216; SE= 0.057; p≤ 0.001). In addition, the robust regression analyses showed that both the mediators, hence the COVID-19-related post-traumatic impact (b_{b1}= 0.104; SE= 0.052; p= 0.046) and loneliness (b_{b2}= 0.252; SE= 0.042; p≤ 0.001) had a significant effect on depression. The three predictors (the dependent variable and the two mediators) explained the variance of depression with an adjusted robust R^2 of 0.317. Finally, the direct effect of COVID-19-related fears on depression was not significant after the mediators were sequentially entered into the model (c´= -0.019; SE= 0.085; p= 0.817). Hence, this result showed that COVID-19-related post-traumatic impact and loneliness fully mediated the relationship between COVID-19-related fears and depression.

Bootstrap analyses confirmed that the serial mediation indirect effect involving COVID-19-related post-traumatic impact and loneliness was significant (β= 0.052; 95% CI= 0.025-0.095). In addition, the indirect effect of COVID-19-related fears on depression via COVID-19-related post-traumatic impact emerged as significant (β= 0.100; 95% CI= 0.005-0.211). On the other side, the single mediation via loneliness was not significant (β= 0.015; 95% CI= -0.067 to 0.107) (Table 5.4).

Contrasts in pairs showed no difference in magnitude between the indirect effects (simple mediation via COVID-19-related post-traumatic impact, simple mediation via loneliness, and serial mediation). In particular, the contrast between the single mediation via COVID-19-related post-traumatic impact and the

serial mediation was not significant (β= 0.047; 95% CI= -0.060 to 0.163). This result indicated that the single mediation via COVID-19-related post-traumatic impact and the serial mediation had a similar strength in explaining the relationship between COVID-19-related fears and depression (Table 5.4).

Figure 5.1
Serial mediation model for depression



Notes: Standardized beta values are reported. *p<0.05; *p< 0.01; ***p ≤ 0.001.

Table 5.4
Indirect effects and contrasts for depression – bootstrap results

	β	95% CI [L–U]
Indirect effects		
Total indirect effects	0.169	0.049 – 0.302
COVID-19-related fears → COVID-19-related post-traumatic impact → Depression	0.100	0.005 – 0.211
COVID-19-related fears → Loneliness →Depression	0.015	-0.067 – 0.107
COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness →Depression	0.052	0.025 – 0.095
Contrasts		
Model 1 – Model 2	0.084	-0.056 – 0.210
Model 1 – Model 3	0.047	-0.060 – 0.163
Model 2 – Model 3	-0.036	-0.146 – 0.067

Notes: β = standardized beta; 95% CI [L–U]= 95% confidence intervals [lower and upper bound]; Model 1: *COVID-19-related fears → COVID-19-related post-traumatic impact → Depression;* Model 2: *COVID-19-related fears → Loneliness →Depression;* Model 3: *COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness →Depression*

5.3.4.2 Anxiety

In the second model (Figure 5.2), as well as for depression, the total effect of COVID-19-related fears on anxiety was significant (c= 0.116; SE= 0.059; p= 0.048). The adjusted robust R^2 of the model was 0.174. The effect of COVID-19-related post-traumatic impact on anxiety was significant (b_{b1}= 0.140; SE= 0.050; p= 0.005). No significant direct relationship between loneliness and anxiety was found, instead (b_{b2}= 0.068; SE= 0.037; p= 0.066).

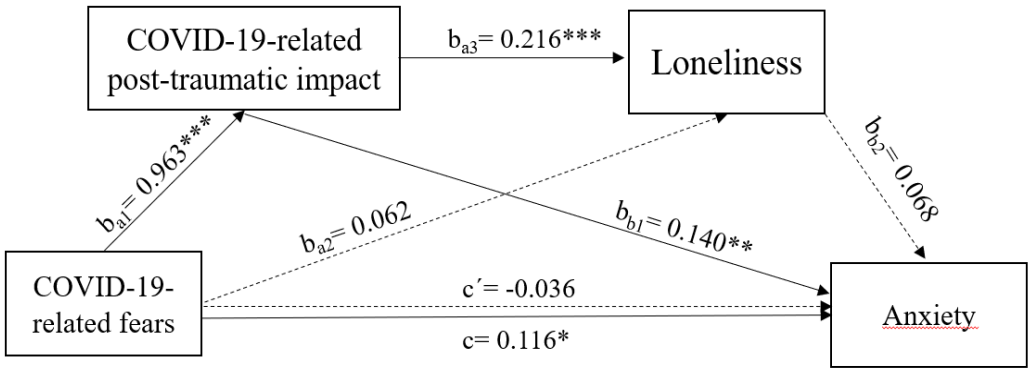
Consequently, loneliness lost its weight as a single mediator in this model, as emerged from the bootstrap analysis (β= 0.004; 95% CI= -0.015 to 0.041). On the other side, COVID-19-related post-traumatic

impact emerged as a significant single mediator between COVID-19-related fears and anxiety, as the bootstrap analysis confirmed (β= 0.134; 95% CI= 0.041-0.245). Finally, a significant serial mediation indirect effect was also found (β= 0.014; 95% CI= 0.001-0.039) (Table 5.5). Observing the no significant direct effect of COVID-19-related fears on anxiety (c´= -0.036; SE= 0.074; p= 0.622), a full mediation effect could be assumed.

From contrast analyses, a stronger effect of the single mediation of COVID-19-related post-traumatic impact than the single mediation of loneliness (β= 0.130; 95% CI= 0.029-0.241) and the serial mediation model (β= 0.120; 95% CI= 0.023-0.234), emerged. No significant difference in magnitude was found between the indirect effect of the single mediation of loneliness and the serial mediation indirect effect (β= -0.009; 95% CI= -0.061 to 0.013).

Figure 5.2

Serial mediation model for anxiety



Notes: Standardized beta values are reported. *p<0.05; *p< 0.01; ***p ≤ 0.001.

Table 5.5

Indirect effects and contrasts for anxiety – bootstrap results

	β	95% CI [L–U]
Indirect effects		
Total indirect effects	0.153	0.057 – 0.265
COVID-19-related fears → COVID-19-related post-traumatic impact → Anxiety	0.134	0.041 – 0.245
COVID-19-related fears → Loneliness → Anxiety	0.004	-0.015 – 0.041
COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness → Anxiety	0.014	0.001 – 0.039
Contrasts		
Model 1 – Model 2	0.130	0.029 – 0.241
Model 1 – Model 3	0.120	0.023 – 0.234
Model 2 – Model 3	-0.009	-0.061– 0.013

Notes: β = standardized beta; 95% CI [L–U]= 95% confidence intervals [lower and upper bound]; Model 1: *COVID-19-related fears → COVID-19-related post-traumatic impact → Anxiety;* Model 2: *COVID-19-related fears → Loneliness → Anxiety;* Model 3: *COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness → Anxiety.*

5.3.4.3 Stress

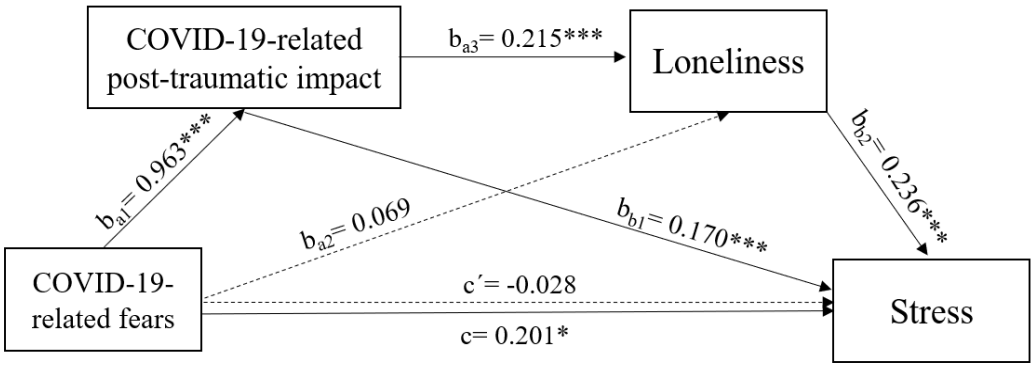
In the third model (Figure 5.3), the total effect of COVID-19-related fears on stress was significant (c= 0.201; SE= 0.080; p= 0.012). Considering the relationship between the mediators and stress, both the COVID-19-related post-traumatic impact (b_{b1}= 0.170; SE= 0.040; p≤ 0.001) and loneliness (b_{b2}= 0.236; SE= 0.044; p≤ 0.001) showed a significant effect. The COVID-19-related fears and the mediators explained 28.4% of the variance of stress (adjusted robust R^2= 0.284). The direct effect of COVID-19-related fears on stress was not significant after entering the mediators into the model (c´= -0.028; SE= 0.076; p= 0.71). Hence, as well as it was observed for depression and anxiety, the effect of the COVID-19-related fears on stress was fully mediated by the COVID-19-related post-traumatic impact and loneliness.

Results from the bootstrap analysis confirmed that the indirect effect of COVID-19-related fears on stress via serial mediation of both mediators was significant (β= 0.049; 95% CI= 0.020-0.094). In addition, the indirect effect of COVID-19-related fears on stress via COVID-19-related post-traumatic impact was significant (β= 0.163; 95% CI= 0.089-0.259), while the indirect effect via loneliness was not significant (β= 0.017; 95% CI= -0.062 to 0.100). Consequently, the total indirect effect was significant (β= 0.230; 95% CI= 0.119-0.350) (Table 5.6).

As well as for anxiety, contrasts showed that the indirect effect of COVID-19-related post-traumatic impact alone was stronger than the single mediation indirect effect of loneliness (β= 0.146; 95% CI= 0.032-0.263) and the indirect effect of the serial mediation (β= 0.114; 95% CI= 0.024-0.208). No significant difference in magnitude was found between the indirect effect of the single mediation of loneliness and the serial mediation indirect effect (β= -0.032; 95% CI= -0.138 to 0.058).

Figure 5.3

Serial mediation model for stress



Notes: Standardized beta values are reported. *p<0.05; *p< 0.01; ***p ≤ 0.001.

Table 5.6

Indirect effects and contrasts for stress – bootstrap results

	β	95% CI [L–U]
Indirect effects		
Total indirect effects	0.230	0.119 – 0.350
COVID-19-related fears → COVID-19-related post-traumatic impact → Stress	0.163	0.089 – 0.259
COVID-19-related fears → Loneliness → Stress	0.017	-0.062 – 0.100
COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness → Stress	0.049	0.020 – 0.094
Contrasts		
Model 1 – Model 2	0.146	0.032 – 0.263
Model 1 – Model 3	0.114	0.024 – 0.208
Model 2 – Model 3	-0.032	-0.138– 0.058

Note: β = standardized beta; 95% CI [L–U]= 95% confidence intervals [lower and upper bound]; Model 1: *COVID-19-related fears → COVID-19-related post-traumatic impact → Stress;* Model 2: *COVID-19-related fears → Loneliness → Stress;* Model 3: *COVID-19-related fears → COVID-19-related post-traumatic impact → Loneliness → Stress.*

5.4 Discussion

To the best of my knowledge, the current study was the only one that explored the psychological health of pregnant and postpartum women at the formal end of the COVID-19 pandemic in Italy.

The results highlighted that, despite the end of the health emergency, the COVID-19 pandemic continued to influence perinatal psychological distress. In particular, the effects of COVID-19-related fears on perinatal maternal depression, anxiety, and stress were fully mediated by the COVID-19-related post-traumatic impact and loneliness.

Before commenting in detail on the results of the current study, it is worth to highlight some characteristics of the group of women who decided to participate in the study.

The overall number of women who participated in the current study was close to the number observed in national cross-sectional studies during the pandemic, worldwide (An et al., 2021; Dagklis et al., 2020; Gharagozloo et al., 2020; Janevic et al., 2021; Harrison et al., 2022; Mirzaei et al., 2021; Perzow et al., 2021) and in Italy (Ravaldi et al., 2021; Smorti et al., 2022; Spinola et al., 2020, Zanardo et al., 2020). In the current study, the group of participants showed some characteristics typically detected in women in the perinatal period recruited via an online survey (Leach et al., 2017): they had a partner, most of them were primipara, and had a quite high level of education. Considering job status, 30.5% of them did not have a job, and based on the collected data it is not possible to know if it was or not a choice of the women. Most of the women experienced the virus infection, not surprisingly considering the final phase of the COVID-19 pandemic, and just a few of them lived the death of a significant person due to the COVID-19 infection. Comfortingly compared with the high reticence registered in Italian women against the vaccination (Miraglia del Giudice et al., 2022), most of the women who participated in the current study received the vaccine against the COVID-19 virus.

In general, on one hand, a great part of participants showed no at-risk levels for depression (68.5%), anxiety (66.5%), and stress (48.5%). On the other hand, 31.5%, 33.5%, and 51.5% showed levels from mild to extreme severe of depression, anxiety and stress, respectively, though only few of them showed severe (depression: 3%; anxiety: 5.5%; stress: 4.5%) and extremely severe (depression: 2.5%; anxiety: 4.5%; stress: 2%) levels. This data is quite similar to the prevalence rates of perinatal depression and anxiety registered globally during the pandemic, as synthesized in the Chapter 6 of this dissertation (Caffieri et al., 2024). The at-risk levels of psychological distress observed in the current study were, in general, higher than the prevalence rates registered before the pandemic (Dennis et al., 2017; Hahn-Holbrook et al., 2018; Shorey et al., 2018; Yin et al., 2021; Woody et al., 2018), though they were lower than those observed during other pandemic phases in Italy (Camoni et al., 2022; Lega et al., 2022; Molgora & Accordini, 2020; Ostacoli et al., 2020; Saccone et al., 2020; Spinola et al., 2020).

Moreover, among the participants of the current study, 15.3% had at-risk levels of COVID-19-related post-traumatic stress. This rate was substantially lower than data collected during the first phases of the pandemic in a cross-national study (Basu et al., 2021) which did not include Italy. That study showed that COVID-19-related PTSD risk prevalences were 41.5%, 44%, 42.3% in the first, second, and third trimesters of pregnancy and 45.2% in the postpartum period, respectively (Basu et al., 2021). Similar rates were also found in Spain (Motrico et al., 2023b). At the same time, the percentage found in the current study was very far from the percentage of 53 showed by Saccone (2020) in pregnant women during the first lockdown in Italy. On one side, these discrepancies confirmed the high heterogeneity in the COVID-19-related post-traumatic stress in pregnant and postpartum women that was found in scientific literature, regardless of the phases of the pandemic or the contexts in which the data were collected (Delanerolle et al., 2023; Ionio et al., 2022), probably due to the variation in the subjective exposure to stressful events (Delanerolle et al., 2023; Ho-fung et al., 2022). On the other side, the low risk of COVID-19-related post-traumatic stress observed in the current study may depend precisely on the period in which the data were collected, i.e., the final phase of the COVID-19 pandemic. Indeed, the emergency dimensions of the COVID-19 pandemic have progressively decreased, both in terms of consequences of the infection – thanks to the immunization – and for the concrete decrease in restrictive preventive measures as well as in terms of a gradual adaptation of the population to the COVID-19-related conditions. Hence, it is possible that the perception of the "traumatic" impact of COVID-19 was decreased in pregnant and postpartum women. This hypothesis is consistent with the results of a longitudinal study according to which, even if with the ongoing COVID-19 spread, pregnant women had been more exposed to COVID-19-related stressful events, the post-traumatic stress during the second phase of the COVID-19 pandemic was smaller than that observed during the first acute phase, suggesting a progressive adaptation and normalization of the pandemic in mothers perception (Shiffman et al., 2023).

Moreover, comparing the different COVID-19-related specific fears, the fears in the interpersonal domain were prominent in pregnant and postpartum women. Pregnant and postpartum women, even at the end of the COVID-19 pandemic were scared of being infected by the virus from others but also had fears for the others' health. It is important to consider that even in the general population, the fears in the interpersonal

domain presented the highest mean levels (Schimmenti et al., 2020b). Moreover, considering pregnant and postpartum women, these results were in line with the findings summarized in the systematic review (first study/Chapter 3; Caffieri & Margherita, 2021) which showed that Italian pregnant and postpartum women during the COVID-19 pandemic had high concerns about the health of their children and significant others, even more than their own health (Caffieri & Margherita, 2021; Fumagalli et al., 2021; Ravaldi et al., 2020a).

Comparing pregnant and postpartum women, no differences emerged for sociodemographic variables often associated with perinatal psychological distress such as age, level of education, job occupation, and previous psychopathology. Moreover, they did not differ considering perinatal experience dimensions such as parity and at-risk pregnancy experience. Similarly, they did not differ in having been vaccinated during pregnancy. Considering psychological dimensions, pregnant and postpartum women had similar levels of COVID-19-related post-traumatic impact, depression, stress, and loneliness. Although some studies showed slightly higher percentages of COVID-19-related post-traumatic impact, depression, and loneliness in women in the postpartum period than in pregnant women (Basu et al., 2021; Caffieri et al., in press), as well as some results showed a higher stress in pregnant women than women in the postpartum period during the first phases of the COVID-19 pandemic (Wyszynski et al., 2022), no consistent and large significant differences were found between pregnant and postpartum women in those studies. Hence, this study is consistent with the invitation to consider the entire perinatal period as a vulnerable period of exposure to the risk of psychological distress during the COVID-19 pandemic, regardless of specific phases of the perinatal path (Perzow et al., 2021; Vanwetswinkel et al., 2022; Zhou et al., 2020).

On the other side, a difference between pregnant and postpartum women regarded anxiety levels was found. In the current study, higher levels of anxiety were found in pregnant women than women during postpartum. Although during the COVID-19 pandemic, the prevalences of prenatal and postpartum anxiety rates were considered similar (Caffieri et al., in press/Chapter 6) the result of the current study was consistent with pre-pandemic data that generally showed higher anxiety during pregnancy than during the postpartum period (Dennis et al., 2017). Before the COVID-19 pandemic, anxiety was considered higher in pregnancy than during postpartum because pregnancy was generally more associated with uncertainty. However, during the first phases of the COVID-19 pandemic, great uncertainty and unpredictability were enlarged to the entire perinatal course. During the phase in which the data of the current study were collected, after two years of the pandemic and the resolution of the public health emergency in Italy, the unpredictability and uncertainty regarding the COVID-19 spread were highly decreased. This might explain why the results of the current study were more similar to the indication provided by pre-pandemic data than pandemic ones.

Moreover, women during postpartum showed higher COVID-19-related fears than pregnant women. In particular, postpartum women showed higher levels of fear of being infected by others (fear of other) and feeling paralyzed by the fear of doing something wrong during the pandemic (fear of action). This result was in line with the conflict founded in women in the postpartum period who participated in the qualitative study in the same period of data collection. From women's narratives emerged the fear related to not promoting the relationship of the child with the other (fear of action) to protect him from the infection (fear of other)

(Caffieri & Margherita, 2023, Chapter 4). In the multi-component model of COVID-19-related fears, two fears were involved in the interpersonal domain: the fear of being infected by others (fear of others), and the fear that family members or close friends were infected (fear for others) (Schimmenti et al., 2020a). Being the model not specific for women in the perinatal period it did not involve the fear that the infant could be infected by the virus. From a psychodynamic perspective, it is possible to hypothesize that during postpartum the psychological differentiation between the woman and the infant in the woman's mind is not complete. Hence, being the infant's health after childbirth strictly dependent on the mother's care, it is more probable that the fear of the infant's infection represented for the mothers more a fear of others than a fear for others.

The results of the correlation analyses showed a positive and significant association between COVID-19-related fears, COVID-19-related post-traumatic impact, loneliness, depression, anxiety, and stress in women in the perinatal period.

Moreover, the results of serial mediation analyses suggested the pathways through which COVID-19-related fears – considered one of the main predictors of perinatal psychological distress during the first and acute phases of the COVID-19 pandemic (Chen et al., 2022; Liu et al., 2020; Motrico et al., 2022; Shuman et al., 2021; Usmani et al., 2021) – influenced perinatal depression, anxiety, and stress at the end of the pandemic health emergency in Italy. In particular, the results showed that COVID-19-related post-traumatic impact and loneliness fully mediated the effect of COVID-19-related fears on perinatal depression, anxiety, and stress. In particular, focusing on the serial models' results, a part of the influence of COVID-19-related fears on perinatal depression, anxiety, and stress was explained by COVID-19-related post-traumatic impact. In addition, another part of the effect of COVID-19-related fears on depression, anxiety, and stress depended on the increase of COVID-19-post-traumatic impact that in turn increased loneliness in pregnant and postpartum women. In detail, as well as was observed in and across other phases of the pandemic, COVID-19-related fears predicted COVID-19-related post-traumatic stress in pregnant and postpartum women at the end of the health emergency (Basu et al., 2021; Shiffman et al., 2023). From a psychodynamic perspective, fear is an emotional reaction to a threatening object – in this case, the COVID-19 virus infection and its consequences – that can increase persecutory primitive anguishes at the base of the psychic reaction to trauma: a conglomeration of unconscious catastrophic fantasies that can led to psychological distress symptoms (De Bianchedi et al., 1986; Giustino, 2013; Klein, 1946). In other words, the post-traumatic impact of COVID-19 reflected a specific psychological functioning in which the COVID-19-related "emergency" was still perceived as present and threatening to the woman's psychological integrity. Hence, it is possible that higher COVID-19-related fears increased the threat representation of the pandemic increasing the COVID-19-related post-traumatic impact, which in turn influenced perinatal depression, anxiety, and stress at the end of the health emergency.

At the same time, the COVID-19-related post-traumatic impact increased perinatal depression, anxiety, and stress by increasing maternal loneliness. While previous data have shown the effect of COVID-19-related social restrictions on loneliness (Basu et al., 2021; Miyoshi et al., 2021), the results of this study showed that beyond the lockdown periods, it is possible that the entire COVID-19 pandemic experience –

through its multicomponent and potentially "traumatic" impact (King et al., 2021) – deeply altered how women in the perinatal period perceived the encounter and the closeness with significant others, increasing loneliness. COVID-19-related traumatic characteristics, largely involving the interpersonal domain, impacted the qualitative evaluation of relationships in terms of closeness and emotional connection (de Jong-Gierveld, 1987; Heinrich & Gullone, 2006; Russell, 1996). In turn, loneliness increased perinatal depression, anxiety, and stress consistent with the hypothesis that loneliness represents an at-risk factor for different forms of perinatal psychological distress (Zaidi et al., 2017; Luoma et al., 2015; 2019; Giurgescu et al., 2021; Harrison et al., 2022; Perzow et al., 2021; Scandurra et al., 2023).

The fact that the serial mediation models showed the same significant pathways for depression, anxiety, and stress suggested that COVID-19-related post-traumatic impact and loneliness could be transversal mediators to different forms of psychological distress. At the same time, the results based on contrasts provided some specific information on the magnitude of the mediation effect of the considered mediators on depression, anxiety, and stress.

Considering depression, no difference in strength emerged between the single mediation via COVID-19-related post-traumatic impact and the serial-multiple mediation via COVID-19-related post-traumatic impact and loneliness. This result suggested that in explaining the effect of COVID-19-related fears on perinatal depression, the two pathways have to be considered both valid and of similar magnitude. In contrast, when considering stress and anxiety, single mediation via COVID-19-related post-traumatic impact was stronger than the serial model. This result suggested that, although the influence of loneliness could not be ignored, COVID-19-related post-traumatic impact played the main role in predicting the effect of COVID-19-related fears on anxiety and stress in women in the perinatal period. Considering these results, it is not surprising that loneliness had a greater weight in predicting depression - being a component of this form of distress (Cacioppo, 2008) - than in predicting anxiety and stress.

5.4.1 Limits

Our study has its limitations.

First, the collection of data period, which had to be limited to the first months after the end of the COVID-19 pandemic to respect the coherence with the pandemic spread course, limited the possibility of increasing the number of participants that were enrolled in the survey. Hence, it was not possible to test the mediation model for both pregnant and postpartum women separately, though there were no clear indications that may us to hypothesize different relationships between the considered variables in the two groups. In addition, being the pregnant (n= 125) and postpartum (n= 75) groups not balanced in number, the comparison results might be partially distorted. For the same reasons, the stage of the perinatal course was not inserted as a covariate in the mediation model.

Second, exclusion criteria based on socio-demographic at-risk factors for perinatal psychological health were not included because the researcher was interested in universally assessing the psychological health of pregnant and postpartum women at the end of the health emergency. At the methodological level, if

the model had been tested “net” of risk factors, it would have been theoretically stronger. However, the sample size and the wide unbalance between no or at-risk women in the group of participants limited the possibility to “control” for the confounding effect of these variables. This aspect limited the generalizability and robustness of the results.

Third, online snowballing recruitment had also its limitations. As it was previously observed, postpartum women recruited online were commonly younger, had a higher education, had a stable relationship, and were primipara than women recruited in person (Leach et al., 2017). In addition, they seemed to show poorer mental health than the women in person recruited (Leach et al., 2017). These aspects limited the generalizability of the results and at the same time might provide an overestimate of the psychological distress lived by pregnant and postpartum women in the period of assessment.

Fourth, although validated, and commonly used scales were selected for assessing psychological variables in the perinatal population, all the measures included in the current study were not specific for pregnant and postpartum women. In particular, considering the salience of loneliness emerged, it will be interesting to develop a scale focused on “maternal” loneliness. Hence, a scale that could involve all the aspects related to the manifestations of loneliness in the perinatal period that might be partially different from general loneliness. The same reflections can be applied to the MAC-RF scale, which did not assess COVID-19-related fears toward the infant’s health.

Fifth, the mediation model was tested on cross-sectional data. Longitudinal data would be useful to confirm inferential hypotheses.

In light of the above-mentioned limitations of the study design and the no replicability of the research due to the change in the COVID-19 pandemic phase, this study should be considered exploratory.

5.4.2 *Highlights and implications*

To the best of my knowledge, this study was the only one that assessed pregnant and postpartum psychological health at the formal end of the COVID-19 pandemic in Italy.

During the acute phases of the pandemic, COVID-19 was universally and socially recognized as a dangerous threat. However, at the formal end of the “collective” health emergency, the “internal” perception of the COVID-19-related threat became fundamental for understanding the way through which the COVID-19 pandemic continued to influence maternal health.

Our results suggested that - probably due to the effect of the end of the pandemic health emergency - the post-traumatic impact of COVID-19 decreased when comparing the results of the current study with those of previous studies published in the literature (Basu et al., 2021; Saccone et al., 2020). However, COVID-19-related fears continued to characterize the affective maternal experience, influencing perinatal psychological distress via COVID-19-related post-traumatic impact and loneliness.

These results have several implications in research and clinical fields.

For the research field, it implies continuing to study the possible “side effects” through which the COVID-19 pandemic will impact maternal psychological health in the following years. In addition, it would

be important to study the role of mediation of loneliness between other “collective” or “individual” traumas, and perinatal psychological distress. This could be important mainly in the case of interpersonal traumas. In this sense, the creation and validation of specific tools to assess “maternal loneliness” could be beneficial.

For the clinic, these results suggest the importance of including a screening of the post-traumatic symptoms and affective experiences lived by pregnant and postpartum women in routine assessment, during collective and social crises. In addition, these results suggest the importance of including maternal loneliness among the focuses of preventive and treatment interventions for maternal distress, mainly in cases of women’s exposure to traumatic experiences.

Chapter 6

A global perspective on the prevalence of perinatal depression and anxiety during the COVID-19 pandemic: an umbrella review and meta-analytic synthesis (2020-2023)

Chapter 6 -Overview

The study represents the last "step" of the PhD project, partially published in 2024[4].

This part of the PhD project is the product of a collaboration that involved the University of Naples Federico II and the Universidad Loyola Andalucía (Seville), the location of my visiting period. In particular, the study involved my tutor Prof. Giorgia Margherita, I and a group of researchers, composed of Irene Gómez-Gómez, Carlos Barquero-Jimenez, Paula De-Juan-Iglesias led by Prof. Emma Motrico. This study was born from the encounter between two poles, with specific perspectives and traditions in the study of motherhood and perinatology. Prof Giorgia Margherita, from a psychodynamic perspective, has been pursuing for years gender-sensitive research, focused on motherhood in vulnerable populations, such as at-risk pregnancies, adolescents, and women with chronic illness (Margherita, 2015; 2016; 2017a; 2017b; Carlino et al., 2016). Loyola's group, instead, among others runs its research on the prevention of perinatal mental disorders, especially depression and anxiety, and the implementation of preventive interventions in health settings (Martín-Gómez et al., 2022; Motrico et al., 2021b; 2023a). Both groups of research have been interested in the study of perinatal psychological health during the COVID-19 pandemic (Costa et al., 2023; Ganho-Ávila et al., 2023; Gómez-Baya et al., 2022; Kovacheva et al., 2023; Mateus et al., 2022; Mesquita et al., 2023; Motrico et al., 2022): the center aspect of the current doctoral project. A common purpose was in particular to create a global high-level synthesis on the prevalence of depression and anxiety in pregnant and postpartum women during the COVID-19 pandemic. For this purpose, an umbrella review and a meta-analytic synthesis have been performed. Considering the contribution of each researcher to the research, I conceived and designed the study with the supervision of Emma Motrico and Giorgia Margherita. The selection of studies and the extraction of data involved me, Carlos Barquero-Jimenez, Paula De-Juan-Iglesias, and Giorgia Margherita. Irene Gómez-Gómez and Emma Motrico performed and refined the statistical analysis. All researchers participated in the interpretation of the results and in the writing of the above-mentioned publication.

[4] Caffieri, A., Gómez-Gómez, I., Barquero-Jimenez, C., De-Juan-Iglesias, P., Margherita, G., Motrico, E. (2024). Global prevalence of perinatal depression and anxiety during the COVID-19 pandemic: An umbrella review and meta-analytic synthesis. *Acta Obstetricia Gynecologica Scandinavica*, 103(2), 210-224. https://doi.org/10.1111/aogs.14740

6.1 Introduction

As above mentioned, maternal mental health represents a public health concern, considering its short and long-lasting consequences on women's and children's health (Atif et al., 2015; Stein et al., 2014). In terms of prevalence, depression and anxiety are among the main psychiatric disorders and sub-clinical areas of psychological distress observed in pregnant and postpartum women worldwide (Paschetta et al., 2014; Cantweel et al., 2021). Before the COVID-19 pandemic, the prevalence of antenatal depression symptoms was estimated at around 9% in high-income countries and 19% in low-income countries (Woody et al., 2018). The prevalence of postpartum depression symptoms was instead 17% (Hahn-Holbrook et al., 2018; Shorey et al., 2018). Furthermore, antenatal and postnatal anxiety symptoms prevalence was 22.9% and 15%, respectively (Yin et al., 2021; Dennis et al., 2017).

Several systematic reviews and meta-analyses on the prevalence of depression and anxiety symptoms in women in the perinatal period during the COVID-19 pandemic have been published (Mateus et al., 2022; Motrico et al., 2021). A large variation in prevalence rates of perinatal depression and anxiety was found among the systematic reviews and meta-analyses, reporting a generally high heterogeneity between the studies (Mateus et al., 2022). Some factors influenced the founded heterogeneity, with special mention of the country of residence of participants (Mateus et al., 2022). To the best of my knowledge, no comprehensive umbrella review was conducted to provide a clear picture of the global pooled prevalence of depression and anxiety both in pregnant and postpartum women during the COVID-19 pandemic, comparing and contrasting existing systematic reviews and meta-analyses (SR&MA).

6.1.2 Aim of the Study

The aim of this study was to summarize, from SR&MA, the evidence relating to the global prevalence of anxiety and depression among pregnant and postpartum women during the COVID-19 pandemic.

In particular, the study was aimed to:

- Assess the overall quality and the quality of evidence of the SR&MA on this topic of interest;
- Synthesize the main findings of SR&MA on the prevalence of perinatal depression and anxiety during the COVID-19 pandemic;
- Estimate the global prevalence of prenatal and postnatal depression during the COVID-19 pandemic;
- Estimate the global prevalence of antenatal and postnatal anxiety during the COVID-19 pandemic;
- Investigate differences in prevalence rates according to geographical area (continent) and instruments used to assess depression and anxiety, considered as possible sources of heterogeneity.

6.2 Method

An umbrella review is a high-level synthesis that offers the possibility to strengthen information systems by summarizing the evidence from multiple secondary studies (Pollock et al., 2023), through narrative synthesis and/or repetition of the meta-analyses (Fusar-Poli & Radua, 2018). In particular, the

current umbrella review included both a narrative and a quantitative meta-analytic synthesis. For the report of the current umbrella review, the Preferred Reporting Items for Overviews of Systematic Reviews (PRIOR) (Gates et al., 2022; Bougioukas et al., 2019) (A.6.1) and the Cochrane Collaboration's Guideline for overviews of reviews (Pollock et al., 2023) were followed. The PRIOR checklist is the only available reporting guideline for overview created on the basis of key steps recommended by the Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network (Moher et al., 2010). The Cochrane Collaboration's Guideline for overviews of reviews (Pollock et al., 2023) is instead a fundamental resource in improving validity and systematicity in conducting an umbrella review. In particular, the 5 components suggested by the Cochrane guidelines have been addressed in the current umbrella review. These components are (a) a specific and clearly defined research question; (b) SR&MA as units of analysis; (c) an explicit and systematic method to review secondary studies, including the assessment of the quality; (d) a report of the findings that should include: a description of the characteristics of the SR&MA, quality assessment results, quantitative outcome data, and if SR&MA assessed the certainty of evidence of the primary studies included; (e) a discussion on the following points: summary of the findings, comparison with existing literature, quality of evidence, limits.

The research protocol of the current umbrella review was registered with the International Prospective Register of Systematic Reviews (PROSPERO), registration number: CRD42020173125 in December 2022.

6.2.1 Eligibility criteria

Studies were eligible if they met the following inclusion criteria: (a) Participants: Women during the perinatal period (from pregnancy up to a maximum of one year postpartum); (b) Key variable: Data collection was enrolled during the COVID-19 pandemic; (c) Outcome: eligible outcomes were perinatal depression (prenatal depression and/or postpartum depression) and/or perinatal anxiety (prenatal anxiety and/or postpartum anxiety), assessed with self-report questionnaires or standardized clinical interviews (d) Study Design: SR&MA were considered eligible if they presented a systematic study design correspondent to Cochrane guidelines (Higgins et al., 2022); (e) Date of publication: studies that were published from September 2019 to April 2023.

Consequently, (a) scoping reviews, literature or narrative reviews, or papers focused on interventions or on the evaluation of health organizations; (b) articles that reported aggregate data on COVID-19 and other epidemics or aggregate data on perinatal women and other populations; and (c) articles that did not report data on the prevalence of depression or anxiety were excluded from the current umbrella review.

For inclusion in the quantitative synthesis of the current study, MAs were considered eligible if they presented separate and extractable data on pregnancy and/or the postpartum period. Hence, MAs that presented the prevalence of depression or anxiety by aggregating data on pregnant and postpartum women were excluded from the quantitative synthesis. According to the protocol, a minimum of four meta-analyses for each outcome were required for performing quantitative synthesis. However, a change in procedure was

subsequently applied to solve problems related to the overlap between the studies. Hence, primary studies' statistical data were extracted from meta-analyses to avoid duplicates. Thus, the minimum criteria of 4 MAs lapsed, and a criterion of a minimum of 4 primary studies extracted from MAs was applied.

6.2.2 Search strategy

SR&MA were retrieved up to April 14, 2023, from the following electronic databases: Pubmed, The Cochrane database of Systematic Reviews, PsycINFO, CINAHL, Embase, Scopus, Web of Science. A prototype of the search string was created for PubMed using a combination of terms related to (a) "systematic review" and "meta-analysis", (b) "depression" and "anxiety", (c) "COVID-19", and (d) "perinatal period" including "pregnancy" and "postpartum". Then, it was adapted to the other databases. Additionally, the search was completed manually, reviewing the reference list of the included studies. The search strategy's details can be found in Appendix Chapter 6 (A.6.2)

6.2.3 Selection strategy

The selection strategy followed the steps suggested by the PRISMA statement (Page et al., 2021). It was conducted by two independent researchers (AC[5], CB[2]) and discussed with a third researcher who assumed the role of supervisor (EM[2]). First, all duplicate papers were deleted. Then, studies were screened based on abstracts and titles. These first two steps of the selection strategy were performed through Rayyan software (Ouzzani et al., 2016). Finally, full-text articles were evaluated for inclusion.

6.2.4 Data extraction

Data extraction was undertaken independently by two pairs of reviewers (AC, GM, CB, PJ)[2], and disagreements were solved through discussion until total consensus was obtained.

For the narrative review of the studies, the following data were extracted:

1) From SR&MA, the following information were extracted and included in summary tables: author(s), year of publication, type of study (SR, MA), last date search, number of primary studies included in the review, number of participants and target population (pregnant and/or postpartum), countries, number of searched databases, the study design of the included primary studies, the tool used for quality assessment, the outcome(s) (depression, anxiety), and instruments used to assess outcomes in the primary studies.

2) From MAs, the pooled prevalence rates with their 95% confidence intervals (CI) and heterogeneity were also extracted and summarized in two tables separated for outcomes (depression and anxiety).

For the quantitative synthesis, considering the results of the overlap assessment, the research team decided to perform quantitative synthesis on primary articles' data extracted directly from MAs. Therefore, the number of events and the sample size of each primary study checked for duplicates according to

[5] AC= Alessia Caffieri; CB= Carlos Barquero-Jimenez, EM= Emma Motrico, IG= Irene Gómez-Gómez, GM= Giorgia Margherita; PJ= Paula De-Juan-Iglesias.

reference and doi, were extracted from the included MAs. In case of contrasts among data reported in different MAs, the primary article was consulted. No additional primary studies were included in the umbrella review beyond those included in eligible MAs.

6.2.5 Quality assessment

The methodological quality of each SR was assessed independently by two pairs of reviewers (AC, GM, CB, PJ)[2] using the 11-point JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses (Aromataris et al., 2015). This instrument allows the appraisal of the validity and of the quality of the research report. The first nine items of the checklist appraised the validity criteria for SR, such as: (a) clear and explicated stated questions; (b) identifiable and detailed inclusion criteria consistent with the research question; (c) appropriate search strategy involving relevant keywords; (d) adequate sources and resources; (e) appropriate critical assessment of the studies; (f) critical appraisal by two or more reviewers independently; (g) methods chosen to minimize biases in data extraction; (h) appropriate combination of data and synthesis of the studies' findings (in the case of MAs, it includes the investigation of heterogeneity and possible explanations); and (i) assessment of publication bias. The last two criteria (items ten and eleven) instead referred to the quality of the research report and included (j) recommendations for policy and practice, and (k) directives for future further research. Each item of the JBI checklist allows four response options: yes, no, unclear, not applicable. Although the checklist is not intended to be scored, the percentage of "yes" responses was calculated for each SR&MA. To operationalize the quality, thresholds consistent with previous umbrella reviews were used: low quality (0%-33% of criteria met), medium quality (34%-66% of criteria met), and high quality (67% or more of criteria met) (Fernandez et al., 2021; Schultz et al., 2016). All studies, regardless of their methodological quality, were included in the umbrella review.

6.2.6 Quality of the evidence

The strength of evidence was reported based on the Gradings of Recommendations, Assessment, Development, and Evaluation system (GRADE) (Balshem et al., 2011). GRADE represents an assessment of the certainty of evidence, having as the unit of analysis the outcomes considered by each study. It cannot be implemented mechanically and is based on the subjective judgment of researchers. Indeed, it is suggested that a minimum of two researchers have to independently assess GRADE (Balshem et al., 2011). The assessment of the quality of the evidence following GRADE considers five aspects: risk of bias, publication bias, imprecision (random error), inconsistency (heterogeneity), and indirectness (example: participants of the study are different from the population for whom the recommendations applied) (Balshem et al., 2011). Based on these criteria, the researchers can attribute to each study a level: very low (the true effect is probably markedly different from the estimated effect), low (the true effect might be markedly different from the estimated effect), moderate (the true effect is probably close to the estimated effect), and high (there is great confidence that the true effect is similar to the estimated effect). Specifically, it was evaluated if the included SR&MA involved the GRADE assessment and what were the findings they reported.

6.2.7 Overlap assessment

Overlap indicates the degree to which SR&MA address the same primary research. Operationally, the degree of overlap between SR&MA indicates if the primary studies included in each SR&MA are different or the same. For the current study, the corrected cover area (CCA) (Hennessy et al., 2020) was used to calculate the overlap between primary studies included in SR&MA. First, a correlation matrix was created via Excel, where the columns indicated the SR&MA and the rows represented each primary study detected in the included SR&MA. Then, the CCA of the entire matrix was calculated. Considering that the current study included a quantitative synthesis involving MAs, a correlation matrix based only on MAs was organized and CCA was calculated. In addition, considering the different outcomes (prenatal depression, postpartum depression, antenatal anxiety, and postnatal anxiety), specific matrixes and CCA indexes were calculated. According to Pieper et al. (2014) rules of thumb, a value from 0% to 5% indicated a slight overlap, a value from 6% to 10% indicated a moderate overlap, an index from 11% to 14% indicated a high overlap, and a value >15% corresponded to a very high overlap. The results of the overlapping assessments were discussed with the research team to evaluate the further steps of analysis.

6.2.8 Data synthesis

In the current study, meta-analytic syntheses were performed. Prenatal and postpartum depression and antenatal and postnatal anxiety, were independently synthesized. To obtain the pooled prevalence of prenatal and postnatal depression and anxiety, the number of events and sample size of the studies included in MAs were used to obtain the logit-transformed proportions to back-transform them into the pooled prevalence rates. Random-effect models were used to obtain the pooled prevalence and its 95% CI. To explore the study heterogeneity, the Q statistic and its p-value were used. In addition, the I^2 index and its 95% CI were calculated to quantify between-study heterogeneity. It was interpreted as follows: unimportant heterogeneity (0-40%), moderate heterogeneity (30-60%), substantial heterogeneity (50-90%), and considerable heterogeneity (75-100%) (Higgins et al., 2022). Subgroup analyses were performed using a mixed-effects model based on the continent and instrument used to assess the prevalence of perinatal depression or anxiety. To measure publication bias, the Egger test was performed (Stuck et al., 1998).

Analyses were performed with Stata (v14.2) using the *metaprop* command (Press, 2019).

6.3 Results

The results would be organized in the following order: (a) results of the selection strategy; (b) results of methodological quality of SR&MA and results on the certainty of evidence; (c) characteristics of SR&MA; (d) characteristics of the MAs; (e) overlap results; (f) narrative synthesis of findings; (g) quantitative syntheses' results, including global pooled prevalences and subgroup analyses' results.

6.3.1 Selected studies

The search procedure yielded a total of 1268 studies. Among them, 585 were duplicates and were deleted. After screening titles and abstracts, 643 studies were excluded, and 40 full-text articles were reviewed. In the full-text screening step, 15 articles were excluded for reasons reported in Appendix 6.3. In the end, 25 SR&MA were included in the umbrella review. Among them, 12 MAs, involving 129 primary studies, were included in the quantitative synthesis (Figure 6.1).

6.3.2 Methodological Quality

The results of the quality assessment were detailed in Table 6.1. Among the total, 4 SR&MA responded to the criteria of JBI Checklist (Aromataris et al., 2015) achieving 100% yes responses. Considering thresholds, 20 SR&MA scored >67%, corresponding to a high level of quality, and 5 SR&MA received an assessment score between the range of 34-66%, corresponding to a medium level of quality (Table 6.1). Two validity domains emerged as particularly critical: the choice of sources that often exclude grey literature investigations (item 4 - 7/25 SR&MA received unclear or no assessment), insufficient procedures aimed to limit extraction biases and assessing the quality of the studies (items 6-7 - 6/25 SR&MA received unclear or no assessment).

Figure 6.1. Flow-diagram of excluded and included SR&MA.

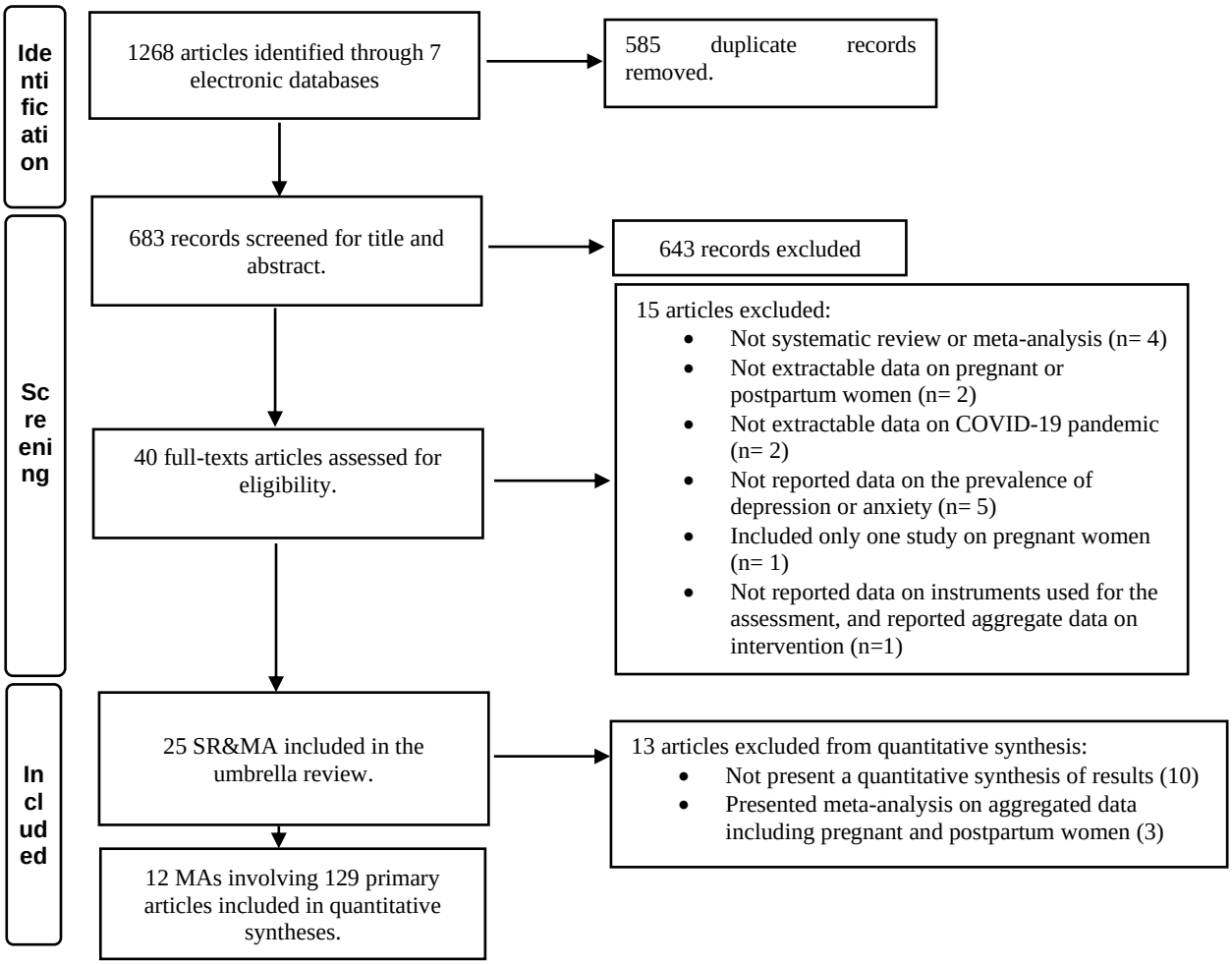


Table 6.1.

Methodological quality of the included SR&MA (N=25).

Author (Year)	JBI Critical Appraisal items											
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Percentage of yes
Adrianto et al., 2022	+	+	+	+	+	+	+/-	+	+	+/-	+	81.82%
Ahmad & Vismara, 2021	+/-	+	+/-	+/-	+	+	+	+/-	NA	+	+	54.55%
Ansariniaki et al., 2021	+	+/-	+	+	+	+	+/-	+	NA	+	+/-	63.64%
Cevik et al., 2022	+	+	+	+	+	+	+	+/-	+	+	+	90.91%
Chen et al, 2022	+	+	+	+	+	+	+	+	+	+	+	100%
Chmielewska et al., 2021	+/-	+	+	+	+	+	+	+	+	+	+	90.91%
Delanerolle et al., 2023	+	+	+	+	+/-	+/-	+	-	+	+	+/-	63.64%
Demissie et al., 2021	+	+	+	+	+	+	+	+/-	+	+	-	81.82%
Fan et al., 2021	+	+	+	+	+	+/-	-	+	+	+	-	72.73%
Gao et al., 2022	+	+	+	+	+	+	+	+	+	+	+	100%
Ghazanfarpour et al., 2022	+	+/-	+/-	+	+	+	+	-	+	+	+	72.73%
Hessami et al., 2020	+	-	+	+	-	-	+	+	+	+	+	72.73%
Iyengar et al., 2021	+	+	+	+	+	+	+	+	+	+	+	100%
Lin et al., 2022	+	+	+	+/-	+	+	+	+	-	+	+	90.91%
Low et al., 2023	+	+	+/-	+/-	+	+	+	+	NA	+	+	72.73%
Muñoz-Vela et al., 2023	+	+	+	+	+	+	+	+/-	NA	+	+	81.82%
Rahimi et al., 2020	+	+/-	+	+	+	+	+	+	NA	+	+	90.91%
Safi-Keykaleh et al., 2022	+	+	+	+	+	+	+	+	+	+	+	100%
Shorey et al., 2021	+	+	+	+	+	+	+	+	+/-	+	+	90.91%
Sun et al., 2021	+/-	+	+	+	+	+	+	+	+	+	+	90.91%
Thakur et al., 2022	+	+	+/-	-	-	-	-	+	NA	+	-	36.36%
Tomfohr-Madsen et al., 2021	+	+	+	-	+	-	+	+	+	+	+	81.82%
Usmani et al., 2021	+	+	-	-	+	+	+	+	NA	+	+	72.73%
Wall et al., 2022	+	+	+	-	+	+/-	+/-	+	NA	+	+	63.64%
Yan et al., 2020	+	+	+	+	+	+	+	+	-	+/-	+	81.82%

6.3.3 Quality of the evidence

The strength of evidence, according to the GRADE system (Balshem et al., 2011), was measured only in one SR. This SR had postpartum depression as the outcome (Low et al., 2023). In this study, the certainty of evidence of the 25 primary articles revised was considered very low due to the observational design of the studies, inconsistency and imprecision. GRADE was not measured and mentioned in any MA.

6.3.4 Characteristics of the included systematic reviews and meta-analysis

The characteristics of the SR&MA included in this umbrella review were summarized in Appendix 6.4. Considering the outcome, 23 SR&MA reported the prevalence of depression, whereas 19 SR&MA synthesized data on the prevalence of anxiety. Considering target population, 8 SR&MA focused on pregnant women, 5 reviewed data on postpartum, and 12 included studies both on pregnant and postpartum women. Considering the publication date, 73 studies were published in 2020, 108 in 2021, and 17 in 2022. The SR&MA included a number of primary studies which varied within the range from 8 to 90. A total of 198 unique primary studies were detected in the included SR&MA. The SR&MA involved data on 45 countries and five continents: Oceania (n= 1), Africa (n= 4), America [South America (n= 10), North America (n= 28)], Europe (n= 50), Asia (n= 103), along with cross-continents studies (n= 2). Several instruments were used for the assessment of depression and anxiety, of which self-reported measures (i.e., Edinburgh Postnatal Depression Scale (EPDS); State Trait Anxiety Inventory (STAI)), diagnostic tools, and specific instruments adapted or created for COVID-19 pandemic (i.e., The Corona Disease Anxiety Scale (CDAS)). Details on instruments and countries are presented in Appendix 6.4.

6.3.5 Characteristics of the included meta-analyses

The main results of the 12 MAs included in the quantitative synthesis of this overview were presented in Appendix Chapter 6 (A.6.5; A.6.6) according to the outcome (depression and anxiety).

The MAs reported prevalence rates that went from 25% (Fan et al., 2021; Ghazanfarpour et al., 2022) to 40% (Cevik et al., 2022) for antepartum depression; from 17% (Shorey et al., 2021) to 34% (Chen et al., 2022) for postpartum depression; from 17% (Cevik et al., 2022) to 42% (Fan et al., 2021) for antenatal anxiety; and 32-34% for postpartum anxiety (Delenarolle et al., 2022; Gao et al., 2022).

From the MAs, the data of the 129 primary studies were extracted. Of them, the 118 primary articles for which contained the minimum data to perform quantitative synthesis were combined in meta-analysis. Among the total, 55 reported data on antenatal depression, 54 reported data on postpartum depression, 44 provided results on antenatal anxiety and 16 on postnatal anxiety. Data derived from: Oceania (n= 1), Africa (n= 2), South America (n= 9), North America (n= 18), Europe (n= 26), Asia (n= 61) (mainly China, n= 30), and multi-continents (n= 1). Prenatal depression was assessed mainly with EPDS (n= 29), PHQ-9 (n=11), and other instruments (n= 14) (including HADS-D, n= 4; DASS-21-D, n= 2; CES-D, n= 2; DASS-D, n= 1; CES-D-10, n= 1; K10, n=1; Whooley-2, n= 1; SCL90-R, n=1; SDS, n= 1); postpartum depression was measured mainly with EPDS (n= 43), and less with PHQ-9 (n= 9) and others (n= 4) (CES-D, n= 2; CES-D-

10, n= 1; PDSS-SF, n= 1; SDS, n= 1). Prenatal anxiety was assessed with a great variety of instruments: GAD-7 (n= 12), STAI (n= 10), and others (n= 22) (including SAS, n= 6; HADS-A, n= 3; DASS-21-A= 2; PASS, n= 2; BAI, n= 1; K10, n= 1; HAQ, n= 1; PRA, n= 1; SAQ, n= 1; PROMIS, n=1; SCL-90-R, n=1; GAD-2, n= 1; CDAS, n=1). Postnatal anxiety was mainly assessed with GAD-7 (n= 6), STAI (n= 5), and others (n= 5) (BAI, n= 1; DASS-21-A, n=1; K6, n= 1; PASS, n= 1; PSS, n= 1).

6.3.6 Study overlap

Overall, the CCA showed a moderate degree of 10% overlap between the primary studies included in SR&MA. However, when calculated on primary studies included exclusively in MAs, a high degree of 12% was found. On the other hand, when stratified for outcomes the overlap increased up to very high level. In particular, for antenatal and postpartum depression the degree of overlap was 19% and 18%, respectively. On the other hand, for antenatal anxiety and postnatal anxiety the overlap was 19% and 31%, respectively. Figures 6.2, 6.3, 6.4, and 6.5 reported detailed overlap between the studies. Considering these results, it was decided to perform the quantitative synthesis based on data of primary articles extracted from MAs to avoid duplicates and, hence, non-independence of the data.

Figure 6.2

Study overlap for prepartum depression

	Adrianto et al., 2022	Cevik et al., 2022	Fan et al., 2021	Ghazanfarpour et al., 2021	Shorey et al., 2021	Tomfohr-Madsen et al., 2021	Yan et al., 2020
Yan et al., 2020	16.6%	0%	50%	35.7%	52.9%	19%	100%
Tomfohr-Madsen et al., 2021	35.1%	0%	26.8%	13.1%	31.5%	100%	
Shorey et al., 2021	19.5%	6.2%	58.8%	35.7%	100%		
Ghazanfarpour et al., 2021	7.6%	0%	25%	100%			
Fan et al., 2021	16.2%	0%	100%				
Cevik et al., 2022	8.1%	100%					
Adrianto et al., 2022	100%						

Notes: 0%-5%= low overlap; 6%-10%= moderate overlap; 11%-14%= high overlap; >15%= very high overlap

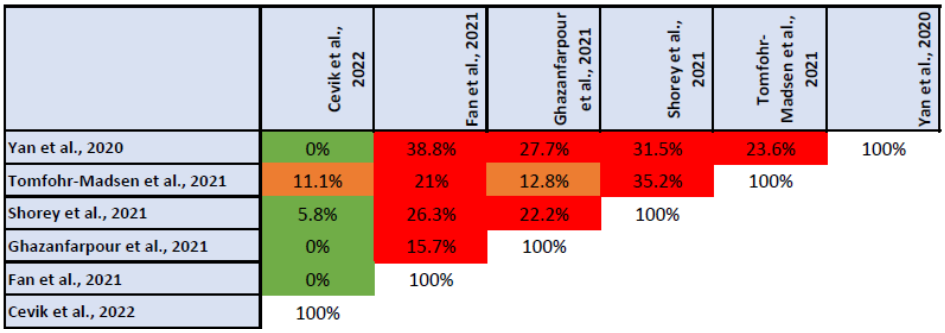
Figure 6.3

Study overlap for postpartum depression

	Adrianto et al., 2022	Chen et al., 2022	Gao et al., 2022	Delenarolle et al., 2021	Lin et al., 2022	Safi-Keykaleh et al., 2021	Shorey et al., 2021
Yan et al., 2020	10%	0%	10.3%	10.3%	7.4%	8%	33.3%
Shorey et al., 2021	14.2%	8.3%	17.2%	13.3%	10.7%	16%	100%
Safi-Keykaleh et al., 2021	34.4%	23%	47.2%	32.5%	21.9%	100%	
Lin et al., 2022	21.6%	6%	17%	19.5%	100%		
Delenarolle et al., 2021	54.8%	12.1%	45%	100%			
Gao et al., 2022	54.8%	19.3%	100%				
Chen et al., 2022	17.3%	100%					
Adrianto et al., 2022	100%						

Notes: 0%-5%= low overlap; 6%-10%= moderate overlap; 11%-14%= high overlap; >15%= very high overlap

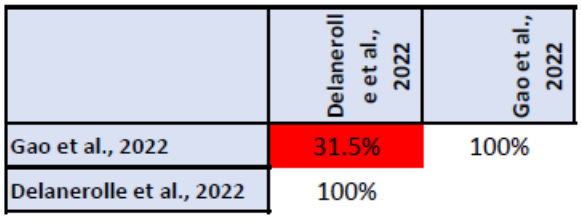
Figure 6.4 Study overlap for antenatal anxiety



	Cevik et al., 2022	Fan et al., 2021	Ghazanfarpour et al., 2021	Shorey et al., 2021	Tomfohr-Madsen et al., 2021	Yan et al., 2020
Yan et al., 2020	0%	38.8%	27.7%	31.5%	23.6%	100%
Tomfohr-Madsen et al., 2021	11.1%	21%	12.8%	35.2%	100%	
Shorey et al., 2021	5.8%	26.3%	22.2%	100%		
Ghazanfarpour et al., 2021	0%	15.7%	100%			
Fan et al., 2021	0%	100%				
Cevik et al., 2022	100%					

Notes: 0%-5%= low overlap; 6%-10%= moderate overlap; 11%-14%= high overlap; >15%= very high overlap

Figure 6.5 Study overlap for postnatal anxiety



	Delanerolle et al., 2022	Gao et al., 2022
Gao et al., 2022	31.5%	100%
Delanerolle et al., 2022	100%	

Notes: 0%-5%= low overlap; 6%-10%= moderate overlap; 11%-14%= high overlap; >15%= very high overlap

6.3.7 Narrative main findings of SR&MA

Moderate to severe levels of perinatal depression and anxiety were generally reported by SRs during the COVID-19 pandemic (Ahmad & Vismara et al., 2021; Ansariniaki et al., 2021; Iyengar et al., 2021). An increase in perinatal depression and anxiety during the COVID-19 pandemic than before was supported (Ahmad & Vismara et al., 2021; Chmielewska et al., 2021; Sun et al., 2021; Thakur et al., 2022), though some contrasting results emerged (Iyengar et al., 2021). Wide variation among the prevalence rates reported by the studies was found (Demissie et al., 2022; Low et al., 2023; Muñoz-Vela et al., 2023; Sun et al., 2021; Usmani et al., Wall et al., 2022). Assessment tools were commonly considered one of the factors that influenced heterogeneity among the studies (Demissie et al., 2022; Sun et al., 2021).

Considering anxiety, SRs suggested that three different configurations of perinatal anxiety were investigated by the studies during COVID-19 pandemic: (1) general anxiety, (2) COVID-19-related anxiety, (3) pregnancy-related anxiety (Ansariniaki et al., 2021).

6.3.8 Global prevalence of antenatal and postnatal depression

The pooled prevalence of antenatal depression (n = 55) was 29% (95% CI= 25% - 33%). The study with the highest prevalence was the study by He et al. (2020) conducted in China (71%; 95 CI= 69% - 73%) and the study with the lowest prevalence was the study by Berthelot et al. (2020) conducted in Canada (2%; 95% CI= 2% - 3%). There was considerable heterogeneity between studies (I^2 = 99.39%; 95% CI= 99% - 99%) and it was significant (Q_{54}= 8878.56; $p < 0.001$). The forest plot of the pooled prevalence of prenatal depression is presented in Figure 6.6.

Regarding postpartum depression (n = 54), the pooled prevalence was 26% (95% CI = 23% - 30%). The study with the highest prevalence was the study conducted in Poland by Chrzan-Dętkoś et al. (2021) with a prevalence of 74% (95% CI= 64% - 83%). On the other side, Janevic et al. (2021) (6%; 95% CI= 3% - 10%) and Silverman et al. (2020) (6%; 95% CI= 5% - 9%) were the studies with the lowest prevalence. Both were conducted in the US. Again, the heterogeneity was considerable (I^2 = 98.18%; 95% CI= 98% - 98%) and significant (Q_{53}= 2906.01; $p < 0.001$). Egger's test indicated publication bias for antenatal depression (bias, 0.27; 95% CI= 0.22 - 0.32; $p < 0.001$) and for postnatal depression (bias, 0.26; 95% CI= 0.21 - 0.32; $p < 0.001$). The forest plot of the pooled prevalence of postpartum depression is presented in Figure 6.7.

6.3.8.1 Sub-groups results for antenatal and postnatal depression

The highest pooled prevalence of antenatal (44%; 95% CI= 36% - 53%) and postpartum (38%; 95% CI= 35% - 41%) depression was found in Africa. However, only one study performed in Africa has been included in the analysis. The lowest and similar pooled prevalence rates of antenatal depression were found in Europe (25%; 95% CI= 19% - 32%), South America (25%; CI= 22% - 28%) and North America (26%; CI= 16% - 37%). In contrast, the lowest pooled prevalence of postpartum depression was found in Asia (22%; CI= 17 – 27%). If we compare the prevalence rates of antenatal and postnatal depression for each continent, two main patterns emerged. For Africa and Asia, the antenatal depression pooled prevalence was higher than the postpartum depression pooled prevalence. In contrast, in Europe and South America the antenatal depression pooled prevalence was lower than the postpartum depression pooled prevalence. For North America the percentages of antenatal and postpartum depression prevalence were similar.

Regarding the instrument, in the case of antenatal depression the pooled prevalence was similar across the subgroups (EPDS, PHQ-8 and other instruments) and it varied between 27% (Others instrument; 95% CI= 23% - 31%) to 30% (EPDS; 95% CI= 24% - 36%). For postnatal depression, the pooled prevalence varied between 18% (PHQ-9; 95% CI= 10% - 28%) to 32% (other instruments; 95% CI= 25% - 39%). Subgroup analyses by continent and instrument for perinatal depression were reported in Table 6.2.

Figure 6.6

Forest plot of the pooled prevalence (proportion) of antenatal depression

Figure 6.7

Forest plot of the pooled prevalence (proportion) of postpartum depression

Table 6.2

The pooled prevalence of antepartum and postpartum depression by continent and instrument

Subgroup analysis	n	Proportion	Proportion 95% CI	p-value	I^2	Between-group heterogeneity
Country						
Antenatal depression						
Africa	1	0.44	0.36 to 0.53	-	-	Q_5=2091.53; p< 0.001
Asia	32	0.31	0.26 to 0.36	<0.001	99.40%	
Europe	9	0.25	0.19 to 0.32	<0.001	97.69%	
North America	11	0.26	0.16 to 0.37	<0.001	99.22%	
South America	1	0.25	0.22 to 0.28	-	-	
Multiplies countries	1	0.31	0.30 to 0.32	-	-	
Postnatal depression						
Africa	1	0.38	0.35 to 0.41	-	-	Q_5=383.70; p< 0.001
Asia	24	0.22	0.17 to 0.27	<0.001	97.51%	
Europe	15	0.32	0.25 to 0.39	<0.001	98.68%	
North America	9	0.23	0.13 to 0.34	<0.001	98.48%	
South America	4	0.35	0.29 to 0.41	0.01	75.43%	
Multiplies countries	1	0.31	0.28 to 0.33	-	-	
Instrument						
Antenatal depression						
EPDS	29	0.30	0.24 to 0.36	<0.001	99.17%	Q_2=2187.15; p< 0.001
PHQ-9	11	0.29	0.22 to 0.35	<0.001	99.50%	
Others	14	0.27	0.17 to 0.37	<0.001	99.01%	
Postnatal depression						
EPDS	43	0.27	0.23 to 0.31	<0.001	98.30%	Q_2=188.41; p< 0.001
PHQ-9	6	0.18	0.10 to 0.28	<0.001	97.66%	
Others	4	0.32	0.25 to 0.39	<0.001	87.92%	

6.3.9 Global prevalence of antenatal and postnatal anxiety

The pooled prevalence of antenatal anxiety was 31% (n= 44; 95% CI= 26% - 37%) (Figure 6.8). The prevalence of antenatal anxiety ranged from 2% registered in China (95% CI= 1% - 4%; Lin et al., 2021) to 77% reported in Italy (95% CI= 70% - 83%; Mappa et al., 2020). The heterogeneity was considerable (I^2 = 99.27%; 95% CI= 99% - 99%) and significant (Q_{43}= 5886.84; p < 0.001). Similarly, the pooled prevalence of postnatal anxiety was 31% (n= 16; 95% CI= 24% - 39%) (Figure 6.9). It ranged from 10% of a study conducted in Belgium (95% CI= 9% - 11%; Ceulemans et al., 2021) to 61% of a study conducted in UK (95% CI= 57% - 65%; Fallon et al., 2021). The heterogeneity was considerable (I^2 = 99.08%; 99% CI= 98% - 99%) and significant (Q_{15}= 1638.21; p < 0.001). Egger's test indicated significant publication bias, for

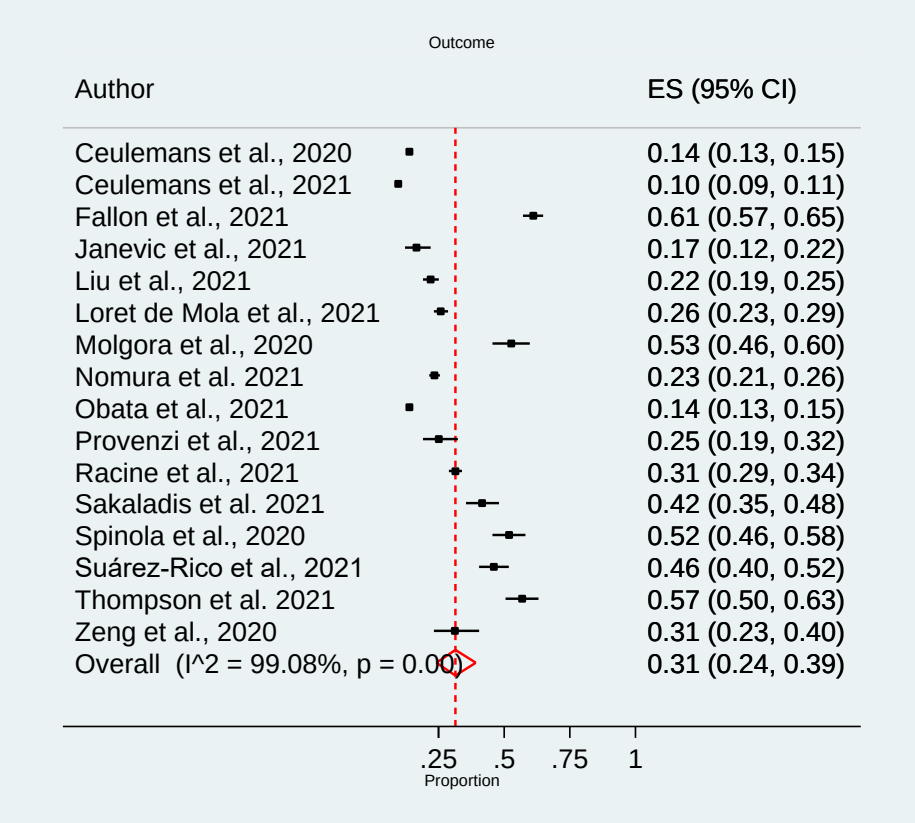
antenatal anxiety (bias, 0.24; 95% CI= 0.17 – 0.31; $p < 0.001$) and for postnatal anxiety (bias, 0.26; 95% CI= 0.12 - 0.39; $p = 0.001$).

Figure 6.8.

Forest plot of the pooled prevalence (proportion) of antenatal anxiety

Figure 6.9

Forest plot of the pooled prevalence (proportion) of postnatal anxiety



6.3.9.1 Sub-groups results for antenatal and postnatal anxiety

Regarding antenatal anxiety, Oceania (42%; 95% CI= 35% - 49%) and Europe (41%; 95% CI= 32% - 51%) presented the highest pooled prevalence and Asia presented the lowest (23%; 95% CI= 18% - 19%). A similar pattern was found for postnatal anxiety, being Oceania (42%; 95% CI= 35% - 48%), Europe (34%; 95% CI= 19% - 51%), and North America (34%; 95% CI= 23% - 46%) the continents with the highest pooled prevalence and being Asia (14%; 95% CI= 13% - 16%) the continent with the lowest. Apart for Oceania, for the other continents the pooled prevalence of antenatal anxiety resulted higher than the pooled prevalence of postnatal anxiety.

The pooled prevalence varied for both prenatal and postnatal anxiety depending on the instrument, with the STAI being the measure associated with the highest prevalence (prenatal= 58%; 95% CI= 43% - 71%; postnatal= 43%; 95% CI= 29% - 58%). Subgroup analyses by continent and instrument for perinatal anxiety were reported in Table 6.3.

Table 6.3.

The pooled prevalence of antenatal and postnatal anxiety by continent and instrument

Subgroup analysis	n	Proportion	Proportion 95% CI	p-value	I^2	Between-group heterogeneity
Country						
Antenatal anxiety						
Asia	28	0.23	0.18 to 0.29	<0.001	99.03%	Q_4=848.98; *p< 0.001*
Europe	17	0.41	0.32 to 0.51	<0.001	99.36%	
North America	11	0.36	0.23 to 0.49	<0.001	99.29%	
South America	3	0.33	0.18 to 0.49	-		
Oceania	1	0.42	0.35 to 0.48	-		
Postnatal anxiety						
Asia	2	0.14	0.13 to 0.16	-		Q_4=848.98; *p< 0.001*
Europe	6	0.34	0.19 to 0.51	<0.001	99.51%	
North America	5	0.34	0.23 to 0.46	<0.001	97.31%	
South America	2	0.24	0.23 to 0.26	-		
Oceania	1	0.42	0.35 to 0.48	-		
Instrument						
Antenatal anxiety						
GAD-7	12	0.21	0.14 to 0.29	<0.001	99.29%	Q_2=792.64; *p< 0.001*
STAI	10	0.58	0.43 to 0.71	<0.001	98.09%	
Other	22	0.26	0.17 to 0.35	<0.001	99.32%	
Postnatal anxiety						
GAD-7	6	0.19	0.13 to 0.25	<0.001	97.77%	Q_2=834.80; *p< 0.001*
STAI	5	0.43	0.29 to 0.58	<0.001	97.84%	
Other	5	0.32	0.22 to 0.52	<0.001	98.99%	

6.4 Discussion

The current umbrella review provided an overall synthesis of the global prevalence of depression and anxiety in pregnant and postpartum women during the COVID-19 pandemic. The findings showed that antenatal and postpartum depression affected one in four women (29% and 26%), whereas antenatal and postnatal anxiety affected one in three women (31% and 31%). A high heterogeneity was found both for overall prevalences and sub-group analyses. A risk of publication bias was also found. Differences emerged between continents, with Africa having the highest prevalence of perinatal depression and Oceania and Europe the highest prevalence of antenatal and postnatal anxiety. Differences also emerged considering instruments used to assess prevalence, especially in the case of antenatal anxiety.

The current umbrella review retrieved information from 25 SR&MA including 198 primary studies from 45 countries and five continents. Most of the included SR&MA (n= 20) showed a high quality, scoring

>63% in the JBI assessment. The other 4 SR&MA showed a medium quality. Nevertheless, the strength of evidence, according to GRADE, was rarely assessed in SR&MA. The only SR which assessed GRADE reported a very low strength. GRADE was no assessed in any MAs.

The global prevalence of antenatal and postpartum depression symptoms was 29% and 26%, respectively. Comparing these results with pre-pandemic data, showing a 20.7% prevalence of antenatal depression (Yin et al., 2021) and 17% of postpartum depression (Hahn-Holbrook et al., 2018; Shorey et al., 2018), the prevalence during the COVID-19 pandemic appeared higher. Moreover, the pooled prevalence of antenatal anxiety was 31%, resulting higher if compared to pre-pandemic data (22.9%, Dennis et al., 2017). Even in the case of postnatal anxiety the pooled prevalence (31%) was higher than the 15% reported before the COVID-19 pandemic (Dennis et al., 2017).

The different prevalence rates observed among continents might be mainly attributed to: (a) COVID-19-related aspects, like restrictions imposed by governments to limit the contagion, or the impact of COVID-19 infection in terms of mortality and contagion rates; (b) cultural differences (Mesquita et al., 2023; Evagorou et al., 2016; Posmontier & Horowitz, 2004).

As emerged before the COVID-19 pandemic (Yin et al., 2021), Africa was the continent with the highest prevalence of antenatal and postpartum depression (Yin et al., 2021= 36.2%; the current umbrella review= 44%). With Africa being the continent with the lowest Gross World Product per capita (IMF, 2021), this result can be read in continuity with studies that reported higher prevalence of perinatal depression in low-income countries (Dennis et al., 2017; Mitchell et al., 2023; Yin et al., 2021). The current result was also considerably higher than the pooled prevalence of depression observed in pregnant (22.8%) and postpartum women (21.2%) in Africa before the COVID-19 spread (Endomba et al., 2021). Nevertheless, in the current umbrella review, data on perinatal depression in Africa referred to just one study. Hence, Africa context was under-represented in the set of the included studies. Europe and America, inversely, showed the lowest levels of antenatal depression, as was observed before the COVID-19 spread (Yin et al., 2021= 17.9% (Europe); 19.6% (America); the current umbrella review= 25% (Europe); 26% (North America); 25% (South America)). For postpartum depression, prevalence rates increased than pre-pandemic era, especially in Europe and South America (Shorey et al., 2018). In Europe, the pooled prevalence of postpartum depression (32%) was far from prevalence rates observed before pandemic, estimated at 8% (Shorey et al., 2018). In South America, the 19% of postpartum depression (Shorey et al., 2018) observed before the pandemic increased till 35% in the current umbrella review. In regard to this point, one of the main differences between the current overview and the Shorey et al. (2018) meta-analysis regards the eligibility criteria. Unlike Shorey et al. (2018), considering the aims and the procedure of the current study focused on SR&MA, primary studies were not reviewed directly and studies which assessed depression in women with previous history of postpartum depression or other at-risk factors, such as preterm birth were not excluded. On the other hand, the lowest pooled prevalence (22%) of postpartum depression observed in Asia might be read in line with cross-cultural perspective. This perspective previously identified two main approaches in addressing postpartum care of women and children after childbirth: Ethnokinship or Technocentric (Evagorou et al.,

2015). Technocentric cultures use technology and medical rituals to monitor the well-being of mothers and infants after childbirth (Posmontier & Horowitz, 2004). On the other hand, Ethnokinship cultures - which characterized mostly Asian countries - pay specific attention to the support rituals towards mothers (Posmontier & Horowitz, 2004). Common aspects of these rituals, activated during postpartum, involved the partial retire from social life which in some cases represents a proper quarantine in which the woman has to rest to restore the balance with her body and soul, as well as the co-habitation with the mother-in-law and other family members (sisters, grandmother) who address care duties toward infants and household (Murray et al., 2015; Shorey et a., 2018; Evagorou et al., 2015). Therefore, it may be possible that these postpartum support-oriented cultural praxes, frequent in Asia, buffered the impact of COVID-19-related restrictions on mothers' mental health during postpartum.

On the other hand, the highest prevalence of antenatal anxiety was found in Europe, as well as in Oceania (41%, 42%, respectively). Moreover, the highest prevalence of postnatal anxiety was observed in Oceania (42%), Europe and North America (36% and 36%). These results are in contrast with the Dennis et al. (2018) meta-analysis conducted before the COVID-19 pandemic which showed that higher levels of perinatal anxiety could be found in low-middle income countries than high income countries. It can be hypothesised that unlike low-middle income countries that are generally more prone to be affected by social collective crisis, the COVID-19 pandemic in the Western countries represented an unsuspected crisis which increased anxiety symptoms prevalence in women in the perinatal period. In addition, in Europe, Oceania and North America the main assistance to pregnancy and postpartum experience is given by the medical services, which had had to address a great number of challenges during the COVID-19 pandemic. Differently, Asia showed the lowest levels of antenatal and postnatal anxiety, confirming a trend previously shown in literature (Insan et al., 2020; Shorey et al., 2020), and observed also in general population (Pashazadeh Kan et al., 2021). As for depression, low levels of anxiety in Asian women in the perinatal period might be partially explained by the family-oriented culture which allowed women to have the support of family members even in periods of lockdown and social isolation, being social support one of the most important predictors of perinatal anxiety (Leach et al., 2016).

For antenatal depression, similar prevalence rates were found comparing different instruments, such as EPDS, PHQ-9 and others, whereas more variations emerged for the prevalence of postpartum depression. In particular, PHQ-9 resulted associated with the lowest prevalence of postpartum depression (18%), compared to the EPDS (27%) and other instruments (32%). In general, EPDS, PHQ-9, as well as CES-D and DASS-21-D are considered moderate accurate in detecting postpartum depressive symptoms, though EPDS is generally considered the most accurate and specific self-report tool to detect depression in the postnatal period (Davis et al., 2013).

On the other hand, STAI emerged as the assessment tool that corresponded to the highest prevalence of prenatal and postnatal anxiety. The STAI was considered a robust, discriminant, and valid measure of perinatal anxiety for research purposes, though the risk of overlapping with depression symptoms and concerns for its use for screening during pregnancy (Meades & Ayers, 2011). In fact, STAI is a general

measure for trait and state anxiety, often used in the perinatal period. The narrative results of the current overview showed that during the COVID-19 pandemic, perinatal anxiety was assessed considering different approaches focused on: general anxiety, COVID-19-related anxiety, or pregnancy-related anxiety (Anderson et al., 2019). These results are consistent with the invite of scientific literature in critical reflecting on the use of anxiety scales in the antenatal period, considering the need for measures that integrate general anxiety manifestations and pregnancy-specific anxiety symptoms (e.g., high partum-related fears and worries) (Sinesi et al., 2019). In this debate, some authors suggested that general anxiety measures assess somatic symptoms that may be hardly differentiated from typical pregnancy symptoms (nausea, vomiting, and dizzling) (Meades & Ayers, 2011; Sinesi et al., 2019), which are incidentally also possible symptoms of COVID-19 infection. Thus, a critical stance in the consideration of the measure used by the studies to assess antenatal anxiety during the COVID-19 pandemic should be applied.

6.4.1 Limits

There are several limitations of this overview.

One of the main limitations is the considerable heterogeneity between studies, even after sub-group analyses. First, this variability could be partially imputed to methodological differences among the studies. For example, (a) the different sample sizes in primary studies, which ranged from 27 to 19515 participants; (b) sample characteristics, such as age, parity, trimester of pregnancy; (c) and the variety of types of instruments and cut-offs considered between the studies. Due to the paucity of information that could be retrieved from the included meta-analyses, it was not possible to provide prevalence rates stratified for pregnancy trimesters. Delanarolle et al. (2023) is the only meta-analysis that provided separated data for trimesters. It observed the highest prevalence of anxiety in the third trimester, confirming previous data (Delenarolle et al., 2023). Conversely, the first trimester appeared as the most at-risk for symptoms of depression (Delenarolle et al., 2023), in contrast with previous studies that did not find differences in depression between gestational trimesters (Yin et al., 2021). In addition, the data were not re-analysed considering the months after postpartum. Gao et al. (2022) was the only study that reported increased levels of depression after six weeks from childbirth compared to within the first six weeks postpartum. Furthermore, MAs included studies that measured depression and anxiety symptoms mainly through self-report scales despite clinical diagnostic tools. Thus, the results of the current umbrella review should not be used to draw inferences about the prevalence of psychiatric diagnoses in women in the perinatal period. In addition, in the cases in which meta-analyses reported both state and trait anxiety scores measured through the STAI, only state anxiety was included in the quantitative synthesis to avoid overlap. Second, the high heterogeneity between studies could also reflect the diversity of the perinatal experiences lived by women in relation to the impact of the COVID-19 pandemic, as well as it was found for other vulnerable populations, like health care workers (Fernandez et al., 2021). First, studies were included regardless of the phase or the restricted measures in force in countries during the data collection. Hence, data collected during total, partial, and non-lockdown periods had been aggregated. Among the eligibility criteria it was stated that SR&MA

had to include collected data during the COVID-19. This criterion was based on the authors' declarations and did not follow strict time or contextual criteria. Second, it was not part of the scope of this umbrella review to present evidence to support the notion that depression and anxiety symptoms increased during the COVID-19 pandemic in comparison to before. Although it did not represent an aim of the current research, contrasting results emerged from SR&MA reviewed. Some studies suggested that perinatal women during the COVID-19 pandemic were more likely to experience anxiety and depression symptoms than before (Sun et al., 2021; Cevik et al., 2022). Contrastingly, other results on pregnant women showed no difference in depression and anxiety levels before and during the COVID-19 pandemic (Hessami et al., 2020). Hence, not firmly conclusions can be drawn on this point.

Another limitation regarded the robustness of the results based on continents, due to high heterogeneity and the paucity of data available for some geographical areas. The few numbers of published papers in Africa and Oceania represented a gap in scientific literature that limits the availability of evidence-based research in these contexts and consequently impacted the consolidation of valid policies. In addition, the current study did not consider the differences in ethnicity within countries. Previous research highlighted in fact that immigrant women were more at risk for perinatal depression and anxiety than non-immigrant populations (Corbani et al., 2017). This point was not examined in the current overview. Thus, the general findings of the overview may not be generalizable to minority populations.

Moreover, the findings are inconclusive due to the effect of publication bias. Publication bias suggested that studies with significant results were more likely to be published than those with non-significant findings (Stuck, 1998). Thus, these results may provide an over- or under-estimation of prevalence compared to the true one. This finding could be transformed in invitations for authors and editors to publish negative significant results and to include un-published articles in SR&MA.

In addition, it is worth to notice that, in absence of more specific tools, some guidelines, such as PRIOR framework (Gates et al., 2022) JBI checklist (Aromataris et al., 2015) and GRADE system (Balshem et al., 2011) were adapted to the current research question, though they were originally designed for other research fields. In particular, to date, some efforts are going to be invested in adapting PRIOR framework, originally designed for meta-studies and systematic reviews on interventions, to epidemiological and prevalence-based studies (Belbasis et al., 2023). In addition, although a medium-high quality was attributed to the included SR&MA through JBI checklist appraisal, only one SR has assessed the strength of evidence by GRADE (Low et al., 2023), showing a very low level between the studies. One possible explanation for this point is that GRADE still has a scarce application on prevalence studies in absence of formal guidelines (Borges et al., 2020). The adoption of GRADE is recommended by the authors for future SR&MA on perinatal depression and anxiety prevalence to improve the quality of reported evidence. Similarly, JBI Critical Appraisal Checklist, used to assess the methodological quality of the SR&MA is a system created in and for the medical research field, though commonly used in the psychology research field. It is hoped, in the future, to have more specific tools for the quality appraisal of SR&MA.

Finally, the extraction and analysis procedure of the current study partially deviated from the PROSPERO protocol. In particular, following the overlap evaluation, it was decided to re-define the procedure of the quantitative synthesis to contrast the very high overlap emerged. Hence, the calculation of the pooled prevalence from the data of primary studies extracted from included MAs was performed. This choice had two main consequences on the level of procedure: (a) the extraction of more data from MAs (the number of events and sample size of each primary studies included in MAs), and (b) the possibility to perform quantitative synthesis also for postnatal anxiety for which 2 MAs were found (16 primasy studies), though a minimum of 4 MAs was fixed as requirement to perform quantitative synthesis.

6.4.2 Highlights and implications

The current study was the first umbrella review on the prevalence of antenatal and postnatal depression and anxiety during the COVID-19 pandemic. The study included several SR&MA and a large number of primary studies from 45 countries, covering five continents. A highly sensitive search was pursued including several electronic databases, and a combination of different search terms related to the topic of interest, and no exclusion criteria based on language. Rigor of the procedure and the report was guarantee following PRISMA and PRIOR guidelines, and a precise qualitative assessment was performed to ensure the quality of the included systematic reviews (JBI Critical Appraisal Checklist and GRADE).

This overview has several implications that could be useful for decision-making policies in future pandemics or public health crises. First, these results confirm the importance in monitoring perinatal psychological distress during public health crises (IAWG, 2023). In this sense, perinatal psychological health during collective crises must be considered a vital public health concern (Motrico et al., 2022; 2023).

Second, the results suggest the importance of strengthening or introducing programs for preventing and managing perinatal anxiety and depression in the post-pandemic era. Clinical practice guidelines on perinatal psychological distress must consider the impact of the pandemic or public health crisis on psychological health (Motrico et al., 2022). The cultural and organizational differences between countries can still lead to legitimate variations in clinical recommendations, even in the presence of the same evidence (Milgrom et al., 2013; Martín-Gómez et al., 2022). Such attempts may promote adequate actions to respond to the increase of psychological distress in mothers, preventing the cascading effects on women, parents, and children's health (Stein et al., 2012; Zhang et al., 2023).

Conclusion

Conclusion in the Italian language can have different meanings: it means to end something by reconstructing the preliminary steps, it means to summarize crosswise the logical consequences of a discourse, but it also means to consider the effects, to translate into reality. I hope these conclusions will restore the sense of this doctoral project on these three levels: a temporal level, tracing the intertwining of the studies through the phases of the COVID-19 pandemic; a transversal level, summarizing the common issues across the different studies; and a concrete level, discussing the implications of this project's findings for research, clinical practice, services and policies.

Conclusion: reconstructing the "meaning" of the studies along temporalities

This project has tried to integrate at least three temporalities: the temporality of the maternal perinatal experience, the COVID-19-related temporality and the temporality of the research and of the researcher. For this reason, it has required several steps forward and back in planning the research design. For me, it has led to continuous attempts to find balance among multiple transitions. It has represented a frustrating and motivating challenge of the project that have tried to address the complexity of living the perinatal experience during the pandemic. Considering the sequence of the studies, the first study of this project focused on the first year of the COVID-19 virus spread in Italy. The study shed light on the wide effects of the COVID-19 pandemic on the psychological health of pregnant and postpartum women in Italy, through a systematic synthesis of the literature. This study helped in orienting further primary studies considering the gaps and the main issues observed in the scientific literature on the phenomenon of interest, in methodological and content terms. On this basis, the second study, assuming a gender sensitive and "women-centered" perspective, explored in-depth the maternal perinatal experience through a qualitative longitudinal design, from the "second wave" of COVID-19 spread to the end of the public health emergency in Italy. With an explorative function, this study highlighted the health needs of pregnant and postpartum women during different phases of the COVID-19 pandemic. In particular, this research shed light on emotional paradoxes that characterized the experience of motherhood during the COVID-19 pandemic, as well as some psycho-social issues scarcely studied in the Italian context. The second study was intertwined with the third study. It was a cross-sectional study on the impact of COVID-19 on maternal psychological distress at the end of the health emergency in Italy. In brief, the third study suggested that COVID-19-related fears continued to influence perinatal psychological health even at the end of the public health emergency in Italy, but through the mediation of the COVID-19-related post-traumatic impact and loneliness. Finally, the fourth study assumed a global perspective, providing an umbrella review of the prevalence of antenatal and postnatal depression and anxiety during the COVID-19 pandemic. This study, which involved the synthesis of 25 SR&MA including 198 primary studies, was possible thanks to a research network that involved the University Federico II and the Universidad Loyola (Seville). The umbrella review provided global coordinates on the burden of perinatal psychological distress during the pandemic, underlining also the main limits of the research in that field, such as high heterogeneity and publication bias.

Conclusion: the main issues on the psychological health of women in perinatal period during the COVID-19 pandemic

Some transversal findings emerged from the research studies, sustainable with a moderate level of accuracy. In general, the findings that emerged from the current PhD studies are consistent with the indications provided by the WHO (2022) in the "*Guide for the integration of perinatal mental health in maternal and child health services"* where pandemics were included in cases of "special needs".

First, in a broad sense, the current project contributed to exploring and synthesizing the burden of psychological distress lived by pregnant and postpartum women during the COVID-19 pandemic. In particular, the umbrella review showed clearly that perinatal psychological distress needs to be considered in this post-pandemic era, more than ever, a health global priority. It suggested that, during the COVID-19 pandemic, antenatal and postpartum depression affected one in four women, with prevalence rates of 29% and 26%, respectively. On the other side, the prevalence of antenatal and postnatal anxiety was 31%, affecting one in three women. Although the study was not focused on clinical diagnoses, it showed the importance in monitoring also the sub-clinical levels of distress in women in the perinatal period, for the cascading well-documented effects that they have on women's and children's wellbeing. The perinatal psychological distress observed during the pandemic in Italy (from the systematic review) and the world (from umbrella review) was in general higher than what was observed before the COVID-19 pandemic (Cena et al., 2020; Dennis et al., 2017; Shorey et al., 2018; Yin et al.; 2021). This finding cannot be ignored, and it should represent an important first step for future post-pandemic research. However, the secondary studies reported in this dissertation did not solve the problem of heterogeneity of results in this field. The high variability of data emerged in Italy and the high heterogeneity estimated globally – though the performance of sensitivity analyses – suggested that future studies should investigate further possible origins of heterogeneity and eventual methods to control these factors. Among the possible causes of heterogeneity, the findings of the umbrella review suggest paying attention to the definition of perinatal anxiety that could involve different constructs, unlike depression which represents a more solid and clear combination of symptoms in the perinatal field. Beyond the contribution of the systematic syntheses on perinatal psychological distress during the COVID-19 pandemic, the project also provided new data. In particular, to the best of my knowledge, the cross-sectional study presented in this thesis was the only one that assessed perinatal psychological distress, in terms of depression, anxiety, and stress, at the end of the health emergency in Italy. The levels of psychological distress shown in pregnant and postpartum women in this study were consistent with the results of the umbrella review, though the levels of distress found were lower than those observed by other studies in other phases of the COVID-19 pandemic in Italy (Camoni et al., 2022; Lega et al., 2022; Molgora & Accordini et al., 2020; Ostacoli et al., 2020; Saccone et al., 2020; Spinola et al., 2020). This result could depend on the fact that data were collected when the pandemic-related emergency was decreased. This result confirmed the idea that psychological distress in women in the perinatal period is widely influenced by "social" and "collective" crises and emergencies. In addition, the longitudinal qualitative study showed that beyond a clinical diagnosis of mental disorders or sub-clinical

forms of psychological distress, COVID-19 widely influenced maternal well-being. However, the primary studies were focused on small groups of women who, in the majority of the cases, did not present at-risk socio-demographic characteristics. This created limitations in the generalizability of the results, which needed to be added to the replicability's limitations, being the pandemic situation not replicable under the same conditions, fortunately.

Second, the PhD project addressed the possible "traumatic" effects of the COVID-19 pandemic on maternal perinatal psychological health in Italy. In particular, the current project shed light on the scarcity of studies in Italy that considered COVID-19-related post-traumatic distress in pregnant and postpartum women. The cross-sectional study tried to fill this gap in the literature, assessing COVID-19-related post-traumatic impact on women in the perinatal period at the end of the COVID-19 health emergency in Italy. It showed that, even when it did not assume the form of a clinical risk, COVID-19-post-traumatic impact indirectly mediated the effect of COVID-19-related fears on psychological perinatal distress. Worries about the post-traumatic consequences of the COVID-19 pandemic on the maternal role and child's development also emerged from the qualitative study. Based on these results, it is not possible to firmly affirm that COVID-19 pandemic would affect in log-term the psychological health of women who lived the perinatal experience during the pandemic. However, these findings could orient further research in finding "side effects" of the COVID-19 pandemic on maternal psychological health. In a broad sense, the results of this project suggest paying attention to the "traumatic" experiences that a woman can live along her perinatal course - even when these experiences do not meet diagnostic criteria for PTSD - in particular in case of social and collective crises, for the influence they could have on women's psychological health.

Third, the PhD project offered an interpretation of the role played by affects as predictors of perinatal psychological distress during the COVID-19 pandemic. From a psychodynamic perspective, the COVID-19 pandemic increased persecutory anguishes in mothers related to the closeness with others, lived as something potentially dangerous for their children's and own lives, as well as increased depressive anxieties related to the eventual loss of others. As revealed by the systematic review and the cross-sectional study's results, among the COVID-19-related fears, the fears in the interpersonal domains resulted prevalent in pregnant and postpartum women. Qualitative research, instead, in-depth showed the paradox behind maternal fears in the interpersonal domains: from one side, the fears of not having the support of the other and not investing enough in fostering the child's relationships with the outside world in postpartum; on the other side, the fear of the other, not only as a possible source of contagion but also as a possible "intruder" in the mother-child relationship. This emotional paradox that mothers attributed to the perinatal experience during the COVID-19 pandemic, reflected a general and crucial issue in the perinatal clinical field: on one side, the necessity of a "caring" external environment that can support the mothers' needs; and on the other side, an internal disposition of the mother which could help her in benefit of the support provided by renouncing to their omnipotent "saving function" and trusting in the social environment. The tendency to worry for others could lead women to flatten their self-representation to the patriarchal representation which attributes to women the exclusive role of "care" within society, hindering the recognition of needs and distress and limiting the

request for medical and psychological help and support (Austin et al., 2008; Camoni et al., 2020), increasing loneliness experience. At the end of the public health emergency, the persecutory effects of COVID-19-related fears had been confirmed by the cross-sectional study's results. The intensity of the COVID-19-related fears increased the COVID-19-related post-traumatic impact that in turn increased loneliness, and consequently perinatal depression, anxiety, and stress. Specifically, a special mention needs to be reserved for the experience of loneliness lived by pregnant and postpartum women during the COVID-19 pandemic. The findings of the studies prompt to reflect, that beyond the conditions of social isolation, paranoid thoughts, related to the disruption of trust in others (Käll et al., 2020; Masi et al., 2011) increased the experience of loneliness in mothers during the COVID-19 pandemic. In turn, loneliness increased different forms of perinatal psychological distress, assuming the role of a possible trans-diagnostic factor.

Fourth, the project shed light on the risk of obstetric violence and job forced abandonment that the pregnant and postpartum women lived during the COVID-19 pandemic, and that found little representation in the scientific literature in Italy. In a gender sensitive perspective, these phenomena have to be read as a perpetuation of gender-based social violence, often disregarded and minimized in many societies.

Considering the overall project, some transversal limits need to be mentioned. First, I was not able to perform research in clinical and perinatal healthcare contexts, partially due to the COVID-19 restrictions and the state of emergency. This hindered the possibility of creating a research network that could involve services. As much research during the COVID-19 pandemic, snow-balling sampling, online survey and secondary studies represented the most common choices. This made it complex to contextualize results in relation to specific contexts. In addition, the unpredictability of COVID-19 spread has been a difficult challenge. For example, this aspect limited the possibility of extending the periods of data collection and resulted in continuous questioning of project steps.

Conclusion: implications for research, clinical practice, perinatal healthcare services and policies

Finally, the possible implications of the results of the current PhD project for research, clinic, perinatal healthcare services and policies will be presented.

In the research field, the project sustains the value of mixed methods in studying perinatal psychology health. Considering the great number of publications in the perinatal field, systematic secondary studies, at different levels of synthesis, are necessary to provide clear coordinates for orienting global and national policies and guidelines. At the same time, the integration of qualitative and quantitative primary studies offers the possibility to understand the possible negative drifts of the perinatal maternal experience, starting from the recognition of women's needs that can change over time, during the perinatal path and in face of macro-social changes. In methodological terms, in the current project two methods scarcely used in the perinatal psychology research field were performed: qualitative longitudinal analysis, following LIPA paradigm (Farr & Nizza, 2019; Smith, 1994), and robust mediation analysis (Alfons et al., 2022). On one hand, in further research, the LIPA approach could help to explore paths of different forms of parenting that involved different temporalities, such as medically assisted reproduction experiences, gestational surrogates,

and intended parents' experiences. On the other side, robust mediation could find promising applications in perinatal clinical psychology research which often involves clinical constructs that are rarely normally distributed. In terms of instruments, the findings of this project suggest the importance of creating measures to assess the emotional maternal experience. In particular, this project, highlighting the different forms of loneliness experienced by mothers, suggests the importance of creating and validating specific tools to assess "maternal loneliness". In particular, it could be beneficial to create instruments that could assess both the negative and positive characteristics of maternal loneliness. In fact, from a psychodynamic perspective, the "capacity to be alone" (Winnicott, 1958) represents a fundamental competence of the mother to maintain a personal authenticity in the presence of others, which decreases the perception of other's persecutory and helps the woman in her "caring" function. However, tools that can capture positive aspects of maternal loneliness are yet not available. In addition, it is worth noticing that the current project focused specifically on the birthing motherhood experience. However, COVID-19 impacted also other forms of motherhood experience, as well as the experiences lived by fathers and professionals working in maternal care services. Hence, further research on the perinatal field in other "crisis" contexts, should explore the experience of both parents and professionals working in maternal care services to create future directions for the health care praxes. Further studies will be also useful to study the long-term effect of motherhood started during the COVID-19 pandemic on maternal and children's health, as well as on future pregnancies of these women to investigate different developmental trajectories that can go from resilient pathways to distress pathways. Moreover, other studies may explore the "collective heredity" of the COVID-19 pandemic on maternal representations.

Although the current PhD project does not involve any study on psychological intervention, the results of studies can have some implications for the clinical field. From a clinical perspective, the high prevalence of perinatal anxiety and depression registered during the COVID-19 pandemic shows the necessity of the implementation of psychological intervention programs. The role played by the affective maternal experience in predicting psychological distress in mothers suggest not only focus on at-risk conditions but universally via preventive programs (Motrico et al., 2023a). Psychological support interventions should involve mothers in conditions of crisis so that their persecutory and depressive anxieties can be transformed into more tolerable emotions. The "timing" in clinical intervention for women in the perinatal period represented a fundamental aspect. Hence, prevention programs and short- and long-term treatment interventions, which may start during pregnancy and follow the women across different phases of the perinatal experience, need to be implemented. Considering the wide spread of online intervention for pregnant and postpartum women in recent years, the current project also suggests the importance of not losing the focus on the interpersonal domain.

For perinatal healthcare services, the integration of psychological screening and intervention in routine praxes should represent a fundamental step for promoting a global approach to maternal health (Motrico et al., 2022). In this sense, early screening and routine monitoring of the maternal psychological health from pregnancy to postpartum are recommended. In a broad sense, the current project suggests

promoting “caring” environments for pregnant and postpartum women and “re-centering” (Rice, 2022) on parents’ needs the perinatal care services, guaranteeing the rights of both parents of assisting childbirth, promoting a good quality of relationship with health care professionals and incentivizing psychological support for parents. In Italy, this “mission” - a cornerstone of perinatal clinical psychology – was impaired due to the COVID-19 health emergency that overwhelmed healthcare services, which applied asymmetrical procedures to mothers, underestimating their needs. Today’s challenge is to reestablish spaces of freedom and to rethink healthcare procedures and interventions starting from the heredity of the past pandemic. This challenge also involves the concrete integration of psychological preventive and treatment intervention within the offer of perinatal healthcare services. Hence, in this historical post-pandemic period, it could be beneficial to embrace the invitation of Baraitser & Salisbury (2020) to promote “watchful waiting” or “waiting with” in perinatal healthcare services. It means the creation in perinatal healthcare services of spaces of containment in which the presence of trusted others (family members and healthcare professionals) could contain anxious and depressive thoughts of mothers to improve their well-being and sustain their “caring” function.

COVID-19 could be considered as a “collective trauma” that affected interpersonal bonds and for this reason requires a “collective healing”. The high global prevalence of depression and anxiety in perinatal women during the COVID-19 pandemic invites institutions and governments to convergent and adequate actions to respond to the increase of psychological distress in mothers, preventing the cascading effects on women, parents, and children’s health (Motrico et al., 2022). On the level of national policies, in Italy, now more than ever, a “tout court” taking charge of the issues around motherhood and reproductive rights represents a priority. In 2022, Italy showed the lowest national birth rate that has ever registered in the country (Istat, 2023): one of the lowest national birth rates among European countries (Eurostat, 2022). To date, in Italy, becoming a mother penalizes career paths and work field participation (Minello & Cannito, 2023). In addition, women are still the ones who take charge of most of the care duties within the family (INAPP, 2022). Complicit of this situation are the low offer of early childhood services, not capable of accommodating the large demand from the population (Minello & Cannito, 2023), in concert with deep-rooted gender biases on “caring” roles. The support to rights of mothers in Italy has been often used in terms of propaganda by several political parties, but it is rarely the focus of stable policies that could support motherhood.[6] COVID-19 played a role in obstacle a process of cultural and policies’ transformation about women rights in Italy (Minello & Cannito, 2023). The findings of this project shows that the women in their perinatal period during the COVID-19 pandemic felt intensified the responsibilities of their maternal role, organized around a personal and social representation of “containing and caring”. If, on the one hand, maternity during COVID-19 made the women feel generative, on the other hand, this generativity became a

[6] These considerations do not address the issue of people who decide not to have children intentionally, the right to abortion, and the right to parenthood for same-sex families. The discussion of these issues goes beyond the focus of this thesis and is not addressed to avoid the risk of extreme synthesis of important and highly relevant issues in terms of human rights.

burden that affected their psychological and social well-being, in face of a difficulty of the social environment in assuming a caregiving and support function towards mothers. I hope this thesis could contribute, in his small way, to flag the importance in promoting psychological health of mothers and a good quality of perinatal experience though national and international assistance policies in order to create benefits for women, parents, children and society.

References

Adlington, K., Vasquez, C., Pearce, E. *et al.* 'Just snap out of it' – the experience of loneliness in women with perinatal depression: a Meta-synthesis of qualitative studies. *BMC Psychiatry* 23, 110 (2023). https://doi.org/10.1186/s12888-023-04532-2

Ahmad, M., & Vismara, L. (2021). The psychological impact of the COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. *International Journal of Environmental Research and Public Health, 18*(13), 7112. https://doi.org/10.3390/ijerph18137112.

Akgor, U., Fadıloglu, E., Soyak, B., Unal, C., Cagan, M., Temiz, B. E., ... & Ozyuncu, O. (2021). Anxiety, depression and concerns of pregnant women during the COVID-19 pandemic. *Archives of gynecology and obstetrics*, *304*, 125-130. https://doi.org/10.1007/s00404-020-05944-1

Alfons, A., Ateş, N. Y., & Groenen, P. J. (2022). A robust bootstrap test for mediation analysis. *Organizational Research Methods*, *25*(3), 591-617. https://doi.org/10.1177/1094428121999096

Alimoradi, Z., Gozal, D., Tsang, H. W., Lin, C. Y., Broström, A., Ohayon, M. M., & Pakpour, A. H. (2021). Gender-specific estimates of sleep problems during the COVID-19 pandemic: systematic review and meta-analysis. *Journal of sleep research*, *31*(1), e13432. https://doi.org/10.1111/jsr.13432

Alimoradi, Z., Ohayon, M. M., Griffiths, M. D., Lin, C. Y., & Pakpour, A. H. (2022). Fear of COVID-19 and its association with mental health-related factors: systematic review and meta-analysis. *BJPsych Open*, *8*(2), e73. https://doi.org/10.1192/bjo.2022.26

Allegri, B., Brenna, V., Confalonieri, L., Puzzini, A., Nichelatti, M., Piccinini, G., Mazza, U., & Percudani, M. E. (2023). The impact of the second COVID-19 lockdown on anxiety and depressive symptoms in pregnant women: A case study of pregnant women in northern Italy. *Brain, behavior, & immunity - health*, *30*, 100633. https://doi.org/10.1016/j.bbih.2023.100633

Alviggi, C., Esteves, S. C., Orvieto, R., Conforti, A., La Marca, A., Fischer, R., Andersen, C. Y., Bühler, K., Sunkara, S. K., Polyzos, N. P., Strina, I., Carbone, L., Bento, F. C., Galliano, D., Yarali, H., Vuong, L. N., Grynberg, M., Drakopoulos, P., Xavier, P., & Humaidan, P.… Ubaldi, F. M. (2020). COVID-19 and assisted reproductive technology services: Repercussions for patients and proposal for individualized clinical management. *Reproductive Biology and Endocrinology*, *18*(1), 1–7. https://doi.org/ 10.1186/s12958-020-00605-z

Aljaberi, M. A., Lee, K. H., Alareqe, N. A., Qasem, M. A., Alsalahi, A., Abdallah, A. M., Noman, S., Al-Tammemi, A. B., Mohamed Ibrahim, M. I., & Lin, C. Y. (2022). Rasch Modeling and Multilevel Confirmatory Factor Analysis for the Usability of the Impact of Event Scale-Revised (IES-R) during the COVID-19 Pandemic. *Healthcare (Basel, Switzerland)*, *10*(10), 1858. https://doi.org/10.3390/healthcare10101858

Ammaniti, M., Candelori, C., Pola, M., & Tambelli, R. (1995). *Maternità e gravidanza* [Motherhood and pregnancy] Raffaello Cortina.

An, R., Chen, X., Wu, Y., Liu, J., Deng, C., Liu, Y., & Guo, H. (2021). A survey of postpartum depression and health care needs among Chinese postpartum women during the pandemic of COVID-19. *Archives of psychiatric nursing*, *35*(2), 172-177. https://doi.org/10.1016/j.apnu.2021.02.001

Anderson, C. M., Brunton, R. J., & Dryer, R. (2019). Pregnancy-related anxiety: Re-examining its distinctiveness. *Australian Psychologist*, *54*(2), 132-142. https://doi.org/10.1111/ap.12365

Anderson, E., Brigden, A., Davies, A., Shepherd, E., & Ingram, J. (2021). Pregnant women's experiences of social distancing behavioural guidelines during the Covid-19 pandemic 'lockdown' in the UK, a qualitative interview study. *BMC public health*, *21*(1), 1202. https://doi.org/10.1186/s12889-021-11202-z

Andrews, K., Ayers, S., & Williams, L. R. (2022). The experience of fathers during the covid-19 UK maternity care restrictions. *Midwifery*, *113*, 103434. https://doi.org/10.1016/j.midw.2022.103434

Ansariniaki, M., Abounoori, M., & Babakhanian, M. (2021). A systematic review of anxiety during pregnancy in the period of the COVID-19 pandemic. *International Journal of Pediatrics*, *9*(11), 14756-14771. https://doi.org/10.22038/ijp.2021.54774.4321

APA. American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).* American Psychiatric Association.

Aromataris, E., Fernandez, R., Godfrey, C. M., et al. (2015). Summarizing systematic reviews: methodological development, conduct and reporting of an umbrella review approach. *International Journal of Evidence-Based Healthcare, 13*, 132-140.

Ashford, M. T., Olander, E. K., & Ayers, S. (2016). Computer-or web-based interventions for perinatal mental health: a systematic review. *Journal of Affective Disorders, 197*, 134-146. https://doi.org/10.1016/j.jad.2016.02.057

Ashworth, P. D. (2016). The lifeworld–enriching qualitative evidence. *Qualitative Research in Psychology*, *13*(1), 20-32. https://doi.org/10.1080/14780887.2015.1076917

Associazione Italiana di Psicologia (AIP) [Italian Association of Psychology] (2020, September 18-19). *Tavola rotonda - La ricerca: panoramica sugli effetti del COVID [Round table - The research: overview of the effects of COVID]* [Webinar presentation]. Programma giornate di studio della sezione aip di psicologia clinica e dinamica [Research days of the AIP section of clinical and dynamic psychology].

Atif, N., Lovell, K., & Rahman, A. (2015). Maternal mental health: The missing "m" in the global maternal and child health agenda. *Seminars in perinatology*, *39*(5), 345–352. https://doi.org/10.1053/j.semperi.2015.06.007

Atmuri, K., Sarkar, M., Obudu, E., & Kumar, A. (2022). Perspectives of pregnant women during the COVID-19 pandemic: A qualitative study. *Women & Birth*, *35*(3), 280–288. https://doi.org/10.1016/ j.wombi.2021.03.008

Ausín, B., González-Sanguino, C., Castellanos, M. Á., & Muñoz, M. (2021). Gender-related differences in the psychological impact of confinement as a consequence of COVID-19 in Spain. *Journal of Gender Studies*, *30*(1), 29-38. https://doi.org/10.1080/09589236.2020.1799768

Austin, M. P., Frilingos, M., Lumley, J., Hadzi-Pavlovic, D., Roncolato, W., Acland, S., & Parker, G. (2008). Brief antenatal cognitive behaviour therapy group intervention for the prevention of postnatal depression and anxiety: a randomised controlled trial. *Journal of affective disorders*, *105*(1-3), 35-44. https://doi.org/10.1016/j.jad.2007.04.001

Ayaz, R., Hocaoglu, M., Gunay, T., Yardlmcl, O. D., Turgut, A., & Karateke, A. (2020). Anxiety and depression symptoms in the same pregnant women before and during the COVID-19 pandemic. *Journal of Perinatal Medicine, 48*, 965–970. https://doi.org/10.1515/jpm-2020-0380

Aydin, E., Glasgow, K. A., Weiss, S. M., Austin, T., Johnson, M. H., Barlow, J., & Lloyd-Fox, S. (2022). Expectant parents' perceptions of healthcare and support during COVID-19 in the UK: A thematic analysis. *Journal of Reproductive and Infant Psychology*, *40*(1), 90–104. https://doi.org/10.1080/ 02646838.2022.2075542

Aydin, R., & Aktaş, S. (2021). An investigation of women's pregnancy experiences during the COVID-19 pandemic: A qualitative study. *International journal of clinical practice*, *75*(9), e14418. https://doi.org/10.1111/ijcp.14418

Ayers, S., Wright, D. B., & Wells, N. (2007). Symptoms of post-traumatic stress disorder in couples after birth: association with the couple's relationship and parent–baby bond. *Journal of reproductive and infant psychology*, *25*(1), 40-50. https://doi.org/10.1080/02646830601117175

Badon, S. E., Croen, L. A., Ferrara, A., Ames, J. L., Hedderson, M. M., Young-Wolff, K. C., Zhu, Y., & Avalos, L. A. (2022). Coping strategies for COVID-19 pandemic-related stress and mental health during pregnancy. *Journal of affective disorders*, *309*, 309–313. https://doi.org/10.1016/j.jad.2022.04.146

Badoux-Levy, A., Robin, M., Lavarde, A. M., & Grygielski, V. (2004). Facteurs psychosociaux prédictifs du sentiment de solitude: approche cognitivo-comportementale [Psychological and social factors predictive of loneliness: a cognitive and behavioral approach]. *L'Encephale*, *30*(1), 16–23. https://doi.org/10.1016/s0013-7006(04)95411-5

Bakioğlu, F., Korkmaz, O., & Ercan, H. (2020). Fear of COVID-19 andpositivity: mediating role of intolerance of uncertainty, depression, anxiety, and stress. *International journal of mental health and addiction*, 1-14. https://doi.org/10.1007/s11469-020-00331-y

Balshem, H., Helfand, M., Schünemann, H. J., et al. (2011). GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol, 64*(4), 401-406. https://doi.org/10.1016/j.jclinepi.2010.07.015.

Banti, S., Mauri, M., Oppo, A., Borri, C., Rambelli, C., Ramaciotti, D., Montagnani, M. S., Camilleri, V., Cortopassi, S., Rucci, P., & Cassano, G. B. (2011) From the third month of pregnancy to 1 year postpartum. Prevalence, incidence, recurrence, and new onset of

depression. Results from the perinatal depression-research & screening unit study. *Comprehensive Psychiatry, 52*(4), 343-351. https://doi.org/10.1016/j.comppsych.2010.08.003

Baraitser, L. (2017). *Enduring time*. Bloomsbury.

Baraitser, L., & Salisbury, L. (2020). 'Containment, delay, mitigation': Waiting and care in the time of a pandemic. *Wellcome Open Research*, *5*, 129. https://doi.org/10.12688/wellcomeopenres.15970.1

Barba-Müller, E., Craddock, S., Carmona, S., et al. (2019). Brain plasticity in pregnancy and the postpartum period: Links to maternal caregiving and mental health. *Archives of Women's Mental Health*, *22*(2), 289–299. https://doi.org/10.1007/s00737-018-0889-z

Barimani, M., Vikström, A., Rosander, M., Forslund Frykedal, K., & Berlin, A. (2017). Facilitating and inhibiting factors in transition to parenthood–ways in which health professionals can support parents. *Scandinavian journal of caring sciences*, *31*(3), 537-546. https://doi.org/10.1111/scs.12367

Barker, E. D., Jaffee, S. R., Uher, R., & Maughan, B. (2011). The contribution of prenatal and postnatal maternal anxiety and depression to child maladjustment. *Depression and anxiety*, *28*(8), 696–702. https://doi.org/10.1002/da.20856

Barrera, C. M., Nelson, J. M., Boundy, E. O., & Perrine, C. G. (2018). Trends in rooming-in practices among hospitals in the United States, 2007-2015. *Birth*, *45*(4), 432-439. https://doi.org/10.1111/birt.12359

Basu, A., Kim, H. H., Basaldua, R., et al. (2021). A cross-national study of factors associated with women's perinatal mental health and wellbeing during the COVID-19 pandemic. *PLoS ONE*, *16*(3), e0249780. https://doi.org/10.1371/journal.pone.0249780

Bateman A., & Fonagy P. (2016). *Mentalization-based treatment for personality disorders—A practical guide.* Oxford University Press.

Bazan, A., Jorge Mendes, S., Antoine-Moussiaux, J., & Prys, D. (2019). Empirical evidence for psychic transparency in pregnancy. *Psychoanalytic Psychology*, *36*(3), 239–248. https://doi.org/10.1037/ pap0000212 Bydlowski, M. (2000). *Je rêve un enfant. L'expérience intérieure de la maternité [I dream a child. The inner experience of motherhood]*. Editions Odile Jacob.

Bedaso, A., Adams, J., Peng, W., & Sibbritt, D. (2021). The relationship between social support and mental health problems during pregnancy: a systematic review and meta-analysis. *Reproductive health*, *18*(1), 1-23. https://doi.org/10.1186/s12978-021-01209-5

Belbasis, L., Brooker, R. D., Zavalis, E., Pezzullo, A. M., Axfors, C., & Ioannidis, J. P. (2023). Mapping and systematic appraisal of umbrella reviews in epidemiological research: A protocol for a meta-epidemiological study. *Systematic Reviews, 12*(1), 123. https://doi.org/10.1186/s13643-023-02265-7

Benassi, E., Vallone, M., Camia, M., & Scorza, M. (2020). Women during the Covid-19 lockdown: more anxiety symptoms in women with children than without children and role of the resilience. *Mediterranean Journal of Clinical Psychology*, *8*(3). https://doi.org/10.6092/2282-1619/mjcp-2559

Bender, W. R., Srinivas, S., Coutifaris, P., Acker, A., & Hirshberg, A. (2020). The Psychological Experience of Obstetric Patients and Health Care Workers after Implementation of Universal SARS-CoV-2 Testing. *American journal of perinatology*, *37*(12), 1271–1279. https://doi.org/10.1055/s-0040-1715505

Benedek, T. (1956). Psychobiological aspects of mothering. *American Journal of Orthopsychiatry*, *26*(2), 272 – 278. https://doi.org/10.1111/j.1939-0025.1956.tb06176.x

Berthelot, N., Lemieux, R., Garon-Bissonnette, J., Drouin-Maziade, C., Martel, É., & Maziade, M. (2020). Uptrend in distress and psychiatric symptomatology in pregnant women during the coronavirus disease 2019 pandemic. *Acta obstetricia et gynecologica Scandinavica*, *99*(7), 848–855. https://doi.org/10.1111/aogs.13925

Bibring, G. L. (1959). Some considerations of the psychological processes in pregnancy. *The psychoanalytic study of the child*, *14*(1), 113-121.

Bibring, G. L., Dwyer, T. F., Huntington, D. S., & Valenstein, A. F. (1961). A study of the psychological processes in pregnancy and of the earliest mother-child relationship: II. Methodological considerations. *The psychoanalytic study of the child*, *16*(1), 25-44.

Bick, D., Cheyne, H., Chang, Y. S., & Fisher, J. (2020). Maternal postnatal health during the COVID-19 pandemic: vigilance is needed. *Midwifery*, *88*, 102781. https://doi.org/10.1016%2Fj.midw.2020.102781

Bigelow, A. E., & Power, M. (2020). Mother–infant skin-to-skin contact: short-and long-term effects for mothers and their children born full-term. *Frontiers in psychology*, *11*, 1921. https://doi.org/10.3389/fpsyg.2020.01921

Biondi-Zoccai, G. (2016). *Umbrella reviews: Evidence synthesis with overviews of reviews and meta-epidemiologic studies*. Springer International.

Birkelund, K. S., Rasmussen, S. S., Shwank, S. E., Johnson, J., & Acharya, G. (2022). Impact of the COVID-19 pandemic on women's perinatal mental health and its association with personality traits: An observational study. *Acta Obstetricia et Gynecologica Scandinavica*, *102*(3), 270-281. https://doi.org/10.1111/aogs.14525

Black, R., Sinclair, M., Miller, P., Reid, B., Mc Cullough, J., Slater, P. F., ... & Farell, D. (2021). The effectiveness of online psychotherapy interventions for the treatment of perinatal mental health disorders: A systematic review. *Evidence Based Midwifery*, *19*(1), 6-18. Advance online publication. http://www.scopus.com/inward/record.url?scp=85106630907&partnerID=8YFLogxK

Bo, H. X., Yang, Y., Chen, J., Zhang, M., Li, Y., Zhang, D. Y., Li, Y., Li, R., Cheung, T., Ng, C. H., Wu, X. J., & Xiang, Y. T. (2021). Prevalence of Depressive Symptoms Among Pregnant and Postpartum Women in China During the COVID-19 Pandemic. *Psychosomatic medicine*, *83*(4), 345–350. https://doi.org/10.1097/PSY.0000000000000904

Boffo, M., Mannarini, S., & Munari, C. (2012). Exploratory structure equation modeling of the UCLA loneliness scale: a contribution to the Italian adaptation. *TPM: Testing, Psychometrics, Methodology in Applied Psychology*, *19*(4), 345-363. https://doi.org/10.4473/TPM19.4.7

Bohleber, W. (2007). Ricordo, trauma e memoria collettiva. [Memory, trauma and collective memory]. *Rivista di psicoanalisi 2*.

Bolgeo, T., Gambalunga, F., Di Matteo, R., Gatti, D., Roberti, E., Dealberti, D., Fadda, B., Grassi, E., Gambarini, L., Iacorossi, L., & Maconi, A. (2022). Becoming a mother during the COVID-19 pandemic: The lived experience as told by birthing mothers: A qualitative study. *Journal of nursing management*, *30*(8), 4138–4144. https://doi.org/10.1111/jonm.13890

Borges Migliavaca, C., Stein, C., Colpani, V., et al. (2020). How are systematic reviews of prevalence conducted? A methodological study. *BMC Medical Research Methodology, 20*, 96. https://doi.org/10.1186/s12874-020-00975-3

Bottesi, G., Ghisi, M., Altoè, G., Conforti, E., Melli, G., & Sica, C. (2015). The Italian version of the Depression Anxiety Stress Scales-21: Factor structure and psychometric properties on community and clinical samples. *Comprehensive psychiatry*, *60*, 170–181. https://doi.org/10.1016/j.comppsych.2015.04.005

Boudiaf, L., Dupont, F., Gras-Le Guen, C., Sauvaget, A., Leroy, M., Thubert, T., ... & Dochez, V. (2022). Postpartum depression after maternal isolation during the COVID-19 pandemic: The MUMI-19 study (mothers undergoing mental impact of COVID-19 pandemic). *Journal of Clinical Medicine*, *11*(19), 5504. https://doi.org/10.3390/jcm11195504

Bougioukas, K. I., Bouras, E., Apostolidou-Kiouti, F., Kokkali, S., Arvanitidou, M., & Haidich, A. B. (2019). Reporting guidelines on how to write a complete and transparent abstract for overviews of systematic reviews of health care interventions. *Journal of Clinical Epidemiology, 106*, 70-79. https://doi.org/10.1016/j.jclinepi.2018.10.005.

Branquinho, M., Rodriguez-Muñoz, M. F., Maia, B. R., Marques, M., Matos, M., Osma, J., Moreno-Peral, P., Conejo-Cerón, S., Fonseca, A., & Vousoura, E. (2021). Effectiveness of psychological interventions in the treatment of perinatal depression: A systematic review of systematic reviews and meta-analyses. *Journal of affective disorders*, *291*, 294–306. https://doi.org/10.1016/j.jad.2021.05.010

Breen, D. (1992). Fantasia e realtà in gravidanza e nel periodo postnatale. [Fantasy and reality in pregnancy and in the postnatal period] In Ammaniti M. (ed), *La gravidanza tra fantasia e realtà*. Il Pensiero Scientifico.

Bright, K. S., Charrois, E. M., Mughal, M. K., Wajid, A., McNeil, D., Stuart, S., Hayden, K. A., & Kingston, D. (2020). Interpersonal Psychotherapy to Reduce Psychological Distress in Perinatal Women: A Systematic Review. *International journal of environmental research and public health*, *17*(22), 8421. https://doi.org/10.3390/ijerph17228421

Brik, M., Sandonis, M. A., Fernández, S., Suy, A., Parramon-Puig, G., Maiz, N., Dip, M. E., Ramos-Quiroga, J. A., & Carreras, E. (2021). Psychological impact and social support in pregnant women during lockdown due to SARS-CoV2 pandemic: A cohort study. *Acta obstetricia et gynecologica Scandinavica*, *100*(6), 1026–1033. https://doi.org/10.1111/aogs.14073

Brunton, R. J., Dryer, R., Saliba, A., & Kohlhoff, J. (2015). Pregnancy anxiety: A systematic review of current scales. *Journal of affective disorders*, *176*, 24-34. https://doi.org/10.1016/j.jad.2015.01.039

Buekens, P., Alger, J., Bréart, G., Cafferata, M. L., Harville, E., & Tomasso, G. (2020). A call for action for COVID-19 surveillance and research during pregnancy. *The Lancet Global Health*, *8*(7), e877-e878. https://doi.org/10.1016/S2214-109X(20)30206-0

Button, S., Thornton, A., Lee, S., Shakespeare, J., & Ayers, S. (2017). Seeking help for perinatal psychological distress: a meta-synthesis of women's experiences. *British Journal of General Practice*, *67*(663), e692-e699.

Bydlowski, M. (2000). *Il debito di vita. I segreti della filiazione [Life debt. The secrets of filiation]*. Quattroventi.

Byron, R. A., & Roscigno, V. J. (2014). Relational power, legitimation, and pregnancy discrimination. *Gender & Society*, *28*(3), 435–462. https://doi.org/10.1177/0891243214523123

Cacioppo, J. T., & Patrick, W. (2008). *Loneliness: Human nature and the need for social connection*. WW Norton & Company.

Caffieri, A., Margherita, G. (2021). The psychological impact of COVID-19 on women's wellbeing during pregnancy and postpartum one year after pandemic outbreak in Italy. A Systematic review. *Mediterranean Journal of Clinical Psychology.* 9(2), 1-24. https://doi.org/10.13129/2282-1619/mjcp-3026

Çalık, K. Y., Küçük, E., & Beydağ, K. D. (2022). Pregnant women voice their concerns and delivery method preferences during the COVID-19 pandemic in Turkey. *Journal of Reproductive and Infant Psychology*, *40*(6), 590–601. https://doi.org/10.1080/02646838.2021.1931071

Calman, L., Brunton, L., & Molassiotis, A. (2013). Developing longitudinal qualitative designs: lessons learned and recommendations for health services research. *BMC medical research methodology*, *13*, 14. https://doi.org/10.1186/1471-2288-13-14

Camacho, E. M., & Shields, G. E. (2018). Cost-effectiveness of interventions for perinatal anxiety and/or depression: a systematic review. *BMJ open*, *8*(8), e022022. https://doi.org/10.1136/bmjopen-2018-022022

Cameron, E. E., Joyce, K. M., Delaquis, C. P., Reynolds, K., Protudjer, J. L. P., & Roos, L. E. (2020). Maternal psychological distress & mental health service use during the COVID-19 pandemic. *Journal of affective disorders*, *276*, 765–774. https://doi.org/10.1016/j.jad.2020.07.081

Cameron, E. E., Simpson, K. M., Pierce, S. K., Penner, K. E., Beyak, A., Gomez, I., ... & Roos, L. E. (2023). Paternal perinatal experiences during the COVID-19 pandemic: a framework analysis of the reddit forum predaddit. *International Journal of Environmental Research and Public Health*, *20*(5), 4408. https://doi.org/10.3390/ijerph20084408

Camoni, L., Mirabella, F., Gigantesco, A., Brescianini, S., Ferri, M., Palumbo, G., Calamandrei, G., & On Behalf Of The Perinatal Mental Health Network (2022). The Impact of the COVID-19 Pandemic on Women's Perinatal Mental Health: Preliminary Data on the Risk of Perinatal Depression/Anxiety from a National Survey in Italy. *International journal of environmental research and public health*, *19*(22), 14822. https://doi.org/10.3390/ijerph192214822

Camoni, L., Mirabella, F., Palumbo, G., Del Re, D., Gigantesco, A., Calamandrei, G., Barbano, G., Cattaneo, M., & Brescianini, S. (2020). Indicazioni di un programma di screening e trattamento per la gestione dell'ansia e della depressione perinatale nell'emergenza e post-emergenza COVID-19. [A screening and treatment programme to deal with perinatal anxiety and depression during the COVID-19 pandemic]. *Epidemiologia & Prevenzione, 44,* 5-6. https://doi.org/10.19191/EP20.5-6.S2.139

Cantwell, R. (2021). Mental disorder in pregnancy and the early postpartum. *Anaesthesia*, 76, 76-83. https://doi.org/10.1111/anae.15424

Carlino, M., & Margherita, G. (2016). La maternità in donne con Sclerosi Multipla. Una ricerca esplorativa sulle possibili dimensioni di benessere nella malattia [Motherhood in women with Multiple Sclerosis. An explorative research about the possible dimensions of well-being even in the illness]. *Psicologia della Salute*, 3, 5-25. http://dx.doi.org/10.3280/PDS2016-003001

Carlino, M., Lanzillo, R., Chiodi, A., Vitelli, R., Morra, V. B., Lavorgna, L. & Margherita, G. (2020). Multiple sclerosis and maternity: A psychological explorative qualitative research. *The Qualitative Report*, 25(5), 1279-1292. https://www.proquest.com/scholarly-journals/multiple-sclerosis-maternity-psychological/docview/2405672281/se-2?accountid=12669

Cataudella, S., Congiu, N., & Langiu, G. (2022). L'impatto psicologico della pandemia da Covid-19 sul periodo perinatale: una breve review dei primi dati della letteratura sul contesto italiano ed internazionale. [The psychological impact of the Covid-19 pandemic on the perinatal period: a brief review of early literature data on the Italian and international contexts]. *Psicologia della salute*, 1/2022, 15-38. https://doi.org/10.3280/PDS2022-001003

Cena, L., Biban, P., Janos, J., Lavelli, M., Langfus, J., Tsai, A., Youngstrom, E. A., & Stefana, A. (2021a). The Collateral Impact of COVID-19 Emergency on Neonatal Intensive Care Units and Family-Centered Care: Challenges and Opportunities. *Frontiers in Psychology*, *12*:630594. https://doi.org/10.3389/fpsyg.2021.630594

Cena, L., Palumbo, G., Mirabella, F., Gigantesco, A., Stefana, A., Trainini, A., Trainini, A., & Imbasciati, A. (2020). Perspectives on early screening and prompt intervention to identify and treat maternal perinatal mental health. Protocol for a prospective multicenter study in Italy. *Frontiers in psychology*, *11*, 365. https://doi.org/10.3389/fpsyg.2020.00365

Cena, L., Rota, M., Calza, S., Massardi, B., Trainini, A., & Stefana, A. (2021b). Estimating the impact of the COVID-19 pandemic on maternal and perinatal health care services in Italy: results of a self-administered survey. *Frontiers in Public Health*, *9*, 701638. https://doi.org/10.3389/fpubh.2021.701638

Cena, L., Rota, M., Calza, S., Massardi, B., Trainini, A., & Stefana, A. (2021c). Mental Health States Experienced by Perinatal Healthcare Workers during COVID-19 Pandemic in Italy. *International journal of environmental research and public health*, *18*(12), 6542. https://doi.org/10.3390/ijerph18126542

Centers for Disease Control and Prevention (2023, November 3). COVID-19 Vaccines While Pregnant or Breastfeeding. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html

Cerioli, M., Cafaro, R., Giorgetti, F., Colombo, A., & Dell'Osso, B. M. (2023). COVID-19 and Mental Health: Psychological Impact of the Pandemic on Women during Pregnancy and Puerperium. *European Psychiatry*, *66*(S1), S653-S654. https://doi.org/10.1192/j.eurpsy.2023.1359

Ceulemans, M., Hompes, T., & Foulon, V. (2020). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic: A call for action. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *151*(1), 146–147. https://doi.org/10.1002/ijgo.13295

Ceulemans, M., Foulon, V., Ngo, E., et al. (2021). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic—A multinational cross-sectional study. *Acta Obstetricia et Gynecologica Scandinavica*, *100*(7), 1219-1229. https://doi.org/10.1111/aogs.14092

Cevik, A., Onat Koroglu, C., Karacam, Z., Gokyildiz Surucu, S., & Alan, S. (2022). Effects of the Covid-19 Pandemic on the Prevalence of Insomnia, Anxiety, and Depression During Pregnancy: A Systematic Review and Meta-Analysis. *Clinical Nursing Research*, *31*(8), 1405-1421. https://doi.org/10.1177/105477382211127

Challacombe, F. L., Salkovskis, P. M., Woolgar, M., Wilkinson, E. L., Read, J., & Acheson, R. (2017). A pilot randomized controlled trial of time-intensive cognitive-behaviour therapy for postpartum obsessive-compulsive disorder: effects on maternal symptoms, mother-infant interactions and attachment. *Psychological medicine*, *47*(8), 1478–1488. https://doi.org/10.1017/S0033291716003573

Charles, P., & Perreira, K. M. (2007). Intimate partner violence during pregnancy and 1-year post- partum. *Journal of Family Violence*, *22*(7), 609–619. https://doi.org/10.1007/s10896-007-9112-0

Conrad, M. (2022). Health information-seeking internet behaviours among pregnant women: A narrative literature review. *Journal of Reproductive and Infant Psychology*, 1–15. Advance online publication. https://doi.org/10.1080/02646838.2022.2088711

Chaves, C., Mezei, I., Marchena, C., & Duque, A. (2023). Perinatal Mental Health during the COVID-19 Pandemic: A Longitudinal Study. *Clinical and Health*, *34*(2), 71-78. https://doi.org/10.5093/clysa2023a18

Chen, Q., Li, W., Xiong, J., & Zheng, X. (2022). Prevalence and Risk Factors Associated with Postpartum Depression during the COVID-19 Pandemic: A Literature Review and Meta-Analysis. *International journal of environmental research and public health*, *19*(4), 2219. https://doi.org/10.3390/ijerph19042219

Chhabra, J., Li, W., & McDermott, B. (2022). Predictive factors for depression and anxiety in men during the perinatal period: A mixed methods study. *American Journal of Men's Health*, 16(1). https://doi.org/10.1177/15579883221079489

Chmielewska, B., Barratt, I., Townsend, R., et al. (2021). Effects of the COVID-19 pandemic on maternal and perinatal outcomes: A systematic review and meta-analysis. *The Lancet Global Health*, *9*(6), e759-e772. https://doi.org/10.1016/S2214-109X(21)00079-6

Craparo, G., Faraci, P., Rotondo, G., & Gori, A. (2013). The Impact of Event Scale - Revised: psychometric properties of the Italian version in a sample of flood victims. *Neuropsychiatric disease and treatment*, *9*, 1427–1432. https://doi.org/10.2147/NDT.S51793

Christianson, S., & Marren, J. (2012). The Impact of Event Scale - Revised (IES-R). *Medsurg nursing : official journal of the Academy of Medical-Surgical Nurses*, *21*(5), 321–322.

Chrzan-Dętkoś, M., Walczak-Kozłowska, T., & Lipowska, M. (2021). The need for additional mental health support for women in the postpartum period in the times of epidemic crisis. *BMC Pregnancy and Childbirth*, *21*, 114. https://doi.org/10.1186/s12884-021-03577-7

Clavenna, A., Seletti, E., Cartabia, M., Didoni, A., Fortinguerra, F., Sciascia, T., Brivio, L., Malnis, D., & Bonati, M. (2017). Postnatal depression screening in a paediatric primary care setting in Italy. *BMC psychiatry*, *17*(1), 1-7. https://doi.org/10.1186/s12888-017-1205-6

Cluxton-Keller, F., & Bruce, M. L. (2018). Clinical effectiveness of family therapeutic interventions in the prevention and treatment of perinatal depression: A systematic review and meta-analysis. *PloS one*, *13*(6), e0198730. https://doi.org/10.1371/journal.pone.0198730

Connor, J., Madhavan, S., Mokashi, M., Amanuel, H., Johnson, N. R., Pace, L. E., & Bartz, D. (2020). Health risks and outcomes that disproportionately affect women during the Covid-19 pandemic: A review. *Social Science & Medicine*, *266*, 113364. https://doi.org/10.1016/j.socscimed.2020.113364

Cook, N., Ayers, S., & Horsch, A. (2018). Maternal posttraumatic stress disorder during the perinatal period and child outcomes: A systematic review. *Journal of affective disorders*, *225*, 18-31. https://doi.org/10.1016/j.jad.2017.07.045

Corbani, I. E., Rucci, P., Iapichino, et al. (2017). Comparing the prevalence and the risk profile for antenatal depressive symptoms across cultures. *International Journal of Social Psychiatry*, *63*(7), 622-631. https://doi.org/10.1177/0020764017725543

Corbett, G. A., Milne, S. J., Hehir, M. P., Lindow, S. W., & O'connell, M. P. (2020). Health anxiety and behavioural changes of pregnant women during the COVID-19 pandemic. *Eur. J. Obstet. Gynecol. Reprod. Biol*. 249, 96-97. https://dx.doi.org/10.1016%2Fj.ejogrb.2020.04.022

Costa, R., Pinto, T. M., Conde, A., Mesquita, A., Motrico, E., & Figueiredo, B. (2023). Women's perinatal depression: Anhedonia-related symptoms have increased in the COVID-19 pandemic. *General Hospital Psychiatry*. https://doi.org/10.1016/j.genhosppsych.2023.06.007

Cox, L., Alfredsson, E., & Psouni, E. (2023). Coparent exclusion, prenatal experiences, and mental health during COVID-19 in Sweden. *Journal of Family Psychology.* Advance online publication. https://dx.doi.org/10.1037/fam0001127

Craig, F., Gioia, M. C., Muggeo, V., Cajiao, J., Aloi, A., Martino, I., Tenuta, F., Cerasa, A., & Costabile, A. (2021). Effects of maternal psychological distress and perception of COVID-19 on prenatal attachment in a large sample of Italian pregnant women. *Journal of affective disorders*, *295*, 665–672. https://doi.org/10.1016/j.jad.2021.08.102

Creanga, A. A., Syverson, C., Seed, K., & Callaghan, W. M. (2017). Pregnancy-related mortality in the United States, 2011–2013. *Obstetrics and gynecology*, *130*(2), 366-373. https://doi.org/10.1097%2FAOG.0000000000002114

Cruz-Lemini, M., Ferriols Perez, E., de la Cruz Conty, M. L., Caño Aguilar, A., Encinas Pardilla, M. B., Prats Rodríguez, P., ... & Spanish Obstetric Emergency Group. (2021). Obstetric outcomes of SARS-CoV-2 infection in asymptomatic pregnant women. *Viruses*, *13*(1), 112. https://doi.org/10.3390/v13010112

Cuijpers, P., Franco, P., Ciharova, M., Miguel, C., Segre, L., Quero, S., & Karyotaki, E. (2023). Psychological treatment of perinatal depression: a meta-analysis. *Psychological medicine*, *53*(6), 2596–2608. https://doi.org/10.1017/S0033291721004529

Dagklis, T., Tsakiridis, I., Mamopoulos, A., Athanasiadis, A. & Papazisis, G. (2020). Anxiety During Pregnancy in the Era of the COVID-19 Pandemic. Retrieved from: https://ssrn.com/abstract=3588542

Dashraath, P., Wong, J. L. J., Lim, M. X. K., Lim, L. M., Li, S., Biswas, A., ... & Su, L. L. (2020). Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. *American journal of obstetrics and gynecology*, *222*(6), 521-531. https://doi.org/10.1016/j.ajog.2020.03.021

Davenport, M. H., Meyer, S., Meah, V. L., Strynadka, M. C., & Khurana, R. (2020). Moms Are Not OK: COVID-19 and Maternal Mental Health. *Frontiers in global women's health*, *1*, 1. https://doi.org/10.3389/fgwh.2020.00001

Davico, C., Ghiggia, A., Marcotulli, D., Ricci, F., Amianto, F., & Vitiello, B. (2021). Psychological Impact of the COVID-19 Pandemic on Adults and Their Children in Italy. *Frontiers in psychiatry*, *12*, 572997. https://doi.org/10.3389/fpsyt.2021.572997

Davis, K., Pearlstein, T., Stuart, S., O'Hara, M., & Zlotnick, C. (2013). Analysis of brief screening tools for the detection of postpartum depression: comparisons of the PRAMS 6-item instrument, PHQ-9, and structured interviews. *Archives of women's mental health*, *16*(4), 271–277. https://doi.org/10.1007/s00737-013-0345-z

de Jong-Gierveld, J. (1987). Developing and testing a model of loneliness. *Journal of Personality and Social Psychology, 53*(1), 119–128. https://doi.org/10.1037/0022-3514.53.1.119

de Jong-Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2006). Loneliness and social isolation. In D. Perlman, & A. Vangelisti (Eds.),*The Cambridge handbook of personal relationships* (pp. 485-500). Cambridge University Press.

De Chiara, L., Angeletti, G., Anibaldi, G., Chetoni, C., Gualtieri, F., Forcina, F., Bargagna, P., Kotzalidis, G. D., Callovini, T., Bonito, M., Koukopoulos, A. E., & Simonetti, A. (2022). The Impact of the COVID-19 Pandemic on Postpartum Maternal Mental Health. *Journal of personalized medicine*, *13*(1), 56. https://doi.org/10.3390/jpm13010056

De Bianchedi, E. T., de Boschan, S. L., De Cortiñas, L. P., & De Piccolo, E. G. (1988). Theories on anxiety in Freud and Melanie Klein. Their metapsychological status. *The International journal of psycho-analysis*, *69*, 359.

Decreto del Presidente del Consiglio dei Ministri 3 novembre 2020, "Ulteriori disposizioni attuative del decreto-legge 25 marzo 2020" [President of the Council of Ministers Act 3 November 2020, "Further implementing provisions of the decree-law of 25 March 2020"]. *Gazzetta Ufficiale*. https://www.gazzettaufficiale.it/eli/id/2020/11/04/20A06109/sg

Decreto del Presidente del Consiglio dei Ministri 9 marzo 2020, "Ulteriori disposizioni attuative del decreto-legge 23 febbraio 2020, n. 6, recante misure urgenti in materia di contenimento e gestione dell'emergenza epidemiologica da COVID-19, applicabili sull'intero territorio nazionale" [President of the Council of Ministers Act 9 March 2020, "Further implementing provisions of the decree-law of 23 February 2020, n. 6, containing urgent measures regarding the containment and management of the COVID-19 epidemiological emergency, applicable throughout the national territory"]. *Gazzetta Ufficiale*. https://www.gazzettaufficiale.it/eli/id/2020/03/09/20A01558/sg

Decreto-legge 24 marzo 2022, n. 24, "Disposizioni urgenti per il superamento delle misure di contrasto alla diffusione dell'epidemia da COVID-19, in conseguenza della cessazione dello stato di emergenza" (2022, 24 marzo) (Italia) [Act 24 March 2022, n. 24, "Urgent provisions for overcoming the measures to contrast the spread of the COVID-19 epidemic, following the cessation of the state of emergency" (2022, 24 March) (Italy).]. *Gazzetta Ufficiale*. https://www.gazzettaufficiale.it/eli/id/2022/03/24/22G00034/sg

del Valle, M., Andrés, M. L., Urquijo, S., Yerro Avincetto, M. M., López Morales, H., & Canet Juric, L. (2020). Intolerance of uncertainty over covid-19 pandemic and its effect on anxiety and depressive symptoms. *Revista Interamericana de Psicología,* 54*(2),* 1335-1335. http://dx.doi.org/10.30849/ripijp.v54i2.1335

Delanerolle, G., McCauley, M., Hirsch, M., et al. (2023). The prevalence of mental ill-health in women during pregnancy and after childbirth during the Covid-19 pandemic: A systematic review and meta-analysis. *BMC Pregnancy and Childbirth*, *23*(1), 1-40. https://doi.org/10.1186/s12884-022-05243-4

Demissie, D. B., & Bitew, Z. W. (2021). Mental health effect of COVID-19 pandemic among women who are pregnant and/or lactating: A systematic review and meta-analysis. *SAGE Open Medicine*, *9*, 20503121211026195. https://doi.org/10.1177/20503121211026195

Dennis, C. L., & Hodnett, E. (2007). Psychosocial and psychological interventions for treating postpartum depression. *The Cochrane database of systematic reviews*, (4), CD006116. https://doi.org/10.1002/14651858.CD006116.pub2

Dennis, C. L., Falah-Hassani, K., & Shiri, R. (2017). Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. *The British Journal of Psychiatry*, 210(5), 315-323. https://doi.org/10.1192/bjp.bp.116.187179

Deoni, S. C., Beauchemin, J., Volpe, A., D'Sa, V., & Resonance Consortium. (2021). Impact of the COVID-19 pandemic on early child cognitive development: initial findings in a longitudinal observational study of child health. *MedRxiv*. Advance online https://doi.org/10.1101/2021.08.10.21261846

Deutsch, H. (1945). *The psychology of women. Vol. 2. Motherhood.* Grune & Stratton.

Devera, J. L., Gonzalez, Y., & Sabharwal, V. (2023). A narrative review of COVID-19 vaccination in pregnancy and breastfeeding. *Journal of Perinatology*, 1-8. https://doi.org/10.1038/s41372-023-01734-0

Di Florio, A., Forty, L., Gordon-Smith, K., Heron, J., Jones, L., Craddock, N., & Jones, I. (2013). Perinatal episodes across the mood disorder spectrum. *JAMA psychiatry*, *70*(2), 168-175. https://doi.org/10.1001/jamapsychiatry.2013.279

Di Giacomo, D. (2020). Public Health emergencies and quarantine: virtual patient engagement as challenge and opportunity for Mental Health strategy. *Mediterranean Journal of Clinical Psychology*, *8*(2). https://doi.org/10.6092/2282-1619/mjcp-2533

Di Mascio, D., Khalil, A., Saccone, G., Rizzo, G., Buca, D., Liberati, M., ... & D'Antonio, F. (2020). Outcome of coronavirus spectrum infections (SARS, MERS, COVID-19) during pregnancy: a systematic review and meta-analysis. *American journal of obstetrics & gynecology MFM*, *2*(2), 100107. https://doi.org/10.1016/j.ajogmf.2020.100107.

Di Paolo, A. L., King, S., McLean, M. A., Lequertier, B., Elgbeili, G., Kildea, S., & Dahlen, H. G. (2022). Prenatal stress from the COVID-19 pandemic predicts maternal postpartum anxiety as moderated by psychological factors: The Australian BITTOC Study. *Journal of affective disorders*, *314*, 68–77. https://doi.org/10.1016/j.jad.2022.06.055

Diaz, A., Baweja, R., Bonatakis, J. K., & Baweja, R. (2021). Global health disparities in vulnerable populations of psychiatric patients during the COVID-19 pandemic. *World Journal of Psychiatry*, *11*(4), 94. https://doi.org/10.5498%2Fwjp.v11.i4.94

Dib, S., Rougeaux, E., Vázquez-Vázquez, A., Wells, J. C. K., & Fewtrell, M. (2020). Maternal mental health and coping during the COVID-19 lockdown in the UK: Data from the COVID-19 New Mum Study. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *151*(3), 407–414. https://doi.org/10.1002/ijgo.13397

Diguisto, C., Saucedo, M., Kallianidis, A., et al. (2022). Maternal mortality in eight European countries with enhanced surveillance systems: descriptive population-based study. *BMJ*, 379, e070621. https://doi.org/10.1136/bmj-2022-070621

Donati, S., Corsi, E., Maraschini, A., Salvatore, M. A., ItOSS COVID-19 Working Group, & ItOSS COVID-19 WORKING GROUP (2021). The first SARS-CoV-2 wave among pregnant women in Italy: results from a prospective population-based study. *Annali dell'Istituto superiore di sanita*, *57*(4), 272–285. https://doi.org/10.4415/ANN_21_04_02

Donati, S., Corsi, E., Maraschini, A., Salvatore, M. A., ItOSS-COVID-19 Working Group, Arena, M. G., ... & Vimercati, A. (2022). SARS-CoV-2 infection among hospitalised pregnant women and impact of different viral strains on COVID-19 severity in Italy: a national prospective population-based cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*, *129*(2), 221-231. https://doi.org/10.1111/1471-0528.16980

Dong, L., Tian, J., He, S., Zhu, C., Wang, J., Liu, C., & Yang, J. (2020). Possible Vertical Transmission of SARS-CoV-2 From an Infected Mother to Her Newborn. *JAMA*, *323*(18), 1846–1848. https://doi.org/10.1001/jama.2020.4621

Doyle, F. L., & Klein, L. (2020). Postnatal Depression Risk Factors: An Overview of Reviews to Inform COVID-19 Research, Clinical, and Policy Priorities. *Frontiers in global women's health*, *1*, 577273. https://doi.org/10.3389/fgwh.2020.577273

Duane, A.M., Stokes, K.L., DeAngelis, C.L., & Bocknek, E.L. (2020). Collective trauma and community support: lessons from Detroit. Psychol. *Trauma Theory Res. Pract. Policy*, 12 (5), 452–454. https://doi.org/10.1037/tra0000791.

Duguay, G., Garon-Bissonnette, J., Lemieux, R., Dubois-Comtois, K., Mayrand, K., & Berthelot, N. (2022). Socioemotional development in infants of pregnant women during the COVID-19 pandemic: the role of prenatal and postnatal maternal distress. *Child and Adolescent Psychiatry and Mental Health*, *16*(1), 28. https://doi.org/10.1016/j.biopsych.2022.05.011

Durankuş, F., & Aksu, E. (2022). Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: A preliminary study. *Journal of Maternal-Fetal & Neonatal Medicine*, *35*, 205-211. https://doi.org/10.1080/14767058.2020.1763946

Dymecka, J., Gerymski, R., Iszczuk, A., & Bidzan, M. (2021). Fear of Coronavirus, Stress and Fear of Childbirth in Polish Pregnant Women during the COVID-19 Pandemic. *International journal of environmental research and public health*, *18*(24), 13111. https://doi.org/10.3390/ijerph182413111

Effati-Daryani, F., Zarei, S., Mohammadi, A., Hemmati, E., Ghasemi Yngyknd, S., & Mirghafourvand, M. (2020). Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. *BMC Psychology*, *8*, 99. https://doi.org/10.1186/s40359-020-00464-8

Endomba, F. T., Ndoadoumgue, A. L., Mbanga, C. M., et al. (2021). Perinatal depressive disorder prevalence in Africa: A systematic review and Bayesian analysis. *General Hospital Psychiatry, 69*, 55-60. https://doi.org/10.1016/j.genhosppsych.2021.01.006

Endres, K., Haigler, K., Sbrilli, M., Jasani, S., & Laurent, H. (2023). Social determinants of perinatal mental health during the COVID-19 pandemic. *General hospital psychiatry*, *84*, 39–43. https://doi.org/10.1016/j.genhosppsych.2023.05.010

Erikson, E. (1993). *Childhood and Society*. Norton & CO.

Erikson, E. H. (1956). The Problem of Ego Identity. *Journal of the American Psychoanalytic Association*, *4*(1), 56-121. https://doi.org/10.1177/000306515600400104

Erikson, E. H. (1984). *I cicli della vita. Continuità e mutamenti*. *[The life cicle]*. Armando Editore.

Etheridge, B., & Spantig, L. (2020). *The gender gap in mental well-being during the Covid-19 outbreak: Evidence from the UK (No. 2020-08)*. Institute for Social and Economic Research.

Eurostat (2022). Fertility statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Fertility_statistics

Evagorou, O., Arvaniti, A., & Samakouri, M. (2016). Cross-Cultural Approach of Postpartum Depression: Manifestation, Practices Applied, Risk Factors and Therapeutic Interventions. *The Psychiatric quarterly*, *87*(1), 129–154. https://doi.org/10.1007/s11126-015-9367-1.

Evans, C. (2022). African American women's experience of birth trauma. *Journal of Reproductive and Infant Psychology*, *40*(1), 77–89. https://doi.org/10.1080/02646838.2022.2156988

Fairbrother, N., Collardeau, F., Albert, A., & Stoll, K. (2022). Screening for perinatal anxiety using the childbirth fear questionnaire: A new measure of fear of childbirth. *International journal of environmental research and public health*, 19(4), 2223. https://doi.org/10.3390/ijerph19042223

Falah-Hassani, K., Shiri, R., & Dennis, C. L. (2016). Prevalence and risk factors for comorbid postpartum depressive symptomatology and anxiety. *Journal of affective disorders*, *198*, 142–147. https://doi.org/10.1016/j.jad.2016.03.010

Fallon, V., Davies, S. M., Silverio, S. A., et al. (2021). Psychosocial experiences of postnatal women during the COVID-19 pandemic: A UK-wide study of prevalence rates and risk factors for clinically relevant depression and anxiety. *Journal of Psychiatric Research, 136*, 157-166. https://doi.org/10.1016/j.jpsychires.2021.01.048

Fan, S., Guan, J., Cao, L., Wang, M., Zhao, H., Chen, L., & Yan, L. (2020). Psychological effects caused by COVID-19 pandemic on pregnant women: A systematic review with meta-analysis. *Asian Journal of Psychiatry*, 102533. https://doi.org/10.1016/j.ajp.2020.102533

Farewell, C. V., Jewell, J., Walls, J., & Leiferman, J. A. (2020). A mixed-methods pilot study of perinatal risk and resilience during COVID-19. *Journal of Primary Care & Community Health*. Advance online publication. https://doi.org/10.1177/2150132720944074

Farr, J., & Nizza, I. E. (2019). Longitudinal interpretative phenomenological analysis (LIPA): A review of studies and methodological considerations. *Qualitative Research in Psychology*, *16*(2), 199–217. https://doi.org/10.1080/14780887.2018.1540677

Farrell, T., Reagu, S., Mohan, S., Elmidany, R., Qaddoura, F., Ahmed, E. E., Corbett, G., Lindow, S., Abuyaqoub, S. M., & Alabdulla, M. A. (2020). The impact of the COVID-19 pandemic on the perinatal mental health of women. *Journal of perinatal medicine*, *48*(9), 971–976. https://doi.org/10.1515/jpm-2020-0415

Favre, G., Kunz, C., Schwank, S., Chung, H. F., Radan, A. P., Raio, L., Fluri, M., Winterfeld, U., Baud, D., & Pomar, L. (2022). Mental health in pregnant individuals during the COVID-19 pandemic based on a Swiss online survey. *Scientific reports*, *12*(1), 18448. https://doi.org/10.1038/s41598-022-21881-2

Fernandes, J., Tavares, I., Bem-Haja, P., Barros, T., & Carrito, M. L. (2022). A Longitudinal Study on Maternal Depressive Symptoms During the COVID-19 Pandemic: The Role of Strict Lockdown Measures and Social Support. *International journal of public health*, *67*, 1604608. https://doi.org/10.3389/ijph.2022.1604608

Fernandez, R., Sikhosana, N., Green, H., Halcomb, E. J., Middleton, R., Alananzeh, I., & Moxham, L. (2021). Anxiety and depression among healthcare workers during the COVID-19 pandemic: A systematic umbrella review of the global evidence. *BMJ Open, 11*(9), e054528. https://doi.org/10.1136/bmjopen-2021-054528.

Ferrari, E., Palandri, L., Lucaccioni, L., Talucci, G., Passini, E., Trevisani, V., & Righi, E. (2022). The Kids Are Alright (?). Infants' Development and COVID-19 Pandemic: A Cross-Sectional Study. *International journal of public health*, *67*, 1604804. https://doi.org/10.3389/ijph.2022.1604804.

Ferrazzi, E., Frigerio, L., Savasi, V., Vergani, P., Prefumo, F., Barresi, S., ... & Cetin, I. (2020). Vaginal delivery in SARS-CoV-2-infected pregnant women in Northern Italy: a retrospective analysis. *BJOG: An International Journal of Obstetrics & Gynaecology*, *127*(9), 1116-1121. https://doi.org/10.1111/1471-0528.16278

Ferro, A. M., & Ferro, V. (2012). Paul-Claude Racamier e la bottega della psichiatria. *Paul-Claude Racamier e la bottega della psichiatria* [Paul-Claude Racamier and the workshop of psychiatry], 69-89.

Finlay, L. (2009). Debating phenomenological research methods. *Phenomenology & Practice*, 3 (1), 6–25.

Firestein, M. R., Dumitriu, D., Marsh, R., & Monk, C. (2022). Maternal mental health and infant development during the COVID-19 pandemic. *JAMA psychiatry, 79*(10), 1040-1045. https://doi.org/10.1001/jamapsychiatry.2022.0902

Fisher, S. D. (2017). Paternal mental health: why is it relevant?. *American journal of lifestyle medicine*, *11*(3), 200-211. https://doi.org/10.1177/1559827616629895

Fletcher, R., StGeorge, J., Newman, L., & Wroe, J. (2020). Male callers to an Australian perinatal depression and anxiety help line-Understanding issues and concerns. Infant Mental Health Journal, 41(1), 145–157. https://doi.org/10.1002/imhj.2182

Fornari, F. (1981). *Il codice vivente [The living code]*. Boringhieri.

Forray, A., & Foster, D. (2015). Substance use in the perinatal period. *Current psychiatry reports*, *17*, 1-11. https://doi.org/10.1007/s11920-015-0626-5

Fraiberg, S., Adelson, E., & Shapiro, V. (1982). Ghosts in the nursery: a psychoanalytic approach to the problems of impaired infant–mother relationships 1. In *Parent-infant psychodynamics* (pp. 87-117). Routledge.

Freeston, M., Tiplady, A., Mawn, L., Bottesi, G., & Thwaites, S. (2020). Towards a model of uncertainty distress in the context of Coronavirus (COVID-19). *The Cognitive Behaviour Therapist*, *13*, E31. https://doi.org/10.1017/S1754470X2000029X

Freud, S. (1912). *Recommendations for Physicians Practicing Psychoanalysis*. Standard Edition.

Fumagalli, S., Borrelli, S., Ornaghi, S., Vergani, P., & Nespoli, A. (2023). Midwives' experiences of providing maternity care to women and families during the COVID-19 pandemic in Northern Italy. *Women & Birth*, *36*(1), e57–e64. https://doi.org/10.1016/j.wombi.2022.04.011

Fumagalli, S., Ornaghi, S., Borrelli, S., Vergani, P., & Nespoli, A. (2021). The experiences of childbearing women who tested positive to COVID-19 during the pandemic in northern Italy. *Women and Birth. (first online).* https://doi.org/10.1016/j.wombi.2021.01.001

Furtado, M., Frey, B.N. & Green, S.M. Validation of the intolerance of uncertainty scale as a screening tool for perinatal anxiety. *BMC Pregnancy Childbirth* 21, 829 (2021). https://doi.org/10.1186/s12884-021-04296-1

Fusar-Poli, P., & Radua, J. (2018). Ten simple rules for conducting umbrella reviews. *BMJ Ment Health*, *21*(3), 95-100. http://dx.doi.org/10.1136/ebmental-2018-300014

Gagliardi, L., Grumi, S., Gentile, M., Cacciavellani, R., Placidi, G., Vaccaro, A., Maggi, C., Gambi, B., Magi, L., Crespin, L., Memmini, G., DeFilippo, M., Verucci, E., Malandra, L., Mele, L., Azzarà, A., & Provenzi, L. (2022). The COVID-related mental health load of neonatal healthcare professionals: a multicenter study in Italy. *Italian journal of pediatrics*, *48*(1), 136. https://doi.org/10.1186/s13052-022-01305-7

Galderisi, A., Lista, G., Cavigioli, F., & Trevisanuto, D. (2023, March). Clinical features of neonatal COVID-19. In *Seminars in fetal and neonatal medicine* (p. 101430). WB Saunders. https://doi.org/10.1016/j.siny.2023.101430

Gandino, G., Venera, E. M., & Bernaudo, A. (2018). Narcissism and systemic approach. A systematic review. *Mediterranean Journal of Clinical Psychology*, *6*(3). https://doi.org/10.6092/2282-1619/2018.6.1968

Ganho-Ávila, A., Guiomar, R., Sobral, M., Pacheco, F., Caparros-Gonzalez, R. A., Diaz-Louzao, C., Motrico, E., Domínguez-Salas, S., Mesquita, A., Costa, R., Vousoura, E., Hadjigeorgiou, E., Bina, R., Buhagiar, R., Mateus, V., Contreras-García, Y., Wilson, C. A., Ajaz, E., Hancheva, C., Dikmen-Yildiz, P., … de la Torre-Luque, A. (2023). The impact of COVID-19 on breastfeeding rates: An international cross-sectional study. *Midwifery*, *120*, 103631. https://doi.org/10.1016/j.midw.2023.103631

Gao, S., Su, S., Zhang, E., et al. (2022). Psychological health status in postpartum women during COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Affective Disorders, 319*, 99-111. https://doi.org/10.1016/j.jad.2022.08.107

Garthus-Niegel, S., Ayers, S., Martini, J., von Soest, T., & Eberhard-Gran, M. (2017). The impact of postpartum post-traumatic stress disorder symptoms on child development: a population-based, 2-year follow-up study. *Psychological Medicine*, 47, 161-70. https://doi.org/10.1017/S003329171600235X

Gates, M., Gates, A., Pieper, D., et al. (2022). Reporting guideline for overviews of reviews of healthcare interventions: development of the PRIOR statement. *BMJ, 378*, e070849. https://doi.org/10.1136/bmj-2022-070849.

Geremia, S., Valente, E. P., Mariani, I., Dalena, P., & Lazzerini, M. (2023). Women's suggestions on how to improve the quality of maternal and newborn care during the COVID-19 pandemic in Italy: A co-occurrence network analysis. *Journal of global health*, *13*, 06013. https://doi.org/10.7189/jogh.13.06013

Geremia, S., Valente, E. P., Mariani, I., Dalena, P., & Lazzerini, M. (2023). Women's suggestions on how to improve the quality of maternal and newborn care during the COVID-19 pandemic in Italy: A co-occurrence network analysis. *Journal of Global Health*, *13*, 06013. https://doi.org/10.7189%2Fjogh.13.06013

Ghazanfarpour, M., Bahrami, F., Rashidi Fakari, F., Ashrafinia, F., Babakhanian, M., Dordeh, M., & Abdi, F. (2022). Prevalence of anxiety and depression among pregnant women during the COVID-19 pandemic: a meta-analysis. *Journal of psychosomatic obstetrics and gynaecology*, *43*(3), 315–326. https://doi.org/10.1080/0167482X.2021.1929162

Gharagozloo, M., Sadatmahalleh, S. J., Khomami, M. B., Moini, A., & Kazemnejad, A. (2020). Mental health and marital satisfaction changes of pregnant and lactating women during the COVID-19 pandemic. Advanced online https://doi.org/10.21203/rs.3.rs-49590/v1

Ghebreyesus, T. A. (2020). Addressing mental health needs: an integral part of COVID-19 response. *World psychiatry*, *19*(2), 129.

Gheyoh Ndzi, E., & Holmes, A. (2022). Examining the Relationship between Paternal Mental Health and Informal Support Networks: Reflections on the Impact of the COVID-19 Pandemic. *International journal of environmental research and public health*, *19*(19), 12751. https://doi.org/10.3390/ijerph191912751

Giesbrecht, G. F., Rojas, L., Patel, S., Kuret, V., MacKinnon, A. L., Tomfohr-Madsen, L., & Lebel, C. (2022). Fear of COVID-19, mental health, and pregnancy outcomes in the pregnancy during the COVID-19 pandemic study: Fear of COVID-19 and pregnancy outcomes. *Journal of Affective Disorders*, *299*, 483-491. https://doi.org/10.1016/j.jad.2021.12.057

Gimbel, L. A., Allshouse, A. A., Neff, D., Silver, R. M., Conradt, E., & Crowell, S. E. (2022). Mental health symptom changes in pregnant individuals across the COVID-19 pandemic: a prospective longitudinal study. *BMC pregnancy and childbirth*, *22*(1), 897. https://doi.org/10.1186/s12884-022-05144-6

Giurgescu, C., Wong, A. C., Rengers, B., Vaughan, S., Nowak, A. L., Price, M., ... & Misra, D. P. (2022). Loneliness and depressive symptoms among pregnant black women during the COVID-19 pandemic. *Western Journal of Nursing Research*, *44*(1), 23-30. https://doi.org/10.1177/01939459211043937

Giustino, G. (2013, September 14). Ansia/Angoscia [Anxiety/Anguish]. SpiWeb. https://www.spiweb.it/la-ricerca/ricerca/ansiaangoscia/

Glazer, K. B., & Howell, E. A. (2021). A way forward in the maternal mortality crisis: addressing maternal health disparities and mental health. *Archives of Women's Mental Health*, 24(5), 823-830. https://doi.org/10.1007/s00737-021-01161-0

Glover, V. (2014). Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Practice & Research in Clinical Obstetrics & Gynaecology*, *28*(1), 25–35. https://doi.org/10.1016/j.bpobgyn.2013.08.017

Gonzalez-Garcia, V., Exertier, M., & Denis, A. (2021). Anxiety, post-traumatic stress symptoms, and emotion regulation: A longitudinal study of pregnant women having given birth during the COVID-19 pandemic. *European journal of trauma & dissociation = Revue europeenne du trauma et de la dissociation*, *5*(2), 100225. https://doi.org/10.1016/j.ejtd.2021.100225

Goodnight, W. H., & Soper, D. E. (2005). Pneumonia in pregnancy. *Critical care medicine*, *33*(10), S390-S397. https://doi.org/10.1097/01.CCM.0000182483.24836.66

Gordon, T. (2008). *Parent effectiveness training: The proven program for raising responsible children*. Harmony.

Gori, A., Topino, E., Craparo, G., Grotto, R. L., & Caretti, V. (2021). An empirical model for understanding the threat responses at the time of COVID-19. *Mediterranean Journal of Clinical Psychology*, *9*(1). https://doi.org/10.6092/2282-1619/mjcp-2916

Gómez-Baya, D., Gómez-Gómez, I., Domínguez-Salas, S., Rodríguez-Domínguez, C., & Motrico, E. (2022). The influence of lifestyles to cope with stress over mental health in pregnant and postpartum women during the COVID-19 pandemic. *Current psychology (New Brunswick, N.J.)*, 1–20. Advance online publication. https://doi.org/10.1007/s12144-022-03287-5

Greenberg, G. C., Vishwakarma, N., Tirupattur, M. P., Sprague, H. M., & Katwa, L. C. (2023). Implications of COVID-19 Pandemic on Pregnancy: Current Status and Controversies. *COVID*, *3*(6), 859-873. https://doi.org/10.3390/covid3060062

Grigoriadis, S., Graves, L., Peer, M., Mamisashvili, L., Tomlinson, G., Vigod, S. N., ... & Richter, M. (2018). Maternal anxiety during pregnancy and the association with adverse perinatal outcomes: systematic review and meta-analysis. *The Journal of clinical psychiatry*, *79*(5), 17r12011. https://doi.org/10.4088/JCP.17r12011

Groß, R., Conzelmann, C., Müller, J. A., Stenger, S., Steinhart, K., Kirchhoff, F., & Münch, J. (2020). Detection of SARS-CoV-2 in human breastmilk. *The Lancet*, *395*(10239), 1757-1758. https://doi.org/10.1016/S0140-6736(20)31181-8

Grumi, S., Provenzi, L., Accorsi, P., Biasucci, G., Cavallini, A., Decembrino, L., Falcone, R., Fazzi, E. M., Gardella, B., Giacchero, R., Guerini, P., Grossi, E., Magnani, M. L., Mariani, E. M., Nacinovich, R., Pantaleo, D., Pisoni, C., Prefumo, F., Sabatini, C., Scelsa, B., … Borgatti, R. (2021). Depression and Anxiety in Mothers Who Were Pregnant During the COVID-19 Outbreak in Northern Italy: The Role of Pandemic-Related Emotional Stress and Perceived Social Support. *Frontiers in psychiatry*, *12*, 716488. https://doi.org/10.3389/fpsyt.2021.716488

Grussu, P., Lega, I., Quatraro, R. M., & Donati, S. (2020). Perinatal mental health around the world: priorities for research and service development in Italy. *BJPsych International*, *17*(1), 8-10. https://doi.org/10.1192/bji.2019.31

Gu, X. X., Chen, K., Yu, H., Liang, G. Y., Chen, H., & Shen, Y. (2020). How to prevent in-hospital COVID-19 infection and reassure women about the safety of pregnancy: experience from an obstetric center in China. *Journal of International Medical Research*, *48*(7). https://doi.org/10.1177/0300060520939337

Guest, G., Namey, E., Chen, M., & Soundy, A. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS One*, *15*(5), e0232076. https://doi.org/10.1371/journal. pone.0232076

Güner, Ö., & Öztürk, R. (2022). Psychological and social impact and lifestyle changes among pregnant women of COVID-19 pandemic: A qualitative study. *Archives of Psychiatric Nursing*, *36*, 70-77. https://doi.org/10.1016/j.apnu.2021.12.005

Guo, J., De Carli, P., Lodder, P., Bakermans-Kranenburg, M. J., & Riem, M. M. E. (2021). Maternal mental health during the COVID-19 lockdown in China, Italy, and the Netherlands: a cross-validation study. *Psychological medicine*, 1–11. Advance online publication. https://doi.org/10.1017/S0033291720005504

Gur, R. E., White, L. K., Waller, R., Barzilay, R., Moore, T. M., Kornfield, S., Njoroge, W. F. M., Duncan, A. F., Chaiyachati, B. H., Parish-Morris, J., Maayan, L., Himes, M. M., Laney, N., Simonette, K., Riis, V., & Elovitz, M. A. (2020). The Disproportionate Burden of the COVID-19 Pandemic Among Pregnant Black Women. *Psychiatry research*, *293*, 113475. https://doi.org/10.1016/j.psychres.2020.113475

Gutierrez-Galve, L., Stein, A., Hanington, L., Heron, J., Lewis, G., O'Farrelly, C., & Ramchandani, P. G. (2019). Association of Maternal and Paternal Depression in the Postnatal Period With Offspring Depression at Age 18 Years. *JAMA psychiatry*, *76*(3), 290–296. https://doi.org/10.1001/jamapsychiatry.2018.3667

Guyatt, G. H., Oxman, A. D., Schünemann, H. J., Tugwell, P., & Knottnerus, A. (2011). GRADE guidelines: A new series of articles in the Journal of Clinical Epidemiology. *J Clin Epidemiol*, *64*(4), 380-382. https://doi.org/10.1016/j.jclinepi.2010.09.011.

Hahn-Holbrook, J., Cornwell-Hinrichs, T., & Anaya, I. (2018). Economic and health predictors of national postpartum depression prevalence: a systematic review, meta-analysis, and meta-regression of 291 studies from 56 countries. *Frontiers in Psychiatry*, 8, 248. https://doi.org/10.3389/fpsyt.2017.00248

Haidari, E., Main, E. K., Cui, X., Cape, V., Tawfik, D. S., Adair, K. C., Sexton, B. J., & Profit, J. (2021). Maternal and neonatal health care worker well-being and patient safety climate amid the COVID-19 pandemic. *Journal of perinatology : official journal of the California Perinatal Association*, *41*(5), 961–969. https://doi.org/10.1038/s41372-021-01014-9

Hall, W. A., Hauck, Y. L., Carty, E. M., Hutton, E. K., Fenwick, J., & Stoll, K. (2009). Childbirth fear, anxiety, fatigue, and sleep deprivation in pregnant women. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*, *38*(5), 567–576. https://doi.org/10.1111/j.1552-6909.2009.01054.x

Harris-Britt, A., Martin, S. L., Li, Y., Casanueva, C., & Kupper, L. L. (2004). Posttraumatic Stress Disorder and Associated Functional Impairments During Pregnancy: Some Consequences of Violence Against Women. *Journal of Clinical Psychology in Medical Settings*, 11, 253-64. https://doi.org/10.1023/B:JOCS.0000045345.72671.5e

Harrison, V., Moulds, M. L., & Jones, K. (2022). Perceived social support and prenatal wellbeing; the mediating effects of loneliness and repetitive negative thinking on anxiety and depression during the COVID-19 pandemic. *Women & Birth*, *35*(3), 232–241. https://doi.org/10.1016/j.wombi.2020.12.014

Harrison, V., Moulds, M. L., & Jones, K. (2022). Support from friends moderates the relationship between repetitive negative thinking and postnatal wellbeing during COVID-19. *Journal of Reproductive and Infant Psychology*, *40*(5), 516-531. https://doi.org/10.1080/02646838.2021.1886260

Hassanipour, S., Faradonbeh, S. B., Momeni, K., Heidarifard, Z., Khosousi, M. J., Khosousi, L., ... & Arab-Zozani, M. (2020). A systematic review and meta-analysis of pregnancy and COVID-19: Signs and symptoms, laboratory tests, and perinatal outcomes. *International journal of reproductive biomedicine*, *18*(12), 1005. https://doi.org/10.18502%2Fijrm.v18i12.8022

Hawkley, L. C., Browne, M. W., & Cacioppo, J. T. (2005). How can I connect with thee? Let me count the ways. *Psychological science*, *16*(10), 798–804. https://doi.org/10.1111/j.1467-9280.2005.01617.x

He, Z., Chiu, W. T., Wu, H., & Ming, W. K. (2020). PMH4 the psychological and behavioral responses to Covid-19 epidemic in pregnant women in China: A nationwide survey. *Value in Health Regional Issues*, *22*, S62. https://doi.org/10.1016/j.vhri.2020.07.326

Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical psychology review*, *26*(6), 695-718. https://doi.org/10.1016/j.cpr.2006.04.002

Hennessy, E. A., & Johnson, B. T. (2020). Examining overlap of included studies in meta-reviews: Guidance for using the corrected covered area index. *Research synthesis methods*, *11*(1), 134-145. https://doi.org/10.1002/jrsm.1390

Hessami, K., Romanelli, C., Chiurazzi, M., & Cozzolino, M. (2020). COVID-19 pandemic and maternal mental health: a systematic review and meta-analysis. *The Journal of Maternal-Fetal & Neonatal Medicine*, 1-8. https://doi.org/10.1080/14767058.2020.1843155

Higgins, J. P. T., Thomas, J., Chandler, J., et al. (2022). *Cochrane Handbook for Systematic Reviews of Interventions version 6.3*. Cochrane. Retrieved from www.training.cochrane.org/handbook

Hocaoglu, M., Ayaz, R., Gunay, T., Akin, E., Turgut, A., & Karateke, A. (2020). Anxiety and Post-Traumatic Stress Disorder Symptoms in Pregnant Women during the COVID-19 Pandemic's Delay Phase. *Psychiatria Danubina*, *32*(3-4), 521–526. https://doi.org/10.24869/psyd.2020.521

Hoekzema, E., Barba-Müller, E., Pozzobon, C., Picado, M., Lucco, F., Garcia-Garcia, D., ... Vilarroya, O. (2017). Pregnancy leads to long-lasting changes in human brain structure. *Nature Neuroscience*, *20*(2), 287–296. https://doi.org/10.1038/nn.4458

Ho-Fung, C., Andersson, E., Hsuan-Ying, H., Acharya, G., & Schwank, S. (2022). Self-reported mental health status of pregnant women in Sweden during the COVID-19 pandemic: a cross-sectional survey. *BMC pregnancy and childbirth*, *22*(1), 260. https://doi.org/10.1186/s12884-022-04553-x

Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... & Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*, *7*(6), 547-560. https://doi.org/10.1016/S2215-0366(20)30168-1

Horesh, D., & Brown, A. D. (2020). Traumatic stress in the age of COVID-19: A call to close critical gaps and adapt to new realities. *Psychological trauma : theory, research, practice and policy*, *12*(4), 331–335. https://doi.org/10.1037/tra0000592

Howard, L. M., & Khalifeh, H. (2020). Perinatal mental health: a review of progress and challenges. *World Psychiatry*, *19*(3), 313-327. https://doi.org/10.1002/wps.20769

Hsiao, S.-H., Hsu, H.-Y., Erickson, S. R., Lu, T.-S., & Wu, C.-H. (2022). Seeking health information online among U.S. pregnant women: Findings from the 2009-2018 national health interview surveys. *Women & Health*, *63*(1), 59–69. https://doi.org/10.1080/03630242.2022.2158413

Huang, P., Zhou, F., Guo, Y., Yuan, S., Lin, S., Lu, J., Tu, S., Lu, M., Shen, S., Guedeney, A., Xia, H., & Qiu, X. (2021). Association Between the COVID-19 Pandemic and Infant Neurodevelopment: A Comparison Before and During COVID-19. *Frontiers in pediatrics*, *9*, 662165. https://doi.org/10.3389/fped.2021.662165

Hui, P. W., Ma, G., Seto, M. T. Y., & Cheung, K. W. (2021). Effect of COVID-19 on delivery plans and postnatal depression scores of pregnant women. *Hong Kong medical journal = Xianggang yi xue za zhi*, *27*(2), 113–117. https://doi.org/10.12809/hkmj208774

Huizink, A. C., Robles de Medina, P. G., Mulder, E. J., Visser, G. H., & Buitelaar, J. K. (2003). Stress during pregnancy is associated with developmental outcome in infancy. *Journal of Child Psychology and Psychiatry*, *44*(6), 810-818. https://doi.org/10.1111/1469-7610.00166

Ibiwoye, O. H., & Thomson, G. (2023). COVID-19 pandemic and perinatal mental health: A commentary on the impact, risk factors, and protective factors. *Birth (Berkeley, Calif.)*. https://doi.org/10.1111/birt.12747

Ierardi, E., Ferro, V., Trovato, A., Tambelli, R., & Crugnola, C. R. (2019). Maternal and paternal depression and anxiety: their relationship with mother-infant interactions at 3 months. *Archives of women's mental health*, *22*(4), 527-533. https://doi.org/10.1007/s00737-018-0919-x

Iles, J., Slade, P., & Spiby, H. (2011). Posttraumatic stress symptoms and postpartum depression in couples after childbirth: the role of partner support and attachment. *Journal of anxiety disorders*, *25*(4), 520–530. https://doi.org/10.1016/j.janxdis.2010.12.006

Imbasciati, A., & Cena, L. (2020). *Psicologia Clinica Perinatale Babycentered. Come si costruisce la mente umana. [Perinatal Clinical Babycentered Psychology. How the human mind grows]*. Franco Angeli.

Imbasciati, A., Dabrassi, F., & Cena, L. (2007). Psicologia clinica perinatale-Vademecum per tutti gli addetti alla nascita (genitori inclusi) [Perinatal clinical psychology – Vademcum for all staff involved in birth]. Piccin.

INAPP (2022). Rapporto PLUS 2022 - Comprendere la complessità del lavoro. [PLUS Report 2022 - Understanding the Complexity of Work]. https://oa.inapp.org/bitstream/handle/20.500.12916/3827/Bergamante_Mandrone_Rapporto-Plus2022.pdf?sequence=1&isAllowed=y

Insan, N., Slack, E., Heslehurst, N., & Rankin, J. (2020). Antenatal depression and anxiety and early pregnancy BMI among White British and South Asian women: Retrospective analysis of data from the Born in Bradford cohort. *BMC Pregnancy and Childbirth, 20*, 1-502. https://doi.org/10.1186/s12884-020-03097-2

Inter-Agency Working Group on Reproductive Health in Crises. (2023). Collaborating for maternal mental wellbeing in crises. Technical brief on perinatal mental health in humanitarian settings. https://cdn.iawg.rygn.io/media/Technical-Brief_Perinatal-Mental-Health_FINAL.pdf?mtime=20230503013148&focal=none

Istat (2023). Dinamica demografica - anno 2022 [Demographic dynamics - year 2022]. https://www.istat.it/it/archivio/282316

International Confederation of Midwives (ICM) (2014). *Philosophy and Model of Midwifery Care. International Confederation of Midwives.* The Hague. 〈http://www.internationalmidwives.org/assets/uploads/documents/CoreDocuments/CD2005_001%20V2014%20ENG%20Philosophy%20and%20model%20of%20midwifery%20care.pdf〉

International Monetary Fund (2021). World economic outlook update. https://www.imf.org/en/Home (accessed Apr 25, 2023)

Ionio, C., Gallese, M., Fenaroli, V., Smorti, M., Greco, A., Testa, I., Zilioli, A., & Bonassi, L. (2022). COVID-19: what about pregnant women during first lockdown in Italy?. *Journal of reproductive and infant psychology*, *40*(6), 577–589. https://doi.org/10.1080/02646838.2021.1928614

Istituto Superiore della Sanità (ISS) [The Italian National Institute of Health] Report n. 44/2020 (2020, May 31). Indicazioni di un programma di intervento per la gestione dell'ansia e della depressione perinatale nell'emergenza e post-emergenza COVID-19 [Indications for an intervention program addressing perinatal anxiety and depression during COVID-19 emergency and post-emergency]. https://www.iss.it/documents/20126/0/Rapporto+ISS+COVID-19+44_2020.pdf/f23b53b4-a706-eb54-201c-ea12d2d7ca19?t=1591970625833

Istituto Superiore della Sanità (ISS) [The Italian National Institute of Health] COVID-19 Report n. 45/2020 (2020, May 31). Indicazioni ad interim per gravidanza, parto, allattamento e cura dei piccolissimi di 0-2 anni in risposta all'emergenza COVID-19 [Interim indications for pregnancy, childbirth, breastfeeding and care of children of 0-2 years in response to the COVID-19 emergency]. https://www.iss.it/rapporti-covid-19//asset_publisher/btw1J82wtYzH/content/ id/5299861

Istituto Superiore della Sanità (ISS) [The Italian National Institute of Health] COVID-19 Report n. 2/2021 Rev. (2021, February 5). Indicazioni ad interim per gravidanza, parto, allattamento e cura dei piccolissimi di 0-2 anni in risposta all'emergenza COVID-19 [Interim indications for pregnancy, childbirth, breastfeeding and care of children of 0-2 years in response to the COVID-19 emergency]. https://www.iss.it/rapporti-covid-19/-/asset_publisher/btw1J82wtYzH/content/id/5299861

Italian Ministry of Health (2020). Covid-19, situation in Italy. Available at http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?lingua=english&id=5367&area=nuovoCoronavirus&menu=vuoto [accessed August 2023]

Italian Ministry of Health (2023. November 29). Covid-19 dashboard. https://opendatamds.maps.arcgis.com/apps/dashboards/0f1c9a02467b45a7b4ca12d8ba296596

Iyengar, U., Jaiprakash, B., Haitsuka, H., & Kim, S. (2021). One year into the pandemic: A systematic review of perinatal mental health outcomes during COVID-19. *Frontiers in Psychiatry, 12*, 674194. https://doi.org/10.3389/fpsyt.2021.674194

Jackson, L., De Pascalis, L., Harrold, J. A., Fallon, V., & Silverio, S. A. (2021). Postpartum women's psychological experiences during the COVID-19 pandemic: a modified recurrent cross-sectional thematic analysis. *BMC pregnancy and childbirth*, *21*(1), 625. https://doi.org/10.1186/s12884-021-04071-2

Jackson, L., De Pascalis, L., Harrold, J. A., Fallon, V., & Silverio, S. A. (2022). Postpartum women's experiences of social and healthcare professional support during the COVID-19 pandemic: A recurrent cross-sectional thematic analysis. *Women and birth : journal of the Australian College of Midwives*, *35*(5), 511–520. https://doi.org/10.1016/j.wombi.2021.10.002

Jafari, M., Pormohammad, A., Sheikh Neshin, S. A., Ghorbani, S., Bose, D., Alimohammadi, S., Basirjafari, S., Mohammadi, M., Rasmussen-Ivey, C., Razizadeh, M. H., Nouri-Vaskeh, M., & Zarei, M. (2021). Clinical characteristics and outcomes of pregnant women with Covid-19 and comparison with Control Patients: A systematic review and meta-analysis. *Reviews in Medical Virology*, *31* (5), 1–16. https://doi.org/10.1002/rmv.2208

Jago, C. A., Crawford, S. G., Gill, S. J., & Gagnon, L. (2021). Mental Health and Maternal Mortality—When New Life Doesn't Bring Joy. *Journal of obstetrics and gynaecology Canada*, *43*(1), 67-73. https://doi.org/10.1016/j.jogc.2020.06.016

Jamieson, D. J., Theiler, R. N., & Rasmussen, S. A. (2006). Emerging infections and pregnancy. *Emerging infectious diseases*, *12*(11), 1638. https://doi.org/10.3201%2Feid1211.060152

Janevic, T., Maru, S., Nowlin, S., et al. (2021). Pandemic Birthing: Childbirth Satisfaction, Perceived Health Care Bias, and Postpartum Health During the COVID-19 Pandemic. *Maternal and Child Health Journal*, *25*(6), 860-869. https://doi.org/10.1007/s10995-021-03158-8

Javaid, S., Barringer, S., Compton, S. D., Kaselitz, E., Muzik, M., & Moyer, C. A. (2021). The impact of COVID-19 on prenatal care in the United States: Qualitative analysis from a survey of 2519 pregnant women. *Midwifery*, *98*, 102991. https://doi.org/10.1016/j.midw.2021.102991

Jiang, H., Jin, L., Qian, X., et al. (2021). Maternal mental health status and approaches for accessing antenatal care information during the COVID-19 epidemic in China: A cross-sectional study. *Journal of Medical Internet Research*, 23, e18722. https://doi.org/10.2196/18722

Jin, Y., & Murray, L. (2023). Perinatal mental health and women's lived experience of the COVID-19 pandemic: A scoping review of the qualitative literature 2020-2021. *Midwifery*, *123*, 103706. https://doi.org/10.1016/j.midw.2023.103706

Joanna Briggs Institute (JBI) (2017a). *Checklist for Analytical Cross Sectional Studies*. The Joanna Briggs Institute. http://joannabriggs.org/research/critical-appraisal-tools.html

Joanna Briggs Institute (JBI) (2017b). *Checklist for Qualitative research.* The Joanna Briggs Institute. http://joannabriggs.org/research/critical-appraisal-tools.html

Joanna Briggs Institute (JBI) (2020a). *Checklist for case-control studies*. The Joanna Briggs Institute. https://jbi.global/sites/default/files/2020-08/Checklist_for_Case_Control_Studies.pdf

Joanna Briggs Institute (JBI) (2020b). *Checklist for textual evidence: expert opinion*. The Joanna Briggs Institute. https://jbi.global/sites/default/files/2023-09/2.Checklist_Textual_Evidence_Opinion.docx

Jones, K., Harrison, V., Moulds, M. L., & Lazard, L. (2022). A qualitative analysis of feelings and experiences associated with perinatal distress during the COVID-19 pandemic. *BMC pregnancy and childbirth*, *22*(1), 572. https://doi.org/10.1186/s12884-022-04876-9

Junttila, N., Ahlqvist-Björkroth, S., Aromaa, M., Rautava, P., Piha, J., & Marja, V. (2013). Mothers and Fathers Loneliness During Pregnancy, Infancy, and Toddlerhood. *Psychology and education - an interdisciplinary journal*, *50*, 98-104. Available from: https://www.researchgate.net/profile/Laurie-Theeke-

2/publication/286044814_Loneliness_in_school_age_Children_An_integrative_review_of_quantitative_studies/links/568fd5ec08aed0aed810bb31/Loneliness-in-school-age-Children-An-integrative-review-of-quantitative-studies.pdf#page=102

Kahyaoglu Sut, H., & Kucukkaya, B. (2021). Anxiety, depression, and related factors in pregnant women during the COVID-19 pandemic in Turkey: A web-based cross-sectional study. *Perspectives in psychiatric care*, *57*(2), 860–868. https://doi.org/10.1111/ppc.12627

Käll, A., Jägholm, S., Hesser, H., Andersson, F., Mathaldi, A., Norkvist, B. T., ... & Andersson, G. (2020). Internet-based cognitive behavior therapy for loneliness: a pilot randomized controlled trial. *Behavior therapy*, *51*(1), 54-68. https://doi.org/10.1016/j.beth.2019.05.001

Karimi, L., Makvandi, S., Vahedian-Azimi, A., Sathyapalan, T., & Sahebkar, A. (2021). Effect of COVID-19 on mortality of pregnant and postpartum women: a systematic review and meta-analysis. *Journal of pregnancy*, *2021*. https://doi.org/10.1155/2021/8870129

Keating, N. E., Dempsey, B., Corcoran, S., McAuliffe, F. M., Lalor, J., & Higgins, M. F. (2022). Women's experience of pregnancy and birth during the COVID-19 pandemic: a qualitative study. *Irish journal of medical science*, *191*(5), 2177–2184. https://doi.org/10.1007/s11845-021-02862-2

Kent-Marvick, J., Simonsen, S., Pentecost, R., & McFarland, M. M. (2020). Loneliness in pregnant and postpartum people and parents of children aged 5 years or younger: a scoping review protocol. *Systematic reviews*, *9*, 1-5. https://doi.org/10.1186/s13643-020-01469-5

Ketley, R., Darwin, Z., Masterson, C., & McGowan, L. (2022). Women's experience of post-traumatic growth following a traumatic birth: An interpretive phenomenological analysis. *Journal of Reproductive and Infant Psychology*, *40*(1), 105–117. https://doi.org/10.1080/02646838.2022.2070608

Khalil, A., Hill, R., Ladhani, S., Pattisson, K., & O'Brien, P. (2020). Severe acute respiratory syndrome coronavirus 2 in pregnancy: symptomatic pregnant women are only the tip of the iceberg. *American Journal of Obstetrics & Gynecology*, *223*(2), 296-297. https://doi.org/10.1016/j.ajog.2020.05.005

Kaubisch, L. T., Reck, C., von Tettenborn, A., & Woll, C. F. J. (2022). The COVID-19 pandemic as a traumatic event and the associated psychological impact on families - A systematic review. *Journal of affective disorders*, *319*, 27–39. https://doi.org/10.1016/j.jad.2022.08.109

Khoury, J. E., Atkinson, L., Bennett, T., Jack, S. M., & Gonzalez, A. (2021). COVID-19 and mental health during pregnancy: The importance of cognitive appraisal and social support. *Journal of Affective Disorders*, *282*, 1161-1169. https://doi.org/10.1016/j.jad.2021.01.027

Kim, P., Leckman, J. F., Mayes, L. C., Feldman, R., Wang, X., & Swain, J. E. (2010). The plasticity of human maternal brain: longitudinal changes in brain anatomy during the early postpartum period. *Behavioral Neuroscience*, *124*(6), 695–700. https://doi.org/10.1037/a0020884

King, L. S., Feddoes, D. E., Kirshenbaum, J. S., Humphreys, K. L., & Gotlib, I. H. (2021). Pregnancy during the pandemic: The impact of COVID-19-related stress on risk for prenatal depression. *Psychological Medicine*, *53*(1), 170–180. https://doi.org/10.1017/S003329172100132X

Kinser, P. A., Jallo, N., Amstadter, A. B., Thacker, L. R., Jones, E., Moyer, S., Rider, A., Karjane, N., & Salisbury, A. L. (2021). Depression, Anxiety, Resilience, and Coping: The Experience of Pregnant and New Mothers During the First Few Months of the COVID-19 Pandemic. *Journal of women's health (2002)*, *30*(5), 654–664. https://doi.org/10.1089/jwh.2020.8866

Kinser, P. A., Jallo, N., Moyer, S., Weinstock, M., Barrett, D., Mughal, N., Stevens, L., & Rider, A. (2022). "It's always hard being a mom, but the pandemic has made everything harder": A qualitative exploration of the experiences of perinatal women during the COVID-19 pandemic. *Midwifery*, 109, 103313. https://doi.org/10.1016/j.midw.2022.103313

Klein, M. (1963). On the Sense of Loneliness. In M. Klein, *Envy and Gratitude and Other Works 1946–1963*, pp. 300-313. Hogarth Press.

Knight, M., Bunch, K., Vousden, N., Morris, E., Simpson, N., Gale, C., O'Brien, P., Quigley, M., Brocklehurst, P., & Kurinczuk, J. (2020). UK Obstetric Surveillance System SARS-CoV-2 Infection in Pregnancy Collaborative Group. Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population-based cohort study. *BMJ*, *369*, m2107. https://doi.org/10.1136/bmj.m2107

Koochaki, M., Mahmoodi, Z., Esmaelzadeh-Saeieh, S., Kabir, K., Tehranizadeh, M., & Dolatian, M. (2017). The effect of cognitive-behavioral counseling on anxiety in the mothers of infants in the NICU: A randomized controlled trial. *F1000Research*, *6*, 1679. https://doi.org/10.12688/f1000research.12539.1

Kopelman, R. C., Moel, J., Mertens, C., Stuart, S., Arndt, S., & O'Hara, M. W. (2008). Barriers to care for antenatal depression. *Psychiatric services (Washington, D.C.)*, *59*(4), 429–432. https://doi.org/10.1176/ps.2008.59.4.429

Kotlar, B., Gerson, E., Petrillo, S., Langer, A., & Tiemeier, H. (2021). The impact of the COVID-19 pandemic on maternal and perinatal health: a scoping review. *Reproductive health*, *18*(1), 1-39. https://doi.org/10.1186/s12978-021-01070-6

Kovacheva, K., de la Fe Rodríguez-Muñoz, M., Gómez-Baya, D., Domínguez-Salas, S., & Motrico, E. (2023). Relationship between social support and perinatal depression during the COVID-19 pandemic. *Journal of reproductive and infant psychology*, 1–14. Advance online publication. https://doi.org/10.1080/02646838.2023.2230585

Kruse, J. A., Williams, R. A., & Seng, J. S. (2014). Considering a relational model for depression in women with postpartum depression. *International journal of childbirth*, *4*(3), 151-168. https://doi.org/10.1891/2156-5287.4.3.151

Kumari, A., Ranjan, P., Sharma, K. A., Sahu, A., Bharti, J., Zangmo, R., & Bhatla, N. (2021). Impact of COVID-19 on psychosocial functioning of peripartum women: a qualitative study comprising focus group discussions and in-depth interviews. *International Journal of Gynecology & Obstetrics*, *152*(3), 321-327. https://doi.org/10.1002/ijgo.13524

Lancaster, C. A., Gold, K. J., Flynn, H. A., Yoo, H., Marcus, S. M., & Davis, M. M. (2010). Risk factors for depressive symptoms during pregnancy: a systematic review. *American journal of obstetrics and gynecology*, *202*(1), 5-14. https://doi.org/10.1016/j.ajog.2009.09.007

Langher, V., Fedele, F., Caputo, A., Marchini, F., & Aragona, C. (2019). Extreme desire for motherhood: Analysis of narratives from women undergoing Assisted Reproductive Technology (ART). *Europe's Journal of Psychology*, *15*(2), 292–311. https://doi.org/10.5964/ejop.v15i2.1736

Laplanche, J, Pontalis, J. (1988). Attention, (Evenly) Suspended or Poised. In J. Laplanche & J. Pontalis, *The Language of Psychoanalysis* (pp. 43-44). Karnac.

Lasalvia, A., Bonetto, C., Porru, S., Carta, A., Tardivo, S., Bovo, C., Ruggeri, M., & Amaddeo, F. (2020). Psychological impact of COVID-19 pandemic on healthcare workers in a highly burdened area of north-east Italy. *Epidemiology and psychiatric sciences*, *30*, e1. https://doi.org/10.1017/S2045796020001158

Leach, L. S., Butterworth, P., Poyser, C., Batterham, P. J., & Farrer, L. M. (2017). Online Recruitment: Feasibility, Cost, and Representativeness in a Study of Postpartum Women. *Journal of medical Internet research*, *19*(3), e61. https://doi.org/10.2196/jmir.5745

Leach, L. S., Poyser, C., Cooklin, A. R., & Giallo, R. (2016). Prevalence and course of anxiety disorders (and symptom levels) in men across the perinatal period: A systematic review. Journal of Affective Disorders, 190, 675–686. https://doi.org/10.1016/j.jad.2015.09.063

Leap, N. (2009). Woman-centred or women-centred care: does it matter?. *British Journal of Midwifery*, *17*(1), 12-16.

Lebel, C., MacKinnon, A., Bagshawe, M., Tomfohr-Madsen, L., & Giesbrecht, G. (2020). Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic. *Journal of affective disorders*, *277*, 5-13. https://doi.org/10.1016/j.jad.2020.07.126

Lee, K., Vasileiou, K., & Barnett, J. (2019). 'Lonely within the mother': An exploratory study of first-time mothers' experiences of loneliness. *Journal of health psychology*, *24*(10), 1334-1344. https://doi.org/10.1177/1359105317723451

Lega, I., Bramante, A., Lauria, L., Grussu, P., Dubini, V., Falcieri, M., Ghiani, M. C., Giordano, A., Guidomei, S., Mignuoli, A. D., Paris, S., Bettinelli, M. E., Proietti, P., Andreozzi, S., Brenna, V., Bucciarelli, M., Martelli, G., Ferraro, C., Torrisi, M., Carrozzino, D., … Donati, S. (2022). The Psychological Impact of COVID-19 among Women Accessing Family Care Centers during Pregnancy and the Postnatal Period in Italy. *International journal of environmental research and public health*, *19*(4), 1983. https://doi.org/10.3390/ijerph19041983

Leik, N. K. O., Ahmedy, F., Mac Guad, R., & Baharuddin, D. M. P. (2021). Covid-19 vaccine and its consequences in pregnancy: Brief review. *Annals of Medicine and Surgery*, *72*, 103103. https://doi.org/10.1016/j.amsu.2021.103103

Leinweber, J., Fontein-Kuipers, Y., Karlsdottir, S. I., Ekström-Bergström, A., Nilsson, C., Stramrood, C., & Thomson, G. (2023). Developing a woman-centered, inclusive definition of positive childbirth experiences: A discussion paper. *Birth*, *50*(2), 362-383. https://doi.org/10.1111/birt.12666

Leonard, R., Linden, M., & Grant, A. (2021). Effectiveness of family-focused home visiting for maternal mental illness: A systematic review and meta-analysis. *Journal of psychiatric and mental health nursing*, *28*(6), 1113–1127. https://doi.org/10.1111/jpm.12715

Letourneau, N., Leung, B., Ntanda, H., Dewey, D., Deane, A. J., Giesbrecht, G. F., & APrON Team (2019). Maternal and paternal perinatal depressive symptoms associate with 2- and 3-year-old children's behaviour: findings from the APrON longitudinal study. *BMC pediatrics*, *19*(1), 435. https://doi.org/10.1186/s12887-019-1775-1

Levinson, A., Lobel, M., Preis, H., & Mahaffey, B. (2023). Coping with subjective and objective stress during a pandemic pregnancy: implications for maternal mental health. *Archives of women's mental health*, *26*(6), 819–829. https://doi.org/10.1007/s00737-023-01357-6

Lewkowitz, A. K., Schlichting, L., Werner, E. F., Vivier, P. M., Kahn, L. G., & Clark, M. A. (2022). Risk factors for new-onset postpartum depression or anxiety symptoms during the COVID-19 pandemic. *American journal of obstetrics & gynecology MFM*, *4*(1), 100502. https://doi.org/10.1016/j.ajogmf.2021.100502

Li, L., Yue, S. W., Xu, J., Qiao, J., Redding, S. R., & Ouyang, Y. Q. (2023). Effectiveness of Internet-based psychological interventions for treating perinatal depression: A systematic review and meta-analysis. *Journal of clinical nursing*, *32*(13-14), 3087–3101. https://doi.org/10.1111/jocn.16399

Lin, W., Wu, B., Chen, B., et al. (2021). Sleep conditions associate with anxiety and depression symptoms among pregnant women during the epidemic of COVID-19 in Shenzhen. *Journal of Affective Disorders*, *281*, 567-573. https://doi.org/10.1016/j.jad.2020.11.045

Linden, K., Domgren, N., Zaigham, M., Sengpiel, V., Andersson, M. E., & Wessberg, A. (2022). Being in the shadow of the unknown - Swedish women's lived experiences of pregnancy during the COVID-19 pandemic, a phenomenological study. *Women and birth : journal of the Australian College of Midwives*, *35*(5), 440–446. https://doi.org/10.1016/j.wombi.2021.09.007

Liou, S. R., Wang, P., & Cheng, C. Y. (2014). Longitudinal study of perinatal maternal stress, depressive symptoms and anxiety. *Midwifery*, *30*(6), 795-801. https://doi.org/10.1016/j.midw.2013.11.007

Liu X, Chen M, Wang Y, et al. Prenatal anxiety and obstetric decisions among pregnant women in Wuhan and Chongqing during the COVID-19 outbreak: A cross-sectional study. BJOG. 2020;127(10):1229-1240. doi:10.1111/1471-0528.16304

Long, C. R., & Averill, J. R. (2003). Solitude: An exploration of benefits of being alone. *Journal for the Theory of Social Behaviour*, *33*(1), 21-44. https://doi.org/10.1111/1468-5914.00204

López-Morales, H., Del Valle, M. V., Canet-Juric, L., Andrés, M. L., Galli, J. I., Poó, F., & Urquijo, S. (2021). Mental health of pregnant women during the COVID-19 pandemic: A longitudinal study. *Psychiatry Research*, *295*, 113567. https://doi.org/10.1016/j.psychres.2020.113567

Loret de Mola, C., Blumenberg, C., Martins, R. C., Martins-Silva, T., Carpena, M. X., Del-Ponte, B., Pearson, R., Soares, A. L., & Cesar, J. A. (2021). Increased depression and anxiety during the COVID-19 pandemic in Brazilian mothers: a longitudinal study. *Revista brasileira de psiquiatria (Sao Paulo, Brazil : 1999)*, *43*(3), 337–338. https://doi.org/10.1590/1516-4446-2020-1628

Loughnan, S. A., Joubert, A. E., Grierson, A., Andrews, G., & Newby, J. M. (2019). Internet-delivered psychological interventions for clinical anxiety and depression in perinatal women: a systematic review and meta-analysis. *Archives of women's mental health*, *22*(6), 737–750. https://doi.org/10.1007/s00737-019-00961-9

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety stress scales*. Psychology Foundation of Australia.

Low, S. R., Bono, S. A., & Azmi, Z. (2023). Prevalence and factors of postpartum depression during the COVID-19 pandemic: A review. *Current Psychology, 1-18*. https://doi.org/10.1007/s12144-022-04181-w.

Lubián López, D. M., Butrón Hinojo, C. A., Arjona Bernal, J. E., Fasero Laiz, M., Alcolea Santiago, J., Guerra Vilches, V., Casaus Fernández, M., Bueno Moral, A., Olvera Perdigones, A., Rodríguez Rodríguez, B., Cuevas Palomino, A., Presa Lorite, J., Coronado Martín, P., Sánchez-Prieto, M., Sánchez-Borrego, R., & González-Mesa, E. (2021). Resilience and psychological distress in pregnant

women during quarantine due to the COVID-19 outbreak in Spain: a multicentre cross-sectional online survey. *Journal of psychosomatic obstetrics and gynaecology*, *42*(2), 115–122. https://doi.org/10.1080/0167482X.2021.1896491

Lubrano, C., Vilca, L. M., Coco, C., Schirripa, I., Zuliani, P. L., Corneo, R., ... & Cetin, I. (2023). Pregnant women's acceptance and views on COVID-19 vaccine in Northern Italy. *Journal of Obstetrics and Gynaecology*, *43*(1), 2139596. https://doi.org/10.1080/01443615.2022.2139596

Luce, A., Cash, M., Hundley, V., Cheyne, H., van Teijlingen, E., & Angell, C. (2016). "Is it realistic?" the portrayal of pregnancy and childbirth in the media. *BMC Pregnancy and Childbirth*, *16*(1), 40. https://doi.org/10.1186/s12884-016-0827-x

Luciani, M. N., Mannelli, C. (2020) (a cura di). *Medicina di genere e covid-19* [*Gender medicine and covid-19*]. Bussole IRCCS. http://www.bibliosan.it/bussole_IRCCS/medicina_di_genere_e_Covid_19_n_2.pdf

Ludvigsson, J. F. (2020). Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults. *Acta paediatrica*, *109*(6), 1088-1095. https://doi.org/10.1111/apa.15270

Luo, Y., Zhang, K., Huang, M., Qiu, C., & Rostami, A. (2022). Risk factors for depression and anxiety in pregnant women during the COVID-19 pandemic: Evidence from meta-analysis. *PLoS One*, *17*(3), e0265021. https://doi.org/10.1371/journal.pone.0265021

Luoma, I., Korhonen, M., Puura, K., & Salmelin, R. K. (2019). Maternal loneliness: concurrent and longitudinal associations with depressive symptoms and child adjustment. *Psychology, health & medicine*, *24*(6), 667–679. https://doi.org/10.1080/13548506.2018.1554251

Luoma, I., Korhonen, M., Salmelin, R. K., Helminen, M., & Tamminen, T. (2015). Long-term trajectories of maternal depressive symptoms and their antenatal predictors. *Journal of affective disorders*, *170*, 30–38. https://doi.org/10.1016/j.jad.2014.08.017

Madera, P., Romagnolo, C., Zanetti, S., Dal Maso, F., Turro, M., & De Marco, C. (2021). Effects of the COVID-19 pandemic on postpartum depression: A retrospective case-control study on A significant sample of mothers in northern Italy. *Journal of Prenatal & Perinatal Psychology & Health*, *35*(1), 30-38. Available online at: https://www.proquest.com/scholarly-journals/effects-covid-19-pandemic-on-postpartum/docview/2582224806/se-2

Madigan, S., Oatley, H., Racine, N., Fearon, R. P., Schumacher, L., Akbari, E., ... & Tarabulsy, G. M. (2018). A meta-analysis of maternal prenatal depression and anxiety on child socioemotional development. *Journal of the American Academy of Child & Adolescent Psychiatry*, *57*(9), 645-657. https://doi.org/10.1016/j.jaac.2018.06.012

Manfredi, P., & Imbasciati, A. (2004). *Il feto ci ascolta…e impara [The fetus listens to us...and learns].* Borla.

Manning, K. Y., Long, X., Watts, D., Tomfohr-Madsen, L., Giesbrecht, G. F., & Lebel, C. (2022). Prenatal maternal distress during the COVID-19 pandemic and associations with infant brain connectivity. *Biological Psychiatry*, *92*(9), 701-708. https://doi.org/10.1016/j.biopsych.2022.04.022

Mappa, I., Distefano, F. A., & Rizzo, G. (2020). Effects of coronavirus 19 pandemic on maternal anxiety during pregnancy: A prospective observational study. *Journal of Perinatal Medicine*, *48*(5), 545-550. https://doi.org/10.1515/jpm-2020-0182

Maraschini, A., Corsi, E., Salvatore, M. A., Donati, S (2020). ItOSS COVID-19 Working Group. Coronavirus and birth in Italy: results of a national population-based cohort study. *Annali dell'Istituto Superiore di Sanità* [*Annals of the National Istitution of Health*] *56*(3), 378-89. https://doi.org/10.4415/ANN_20_03_1

Margherita, G., Boursieur, V., Gargiulo, A., Nicolò, G. (2017a). Sognare e narrare la maternità. Un'analisi tematica dei sogni delle gestanti. [Dreaming and narratives matherhood. A thematic analysis of pregnant women dreams], Vol II. *Psicologia Clinica dello Sviluppo*, XXI(2), 237-256. https://doi.org/10.1080/07399332.2019.1692849 10.1449/8753

Margherita, G., Gargiulo, A., & Caffieri, A. (2020). Sclerosi Multipla online: un'analisi delle narrazioni dell'esperienza di sm tra illness e health blog [Multiple Sclerosis online: an analysis of naratives of sm experience between illness and health blog]. *Psicologia della Salute*, *2*, 5-24. https://doi.org/10.3280/PDS2020-002001

Margherita, G., Gargiulo, A., & Martino, M. L. (2015). Dream narration in healthy and at-risk pregnancy. *Dreaming*, *25*(2), 88–102. https://doi.org/10.1037/a0038884

Margherita, G., Troisi, G., Tessitore, F., & Gargiulo, A. (2017b). Teen mothers who are daughters of teen mothers: Psychological intergenerational dimensions of early motherhood. *Children and Youth Services Review*, *83*, 294–301. rights and content. https://doi.org/10.1016/j.childyouth.2017.10.010

Mari, F., Capasso, M., & Caso, D. (2022). Exploring the psychosocial impact of the Covid-19 pandemic on women's perinatal experiences and wellbeing: A qualitative study. *Sexual & Reproductive Healthcare*, *35*, 100805. https://doi.org/10.1016/j.srhc.2022.100805

Martín-Gómez, C., Moreno-Peral, P., Bellón, J. A., Conejo-Cerón, S., Campos-Paino, H., Gómez-Gómez, I., ... & Motrico, E. (2022). Effectiveness of psychological interventions in preventing postpartum depression in non-depressed women: a systematic review and meta-analysis of randomized controlled trials. *Psychological Medicine*, *52*(6), 1001-1013. https://doi.org/10.1017/S0033291722000071

Masi, C. M., Chen, H. Y., Hawkley, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and social psychology review*, *15*(3), 219-266. https://doi.org/10.1177/1088868310377394

Masiero, M., Mazzocco, K., Harnois, C., Cropley, M., & Pravettoni, G. (2020). From Individual To Social Trauma: Sources Of Everyday Trauma In Italy, The US And UK During The Covid-19 Pandemic. *Journal of trauma & dissociation : the official journal of the International Society for the Study of Dissociation (ISSD)*, *21*(5), 513–519. https://doi.org/10.1080/15299732.2020.1787296

Mateus, V., Cruz, S., Costa, R., Mesquita, A., Christoforou, A., Wilson, C. A., Vousoura, E., Dikmen-Yildiz, P., Bina, R., Dominguez-Salas, S., Contreras-García, Y., Motrico, E., & Osório, A. (2022). Rates of depressive and anxiety symptoms in the perinatal period during the COVID-19 pandemic: Comparisons between countries and with pre-pandemic data. *Journal of affective disorders*, *316*, 245–253. https://doi.org/10.1016/j.jad.2022.08.017

Matsushima, M., & Horiguchi, H. (2022). The COVID-19 Pandemic and Mental Well-Being of Pregnant Women in Japan: Need for Economic and Social Policy Interventions. *Disaster medicine and public health preparedness*, *16*(2), 449–454. https://doi.org/10.1017/dmp.2020.334122

Matthey, S., Barnett, B., Howie, P., & Kavanagh, D. J. (2003). Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety?. *Journal of affective disorders*, *74*(2), 139–147. https://doi.org/10.1016/s0165-0327(02)00012-5

Mattiuzzi, C., & Lippi, G. (2023). Timeline analysis of clinical severity of COVID-19 in the general population. *European Journal of Internal Medicine*, *110*, 97-98. https://doi.org/10.1016/j.ejim.2022.12.007

Mattiuzzi, C., Henry, B. M., & Lippi, G. (2022). COVID-19 vaccination and SARS-CoV-2 Omicron (B. 1.1. 529) variant: a light at the end of the tunnel?. *International Journal of Infectious Diseases*, *118*, 167-168. https://doi.org/10.1016/j.ijid.2022.03.008

Matvienko-Sikar, K., Pope, J., Cremin, A., Carr, H., Leitao, S., Olander, E. K., & Meaney, S. (2021). Differences in levels of stress, social support, health behaviours, and stress-reduction strategies for women pregnant before and during the COVID-19 pandemic, and based on phases of pandemic restrictions, in Ireland. *Women and birth : journal of the Australian College of Midwives*, *34*(5), 447–454. https://doi.org/10.1016/j.wombi.2020.10.010

Mauri, M., Oppo, A., Montagnani, M. S., Borri, C., Banti, S., Camilleri, V., Cortopassi, S., Ramaciotti, D., Rambelli, C., & Cassano, G. B. (2010). Beyond "postpartum depressions": specific anxiety diagnoses during pregnancy predict different outcomes: results from PND-ReScU. *Journal of affective disorders*, *127*(1-3), 177-184. https://doi.org/10.1016/j.jad.2010.05.015

Mayopoulos, G. A., Ein-Dor, T., Dishy, G. A., Nandru, R., Chan, S. J., Hanley, L. E., Kaimal, A. J., & Dekel, S. (2021). COVID-19 is associated with traumatic childbirth and subsequent mother-infant bonding problems. *Journal of affective disorders*, *282*, 122–125. https://doi.org/10.1016/j.jad.2020.12.101

McCoy, L. K. (2017). Longitudinal qualitative research and interpretative phenomenological analysis: Philosophical connections and practical considerations. *Qualitative Research in Psychology*, *14*(4), 442–458. https://doi.org/10.1080/14780887.2017.1340530

McFarland, M. J., McFarland, C. A. S., Hill, T. D., & D'Oria, R. (2021). Postpartum Depressive Symptoms during the Beginning of the COVID-19 Pandemic: An Examination of Population Birth Data from Central New Jersey. *Maternal and child health journal*, *25*(3), 353–359. https://doi.org/10.1007/s10995-020-03116-w

McKee, K. S., Tang, X., Tung, I., Wu, G., Alshawabkeh, A. N., Arizaga, J. A., ... & Comstock, S. S. (2023). Perinatal Outcomes during versus Prior to the COVID-19 Pandemic and the Role of Maternal Depression and Perceived Stress: A Report from the ECHO Program. *American Journal of Perinatology*. https://doi.org/10.1055/a-2033-5610

McKenzie-McHarg, K., Ayers, S., Ford, E., Horsch, A., Jomeen, J., Sawyer, A., ... & Slade, P. (2015). Post-traumatic stress disorder following childbirth: an update of current issues and recommendations for future research. *Journal of Reproductive and Infant Psychology*, *33*(3), 219-237. https://doi.org/10.1080/02646838.2015.1031646

McNab, S. E., Dryer, S. L., Fitzgerald, L., Gomez, P., Bhatti, A. M., Kenyi, E., ... & Stalls, S. (2022). The silent burden: a landscape analysis of common perinatal mental disorders in low-and middle-income countries. *BMC Pregnancy and Childbirth*, *22*(1), 342. https://doi.org/10.1186/s12884-022-04589-z

McNamara, J., Townsend, M. L., & Herbert, J. S. (2019). A systemic review of maternal wellbeing and its relationship with maternal fetal attachment and early postpartum bonding. *PloS one*, *14*(7), e0220032. https://doi.org/10.1371/journal.pone.0220032

Meades, R., & Ayers, S. (2011). Anxiety measures validated in perinatal populations: a systematic review. *Journal of affective disorders*, *133*(1-2), 1-15. https://doi.org/10.1016/j.jad.2010.10.009

Mesquita, A., Costa, R., Bina, R., Cadarso-Suárez, C., Gude, F., Díaz-Louzao, C., ... & Motrico, E. (2023). A cross-country study on the impact of governmental responses to the COVID-19 pandemic on perinatal mental health. *Scientific Reports*, *13*(1), 2805. https://doi.org/10.1038/s41598-023-29300-w

Miani, C., Leiße, A., Wandschneider, L., & Batram-Zantvoort, S. (2023). Experiences of giving birth during the COVID-19 pandemic: A qualitative analysis of social media comments through the lens of birth integrity. *BMC Pregnancy and Childbirth*, *23*(1), 32. https://doi.org/10.1186/s12884-022-05326-2

Mihajlovic, S., Nikolic, D., Milicic, B., Santric-Milicevic, M., Glushkova, N., Nurgalieva, Z., & Lackovic, M. (2023). Association of Pre-Pregnancy Obesity and COVID-19 with Poor Pregnancy Outcome. *Journal of Clinical Medicine*, *12*(8), 2936. https://doi.org/10.3390/jcm12082936

Milan, A. (2005). Depression in pregnancy and the postpartum period: Balancing adverse effects of untreated illness with treatment risks. *Journal of Psychiatric Practice*, *11*(6), 389-96. https://doi.org/10.1097/00131746-200511000-00005

Milgrom, J., Holt, C., Holt, C. J., Ross, J., Ericksen, J., & Gemmill, A. W. (2015). Feasibility study and pilot randomised trial of an antenatal depression treatment with infant follow-up. *Archives of women's mental health*, *18*(5), 717–730. https://doi.org/10.1007/s00737-015-0512-5

Milgrom, J., Schembri, C., Ericksen, J., Ross, J., & Gemmill, A. W. (2011). Towards parenthood: an antenatal intervention to reduce depression, anxiety and parenting difficulties. *Journal of affective disorders*, *130*(3), 385–394. https://doi.org/10.1016/j.jad.2010.10.045

Milgrom, J., & Gemmill, A. W. (2014). Screening for perinatal depression. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *28*(1), 13-23. https://doi.org/10.1016/j.bpobgyn.2013.08.014

Milgrom, J., & Gemmill, A. W. (2020). Depression, Anxiety, and Psychological Distress in the Perinatal Period. In R. M. Quatrato, & Grussu, P., *Handbook of Perinatal Clinical Psychology: From Theory to Practice*. Routledge

Milton, J. (2018). From the Melanie Klein archive: Klein's further thoughts on loneliness, *The International Journal of Psychoanalysis*, 99(4), 929-946. https://doi.org/10.1080/00207578.2018.1476027

Minello, A., & Cannito, M. (2023). *Le equilibriste – La maternità in Italia – 2023 [The tightrope walkers – Motherhood in Italy – 2023]*. Save the Children.

Miraglia del Giudice, G., Folcarelli, L., Napoli, A., Corea, F., Angelillo, I. F., Agangi, A., ... & Collaborative Working Group. (2022). COVID-19 vaccination hesitancy and willingness among pregnant women in Italy. *Frontiers in Public Health*, *10*, 995382. https://doi.org/10.3389/fpubh.2022.995382

Mirzaei, N., Jahanian Sadatmahalleh, S., Bahri Khomami, M., Moini, A., & Kazemnejad, A. (2021). Sexual function, mental health, and quality of life under strain of COVID-19 pandemic in Iranian pregnant and lactating women: a comparative cross-sectional study. *Health and quality of life outcomes*, *19*(1), 66. https://doi.org/10.1186/s12955-021-01720-0

Missler, M., Beijers, R., Denissen, J., & van Straten, A. (2018). Effectiveness of a psycho-educational intervention to prevent postpartum parental distress and enhance infant well-being: study protocol of a randomized controlled trial. *Trials*, *19*(1), 4. https://doi.org/10.1186/s13063-017-2348-y1-12.

Missler, M., Donker, T., Beijers, R., Ciharova, M., Moyse, C., de Vries, R., Denissen, J., & van Straten, A. (2021). Universal prevention of distress aimed at pregnant women: a systematic review and meta-analysis of psychological interventions. *BMC pregnancy and childbirth*, *21*(1), 276. https://doi.org/10.1186/s12884-021-03752-2

Mitchell, R. A., Gordon, H., Lindquist, A., et al. (2023). Prevalence of Perinatal Depression in Low- and Middle-Income Countries: A Systematic Review and Meta-analysis. *JAMA Psychiatry*, *80*(5), 425-431. https://doi.org/10.1001/jamapsychiatry.2023.0069

Miyauchi, A., Shishido, E., & Horiuchi, S. (2022). Women's experiences and perceptions of women-centered care and respectful care during facility-based childbirth: A meta-synthesis. *Japan Journal of Nursing Science*, *19*(3), e12475. https://doi.org/10.1111/jjns.12475

Miyoshi, A., Ueda, Y., Yagi, A., Kimura, T., Kobayashi, E., Hiramatsu, K., ... & Kimura, T. (2022). How the COVID-19 Pandemic Changed a New Mother's Sense of Loneliness, and Who Was Key to Helping Them Through It. *Journal of Clinical Gynecology and Obstetrics*, *11*(4), 101-107. https://doi.org/10.14740/jcgo824

Moher, D., Schulz, K. F., Simera, I., & Altman, D. G. (2010). Guidance for developers of health research reporting guidelines. *PLoS medicine*, *7*(2), e1000217. https://doi.org/10.1371/journal.pmed.1000217

Molgora, S., & Accordini, M. (2020). Motherhood in the time of coronavirus: The impact of the pandemic emergency on expectant and postpartum women's psychological well-being. *Frontiers in Psychology*, *11*, 567155. https://doi.org/10.3389/fpsyg.2020.567155

Morin, C. M., & Carrier, J. (2021). The acute effects of the COVID-19 pandemic on insomnia and psychological symptoms. *Sleep medicine*, *77*, 346. https://dx.doi.org/10.1016%2Fj.sleep.2020.06.005

Morniroli, D., Consales, A., Colombo, L., Bezze, E. N., Zanotta, L., Plevani, L., Fumagalli, M., Mosca, F., & Giannì, M. L. (2021). Exploring the Impact of Restricted Partners' Visiting Policies on Non-Infected Mothers' Mental Health and Breastfeeding Rates during the COVID-19 Pandemic. *International journal of environmental research and public health*, *18*(12), 6347. https://doi.org/10.3390/ijerph18126347

Mortazavi, F., Mehrabadi, M., & KiaeeTabar, R. (2021). Pregnant women's well-being and worry during the COVID-19 pandemic: a cross-sectional study. *BMC Pregnancy and Childbirth*, *21*(1), 1-11. https://doi.org/10.1186/s12884-021-03548-4

Motrico, E., Bina, R., Domínguez-Salas, S., et al. (2021a). Impact of the Covid-19 pandemic on perinatal mental health (Riseup-PPD-COVID-19): Protocol for an international prospective cohort study. *BMC Public Health*, 21(1), 1-11. https://doi.org/10.1186/s12889-021-10330-w

Motrico, E., Bina, R., Kassianos, A. P., et al. (2023a). Effectiveness of interventions to prevent perinatal depression: An umbrella review of systematic reviews and meta-analysis. *General Hospital Psychiatry*, *82*, 47-61. https://doi.org/10.1016/j.genhosppsych.2023.03.007

Motrico, E., Conejo-Cerón, S., Martín-Gómez, C., Gómez-Gómez, I., Fonseca, A., & Moreno-Peral, P. (2021b). Effectiveness of web-based and mobile-based psychological interventions to prevent perinatal depression: Study protocol for a systematic review and meta-analysis of randomized controlled trials. *Internet Interventions*, *26*, 100471.

Motrico, E., Domínguez Salas, S., Rodríguez Domínguez, C., Gómez Gómez, I., Rodríguez Muñoz, M. D. L. F., & Gomez Baya, D. (2022). The impact of the COVID-19 pandemic on perinatal depression and anxiety: A large cross-sectional study in Spain. *Psicothema*, *34*(2), 200-208. https://doi.org/10.7334/psicothema2021.380

Motrico, E., Galán-Luque, T., Rodríguez-Domínguez, C., Gómez-Gómez, I., & Domínguez-Salas, S. Factors associated with post-traumatic stress symptoms in pregnant and postpartum women. (2023b). *Journal of Women's Health (Larchmt)*, *32*(5), 583–591. Advance online publication. https:// doi.org/10.1089/jwh.2022.0400

Motrico, E., Mateus, V., Bina, R., Felice, E., Bramante, A., Kalcev, G., ... & Mesquita, A. (2020). Good practices in perinatal mental health during the COVID-19 pandemic: a report from task-force RISEUP-PPD COVID-19. *Clínica y Salud*, *31*(3), 155-160. https://dx.doi.org/10.5093/clysa2020a26

Motrico, E., Moreno-Peral, P., Uriko, K., et al. (2022). Clinical practice guidelines with recommendations for peripartum depression: A European systematic review. *Acta Psychiatrica Scandinavica*, *146*(4), 325-339. https://doi.org/10.1111/acps.13478

Moya, E., Larson, L. M., Stewart, R. C., Fisher, J., Mwangi, M. N., & Phiri, K. S. (2022). Reliability and validity of depression anxiety stress scale (DASS)-21 in screening for common mental disorders among postpartum women in Malawi. *BMC psychiatry*, *22*(1), 352. https://doi.org/10.1186/s12888-022-03994-0

Moyer, C. A., Compton, S. D., Kaselitz, E., & Muzik, M. (2020). Pregnancy-related anxiety during COVID-19: a nationwide survey of 2740 pregnant women. *Archives of women's mental health*, *23*(6), 757–765. https://doi.org/10.1007/s00737-020-01073-5

Mucci, C. (2024). Three Levels of Trauma of Human Agency and the Problems of the Diagnostic and Statistical Manual (DSM) Categories for Post Traumatic Stress Disorder-PTSD. In A. Rachman & L. Mucci, *Ferenczi's Confusion of Tongues Theory of Trauma* (pp. 132-169). Routledge.

Mullins, E., Evans, D., Viner, R. M., O'Brien, P., & Morris, E. (2020). Coronavirus in pregnancy and delivery: rapid review. *Ultrasound in Obstetrics & Gynecology*, 55(5), 586-592. https://doi.org/10.1002/uog.22014

Mullins, E., Perry, A., Banerjee, J., Townson, J., Grozeva, D., Milton, R., ... & Coxon, S. (2022). Pregnancy and neonatal outcomes of COVID-19: The PAN-COVID study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *276*, 161-167. https://doi.org/10.1016/j.ejogrb.2022.07.010

Murray, L., Dunne, M. P., Van Vo, T., Anh, P. N. T., Khawaja, N. G., & Cao, T. N. (2015). Postnatal depressive symptoms amongst women in Central Vietnam: A cross-sectional study investigating prevalence and associations with social, cultural, and infant factors. *BMC Pregnancy and Childbirth*, *15*, 1-12. https://doi.org/10.1186/s12884-015-0662-5

Musa, S. S., Bello, U. M., Zhao, S., Abdullahi, Z. U., Lawan, M. A., & He, D. (2021). Vertical transmission of SARS-CoV-2: a systematic review of systematic reviews. *Viruses*, *13*(9), 1877. https://doi.org/10.3390/v13091877

Myers, S., & Emmott, E. H. (2021). Communication across maternal social networks during England's first national lockdown and its association with postnatal depressive symptoms. *Frontiers in Psychology*, *12*, 648002. https://doi.org/10.3389/fpsyg.2021.648002

Myo, T., Hong, S. A., Thepthien, B. O., & Hongkrailert, N. (2021). Prevalence and Factors Associated with Postpartum Depression in Primary Healthcare Centres in Yangon, Myanmar. *The Malaysian journal of medical sciences : MJMS*, *28*(4), 71–86. https://doi.org/10.21315/mjms2021.28.4.8

Naurin, E., Markstedt, E., Stolle, D., Enström, D., Wallin, A., Andreasson, I., ... & Sengpiel, V. (2021). Pregnant under the pressure of a pandemic: a large-scale longitudinal survey before and during the COVID-19 outbreak. *European journal of public health*, *31*(1), 7-13. https://doi.org/10.1093/eurpub/ckaa223

Nazzari, S., Grumi, S., Mambretti, F., Villa, M., Giorda, R., Provenzi, L., & MOM-COPE Study Group (2022). Maternal and infant NR3C1 and SLC6A4 epigenetic signatures of the COVID-19 pandemic lockdown: when timing matters. *Translational psychiatry*, *12*(1), 386. https://doi.org/10.1038/s41398-022-02160-0

Negron, R., Martin, A., Almog, M., Balbierz, A., & Howell, E. A. (2013). Social support during the postpartum period: mothers' views on needs, expectations, and mobilization of support. *Maternal and child health journal*, *17*(4), 616-623. https://doi.org/10.1007/s10995-012-1037-4

Ng, C. A., Ho, J. J., & Lee, Z. H. (2019). The effect of rooming-in on duration of breastfeeding: A systematic review of randomised and non-randomised prospective controlled studies. *PLoS One*, *14*(4), e0215869. https://doi.org/10.1371/journal.pone.0215869

Niela-Vilén, H., Auxier, J., Ekholm, E., Sarhaddi, F., Asgari Mehrabadi, M., Mahmoudzadeh, A., Azimi, I., Liljeberg, P., Rahmani, A. M., & Axelin, A. (2021). Pregnant women's daily patterns of well-being before and during the COVID-19 pandemic in Finland: Longitudinal monitoring through smartwatch technology. *PLoS One*, *16*(2), e0246494. https://doi.org/10.1371/journal.pone.0246494

Nowland, R., Thomson, G., McNally, L., Smith, T., & Whittaker, K. (2021). Experiencing loneliness in parenthood: a scoping review. *Perspectives in public health*, *141*(4), 214-225. https://doi.org/10.1177/17579139211018243

Nunziante Cesaro, A., & Ferraro, F. (1985). *Lo spazio cavo e il corpo saturato. [The hollow space and the saturated body]*. Franco Angeli.

O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: a synthesis of recommendations. *Academic medicine : journal of the Association of American Medical Colleges*, *89*(9), 1245–1251. https://doi.org/10.1097/ACM.0000000000000388

O'Connell, M. A., Khashan, A. S., & Leahy-Warren, P. (2021). Women's experiences of interventions for fear of childbirth in the perinatal period: A meta-synthesis of qualitative research evidence. *Women and Birth*, *34*(3), e309-e321. https://doi.org/10.1016/j.wombi.2020.05.008

O'Donnell, K. J., Glover, V., Barker, E. D., & O'Connor, T. G. (2014). The persisting effect of maternal mood in pregnancy on childhood psychopathology. *Development and psychopathology*, *26*(2), 393-403. https://doi.org/10.1017/S0954579414000029

Obikane, E., Nishi, D., Morisaki, N., & Tabuchi, T. (2023). Risk factors of paternal perinatal depression during the COVID-19 pandemic in Japan. *Journal of psychosomatic obstetrics and gynaecology*, *44*(1), 2245556. https://doi.org/10.1080/0167482X.2023.2245556

Orsolini, L., Pompili, S., Mauro, A., Salvi, V., & Volpe, U. (2022). Fear and anxiety related to COVID-19 pandemic may predispose to perinatal depression in Italy. *Frontiers in psychiatry*, *13*, 977681. https://doi.org/10.3389/fpsyt.2022.977681

Ostacoli, L., Cosma, S., Bevilacqua, F., Berchialla, P., Bovetti, M., Carosso, A. R., Malandrone, F., Carletto, S., & Benedetto, C. (2020). Psychosocial factors associated with postpartum psychological distress during the Covid-19 pandemic: a cross-sectional study. *BMC pregnancy and childbirth*, *20*(1), 1-8. https://doi.org/10.1186/s12884-020-03399-5

Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews*, *5*, 1-10. https://doi.org/10.1186/s13643-016-0384-4.

Paes, L. B. O., Salim, N. R., Stofel, N. S., & Fabbro, M. R. C. (2021). Women and COVID-19: reflections for a sexual and reproductive rights-based obstetric care. *Revista brasileira de enfermagem*, *74Suppl 1*(Suppl 1), e20201164. https://doi.org/10.1590/0034-7167-2020-1164

Page, M. J., McKenzie, J. E., Bossuyt, P. M., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*, 71. https://doi.org/10.1136/bmj.n71.

Palumbo, G., Mirabella, F., Cascavilla, I., Del Re, D., Romano, G., & Gigantesco, A. (Ed.) (2016). *Prevenzione e intervento precoce per il rischio di depressione post partum*. [*Prevention and early intervention for postpartum depression*]. Istituto Superiore di Sanita. (Rapporti ISTISAN 16/31).

Pariente, G., Wissotzky Broder, O., Sheiner, E., Lanxner Battat, T., Mazor, E., Yaniv Salem, S., Kosef, T., & Wainstock, T. (2020). Risk for probable post-partum depression among women during the COVID-19 pandemic. *Archives of women's mental health*, *23*(6), 767–773. https://doi.org/10.1007/s00737-020-01075-3

Paschetta, E., Berrisford, G., Coccia, F., et al. (2014). Perinatal psychiatric disorders: an overview. *American Journal of Obstetrics and Gynecology*, 210(6), 501-509. https://doi.org/10.1016/j.ajog.2013.10.009

Pashazadeh Kan, F., Raoofi, S., Rafiei, S., Khani, S., Hosseinifard, H., Tajik, F., Raoofi, N., Ahmadi, S., Aghalou, S., Torabi, F., Dehnad, A., Rezaei, S., Hosseinipalangi, Z., & Ghashghaee, A. (2021). A systematic review of the prevalence of anxiety among the general population during the COVID-19 pandemic. *Journal of affective disorders*, *293*, 391–398. https://doi.org/10.1016/j.jad.2021.06.073

Patabendige, M., Gamage, M. M., Weerasinghe, M., & Jayawardane, A. (2020). Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *151*(1), 150–153. https://doi.org/10.1002/ijgo.13335

Patel, M., Bailey, R. K., Jabeen, S., Ali, S., Barker, N. C., & Osiezagha, K. (2012). Postpartum depression: a review. *Journal of health care for the poor and underserved*, *23*(2), 534-542. https://doi.org/10.1353/hpu.2012.0037

Perez, A., Schepanski, S., Göbel, A., Yao Stuhrmann, L., Singer, D., Bindt, C., & Mudra, S. (2021). Experience of early motherhood during the first wave of the COVID-19 pandemic in Northern Germany: A single-centre before and after comparison. *Journal of Reproductive and Infant Psychology*, *39*(5), 566–579. https://doi.org/10.1080/02646838.2021.2013458

Perzow, S. E. D., Hennessey, E. P., Hoffman, M. C., Grote, N. K., Davis, E. P., & Hankin, B. L. (2021). Mental health of pregnant and postpartum women in response to the COVID-19 pandemic. *Journal of affective disorders reports*, *4*, 100123. https://doi.org/10.1016/j.jadr.2021.100123

Petrelli, D. (2020). Sulla solitudine. In margine alle Note, dall'Archivio Melanie Klein [On loneliness. Notes from M. Klein's archive]. *Richard e Piggle*, 28*(1)*,

Pieper, D., Antoine, S. L., Mathes, T., Neugebauer, E. A., & Eikermann, M. (2014). Systematic review finds overlapping reviews were not mentioned in every other overview. *Journal of clinical epidemiology*, *67*(4), 368-375. https://doi.org/10.1016/j.jclinepi.2013.11.007

Pieri, M., Maniori, M. A., Shahabian, L., Kanaan, E., Paphiti-Demetriou, I., Pipis, S., ... & Papaneophytou, C. (2022). Survival of vaccine-induced human milk SARS-CoV-2 IgG, IgA and SIgA immunoglobulins across simulated human infant gastrointestinal digestion. *Nutrients*, *14*(16), 3368. https://doi.org/10.3390/nu14163368

Pines, D. (1972). Pregnancy and motherhood: interaction between fantasy and reality. *British Journal of Medical Psychology*, 45, 333-343.

Pinto, T. M., Samorinha, C., Tendais, I., & Figueiredo, B. (2020). Depression and paternal adjustment and attitudes during the transition to parenthood. *Journal of Reproductive and Infant Psychology*, *38*(3), 281-296.

Pisano, G., Sadun, R., & Zanini, M. (2020). Lessons from Italy's response to coronavirus. *Harvard Business Review*. Available at https://hbr.org/2020/03/lessons-from-italys-response-to-coronavirus [accessed August 2023]

Pollock, M., Fernandes, R., Becker, L., Pieper, D., & Hartling, L. (2022). Chapter V: overviews of reviews. In J. Higgins, J. Thomas, J. Chandler, et al. (Eds.) (2023). *Cochrane Handbook for Systematic Reviews of Interventions version 6.4 (updated August 2023).* Cochrane. Available from *www.training.cochrane.org/handbook*.

Posmontier, B., & Horowitz, J. A. (2004). Postpartum practices and depression prevalences: technocentric and ethnokinship cultural perspectives. *Journal of Transcultural Nursing*, *15*(1), 34-43.

Power, A., Atkinson, S., & Noonan, M. (2022). "Stranger in a mask" midwives' experiences of providing perinatal bereavement care to parents during the COVID-19 pandemic in Ireland: A qualitative descriptive study. *Midwifery*, *111*, 103356. https://doi.org/10.1016/j.midw.2022.103356

Preis, H., Mahaffey, B., & Lobel, M. (2020b). Psychometric properties of the pandemic-related pregnancy stress scale (PREPS). *Journal of Psychosomatic Obstetrics & Gynecology*, *41*(3), 191-197. https://doi.org/10.1080/0167482X.2020.1801625

Preis, H., Mahaffey, B., Heiselman, C., & Lobel, M. (2020a). Vulnerability and resilience to pandemic-related stress among US women pregnant at the start of the COVID-19 pandemic. *Social science & medicine*, *266*, 113348. https://doi.org/10.1016/j.socscimed.2020.113348

Preis, H., Mahaffey, B., Pati, S., Heiselman, C., & Lobel, M. (2021). Adverse perinatal outcomes predicted by prenatal maternal stress among US women at the COVID-19 pandemic onset. *Annals of Behavioral Medicine*, *55*(3), 179-191. https://doi.org/10.1093/abm/kaab005

Press, S. (2019). *Stata statistical software: release 16*. StataCorp LLC.

Priyambada, K., Pattojoshi, A., & Bakhla, A. K. (2017). A study of antenatal anxiety: comparison across trimesters. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *6*(5), 1810-1814.

Prokopowicz, A., Stańczykiewicz, B., & Uchmanowicz, I. (2023). Anxiety and psychological flexibility in women after childbirth in the rooming-in unit during the COVID-19 pandemic. *Journal of Midwifery & Women's Health*, *68*(1), 107–116. https://doi.org/10.1111/jmwh.13445

Provenzi, L., Grumi, S., Altieri, L., Bensi, G., Bertazzoli, E., Biasucci, G., Cavallini, A., Decembrino, L., Falcone, R., Freddi, A., Gardella, B., Giacchero, R., Giorda, R., Grossi, E., Guerini, P., Magnani, M. L., Martelli, P., Motta, M. … MOM-COPE Study Group. (2021). Prenatal maternal stress during the COVID-19 pandemic and infant regulatory capacity at 3 months: A longitudinal study. *Development and Psychopathology*, *35*(1), 1–9. https://doi.org/10.1017/S0954579421000766

Provenzi, L., Mambretti, F., Villa, M., Grumi, S., Citterio, A., Bertazzoli, E., Biasucci, G., Decembrino, L., Falcone, R., Gardella, B., Longo, M. R., Nacinovich, R., Pisoni, C., Prefumo, F., Orcesi, S., Scelsa, B., Giorda, R., & Borgatti, R. (2021). Hidden pandemic: COVID-19-related stress, SLC6A4 methylation, and infants' temperament at 3 months. *Scientific reports*, *11*(1), 15658. https://doi.org/10.1038/s41598-021-95053-z.

Psouni, E., & Eichbichler, A. (2020). Feelings of restriction and incompetence in parenting mediate the link between attachment anxiety and paternal postnatal depression. Psychology of Men & Masculinity, 21(3), 416–429. https://doi.org/10.1037/men0000233

Psouni, E., Agebjörn, J., & Linder, H. (2017). Symptoms of depression in Swedish fathers in the postnatal period and development of a screening tool. Scandinavian Journal of Psychology, 58(6), 485–496. https://doi.org/10.1111/sjop.12396

Psouni, E., Frisk, C., & Brocki, K. (2021). Anxiety among fathers in the postnatal period: Links to depression, attachment insecurity and emotion regulation. Journal of Affective Disorders Reports, 6, Article 100276. https://doi.org/10.1016/j.jadr.2021.100276

Racamier, P. C., & Taccani, S. (2010). La maternità: un tipico processo di crisi [Motherhood a normal process of crisis]. In Racamier, P. C., & Taccani, S., *La crisi necessaria. Il lavoro incerto*, 38-48. FrancoAngeli.

Racine, N., Hetherington, E., McArthur, B. A., McDonald, S., Edwards, S., Tough, S., & Madigan, S. (2021). Maternal depressive and anxiety symptoms before and during the COVID-19 pandemic in Canada: a longitudinal analysis. *The lancet. Psychiatry*, *8*(5), 405–415. https://doi.org/10.1016/S2215-0366(21)00074-2-0

Rahman, A., Fisher, J., Bower, P., Luchters, S., Tran, T., Yasamy, M. T., Saxena, S., & Waheed, W. (2013). Interventions for common perinatal mental disorders in women in low- and middle-income countries: a systematic review and meta-analysis. *Bulletin of the World Health Organization*, *91*(8), 593–601I. https://doi.org/10.2471/BLT.12.109819

Räisänen, S., Lehto, S. M., Nielsen, H. S., Gissler, M., Kramer, M. R., & Heinonen, S. (2014). Risk factors for and perinatal outcomes of major depression during pregnancy: a population-based analysis during 2002–2010 in Finland. *BMJ open*, *4*(11), e004883. http://dx.doi.org/10.1136/bmjopen-2014-004883

Rallis, S., Skouteris, H., McCabe, M., & Milgrom, J. (2014). The transition to motherhood: towards a broader understanding of perinatal distress. *Women and Birth*, *27*(1), 68-71. https://doi.org/10.1016/j.wombi.2013.12.004

Rank, O. (1929). Il trauma della nascita [The trauma of childbirth]. Tasco.

Rao, W. W., Zhu, X. M., Zong, Q. Q., Zhang, Q., Hall, B. J., Ungvari, G. S., & Xiang, Y. T. (2020). Prevalence of prenatal and postpartum depression in fathers: A comprehensive meta-analysis of observational surveys. *Journal of affective disorders*, *263*, 491–499. https://doi.org/10.1016/j.jad.2019.10.030

Raphael-Leff, J. (1982). Psychotherapeutic needs of mothers-to-be: Personal risk factors. *Journal of Child Psychotherapy*, *8*(1), 3-13.

Rauf, N., Zulfiqar, S., Mumtaz, S., Maryam, H., Shoukat, R., Malik, A., ... & Atif, N. (2021). The impact of the COVID-19 pandemic on pregnant women with perinatal anxiety symptoms in Pakistan: a qualitative study. *International journal of environmental research and public health*, *18*(16), 8237. https://doi.org/10.3390/ijerph18168237

Ravaldi, C., Ricca, V., Wilson, A., Homer, C., & Vannacci, A. (2020a). Previous psychopathology predicted severe COVID-19 concern, anxiety, and PTSD symptoms in pregnant women during "lockdown" in Italy. *Archives of women's mental health*, *23*, 783-786. https://doi.org/10.1007/s00737-020-01086-0

Ravaldi, C., Wilson, A., Ricca, V., Homer, C., & Vannacci, A. (2020b). Pregnant women voice their concerns and birth expectations during the COVID-19 pandemic in Italy. *Women & Birth*, *34*(4), 335–343. https://doi.org/10.1016/j.wombi.2020.07.002

Raz, S. (2014). Behavioral and neural correlates of cognitive-affective function during late pregnancy: an event-related potentials study. *Behavioural Brain Research, 267*, 17–25. https://doi.org/10.1016/j.bbr.2014.03.021

Reno, C., Maietti, E., Fantini, M. P., Savoia, E., Manzoli, L., Montalti, M., & Gori, D. (2021). Enhancing COVID-19 vaccines acceptance: results from a survey on vaccine hesitancy in Northern Italy. *Vaccines*, *9*(4), 378. https://doi.org/10.3390/vaccines9040378

Rice, K. F. Re-centering relationships: Obstetric violence, health care rationalities, and pandemic childbirth in Canada. (2022). *Medical Anthropology Quarterly*, *37*(1), 59–75. Advance online publication. https://doi.org/10.1111/maq.12739

Riva Crugnola, C. (1987). Parto cesareo e competenza materna [Caesarean section and maternal competence]. In Farinet., M. (ed). *Progetto Nascere*, 86-95.

Rogers, C. (1951). *Client Centered Therapy.* Hachette.

Rokach, A. (2005). Coping with loneliness during pregnancy and motherhood. *Psychology and Education: An Interdisciplinary Journal, 42*(1), 1–12.

Rokach, A. (2004). Giving life: Loneliness, pregnancy and motherhood. *Social Behavior and Personality: an international journal*, *32*(7), 691-702. https://doi.org/10.2224/sbp.2004.32.7.691

Rokach, A. (2007). Self-perception of the antecedents of loneliness among new mothers and pregnant women. *Psychological reports*, *100*(1), 231-243. https://doi.org/10.2466/pr0.100.1.231-243

Rominov, H., Pilkington, P. D., Giallo, R., & Whelan, T. A. (2016). A systematic review of interventions targeting paternal mental health in the perinatal period. *Infant mental health journal*, *37*(3), 289–301. https://doi.org/10.1002/imhj.21560

Rook, K. S. (1984). Research on social support, loneliness, and social isolation: Toward an integration. *Review of Personality & Social Psychology*.

Roos, A., Robertson, F., Lochner, C., Vythilingum, B., & Stein, D. J. (2011). Altered prefrontal cortical function during processing of fear-relevant stimuli in pregnancy. *Behavioural Brain Research, 222*, 200–205. https://doi.org/10.1016/j.bbr.2011.03.055

Rossi, A. S. (1968). Transition to parenthood. *Journal of Marriage and the Family*, 26-39. https://doi.org/10.2307/350219

Rossi, R., Socci, V., Talevi, D., Mensi, S., Niolu, C., Pacitti, F., Di Marco, A., Rossi, A., Siracusano, A., & Di Lorenzo, G. (2020). COVID-19 pandemic and lockdown measures impact on mental health among the general population in Italy. *Frontiers in psychiatry*, *11*, 790. https://doi.org/10.3389/fpsyt.2020.00790

Rossi, R., Socci, V., Jannini, T. B., D'Aurizio, G., Mensi, S., Pacitti, F., Rossi, A., & Di Lorenzo, G. (2023). Changes in mental health outcomes in the general population 14 months into the COVID-19 pandemic in Italy. *Journal of affective disorders*, *325*, 35–40. https://doi.org/10.1016/j.jad.2022.12.148

Russell D. W. (1996). UCLA Loneliness Scale (Version 3): reliability, validity, and factor structure. *Journal of personality assessment*, *66*(1), 20–40. https://doi.org/10.1207/s15327752jpa6601_2

Saadaoui, M., Kumar, M., & Al Khodor, S. (2021). COVID-19 infection during pregnancy: risk of vertical transmission, fetal, and neonatal outcomes. *Journal of personalized medicine*, *11*(6), 483. https://doi.org/10.3390/jpm11060483

Saccone, G., Florio, A., Aiello, F., Venturella, R., De Angelis, M. C., Locci, M., Bifulco, G., Zullo, F., & Sardo, A. D. S. (2020). Psychological impact of coronavirus disease 2019 in pregnant women. *American Journal of Obstetrics & Gynecology*, *223*(2), 293-295. https://doi.org/10.1016/j.ajog.2020.05.003

Sadler, M., Leiva, G., & Olza, I. (2020). COVID-19 as a risk factor for obstetric violence. *Sex Reprod Health Matters*, *28*(1), 1785379. https://doi.org/10.1080/26410397.2020.1785379

Sahin, B. M., & Kabakci, E. N. (2021). The experiences of pregnant women during the COVID-19 pandemic in Turkey: A qualitative study. *Women and Birth*, *34*(2), 162-169. https://doi.org/10.1016/j.wombi.2020.09.022

Sakalidis, V. S., Rea, A., Perrella, S. L., McEachran, J., Collis, G., Miraudo, J., Prosser, S. A., Gibson, L. Y., Silva, D., & Geddes, D. T. (2022). Longitudinal changes in wellbeing amongst breastfeeding women in Australia and New Zealand during the COVID-19 pandemic. *European journal of pediatrics*, *181*(10), 3753–3766. https://doi.org/10.1007/s00431-022-04580-y

Salibian-Barrera, M., & Van Aelst, S. (2008). Robust model selection using fast and robust bootstrap. *Computational Statistics & Data Analysis*, *52*(12), 5121-5135. https://doi.org/10.1016/j.csda.2008.05.007

Salibian-Barrera, M., & Yohai, V. J. (2006). A fast algorithm for S-regression estimates. *Journal of computational and Graphical Statistics*, *15*(2), 414-427. https://doi.org/10.1198/106186006X113629

Salibian-Barrera, M., & Zamar, R. H. (2002). Bootstrapping robust estimates of regression. *Annals of Statistics*, 30(2), 556-582. https://www.jstor.org/stable/2699968

Salehi, L., Rahimzadeh, M., Molaei, E., Zaheri, H., & Esmaelzadeh-Saeieh, S. (2020). The relationship among fear and anxiety of COVID-19, pregnancy experience, and mental health disorder in pregnant women: A structural equation model. *Brain and behavior*, *10*(11), e01835. https://doi.org/10.1002/brb3.1835

Sandford, S. (2011) What is maternal labour? *Studies in the Maternal*, 3(2), 1–11. https://doi.org/10.16995/sim.63

Satici, B., Saricali, M., Satici, S. A., & Griffiths, M. D. (2020). Intolerance of uncertainty and mental wellbeing: serial mediation byrumination and fear of COVID-19. *International journal of mental health and addiction*, 1 - 12. https://dx.doi.org/10.1007%2Fs11469-020-00305-0

Sbrilli, M. D., Haigler, K., & Laurent, H. K. (2021). The Indirect Effect of Parental Intolerance of Uncertainty on Perinatal Mental Health via Mindfulness During COVID-19. *Mindfulness*, *12*(8), 1999–2008. https://doi.org/10.1007/s12671-021-01657-x

Scandurra, C., Mezzalira, S., Aviani, S., Lastra, V., Bochicchio, V., Zapparella, R., Saccone, G., Maldonato, N. M., & Locci, M. (2023). Perinatal depression during the fourth wave of the COVID-19 outbreak in a single prenatal clinic in Southern Italy: The role of loneliness, anxiety, and maternal support. *Journal of affective disorders reports*, *13*, 100585. https://doi.org/10.1016/j.jadr.2023.100585

Scandurra, C., Zapparella, R., Policastro, M., Continisio, G. I., Ammendola, A., Bochicchio, V., Maldonato, N. M., & Locci, M. (2022). Obstetric violence in a group of Italian women: Socio- demographic predictors and effects on mental health. *Culture, Health & Sexuality*, *24*(11), 1466– 1480. https://doi.org/10.1080/13691058.2021.1970812

Schimmenti, A., Billieux, J., & Starcevic, V. (2020a). The four horsemen of fear: An integrated model of understanding fear experiences during the covid-19 pandemic. *Clinical Neuropsychiatry: Journal of Treatment Evaluation*, *17*(2), 41–45. https://doi.org/10.36131/CN20200202

Schimmenti, A., Starcevic, V., Giardina, A., Khazaal, Y., & Billieux, J. (2020b). Multidimensional Assessment of COVID-19-Related Fears (MAC-RF): A Theory-Based Instrument for the Assessment of Clinically Relevant Fears During Pandemics. *Frontiers in psychiatry*, *11*, 748. https://doi.org/10.3389/fpsyt.2020.00748

Schreier, A., Wittchen, H. U., Höfler, M., & Lieb, R. (2008). Anxiety disorders in mothers and their children: prospective longitudinal community study. *The British Journal of Psychiatry*, *192*(4), 308-309. https://doi.org/10.1192/bjp.bp.106.033589

Schultz, T. J., Roupas, P., Wiechula, R., et al. (2016). Nutritional interventions for optimizing healthy body composition in older adults in the community: an umbrella review of systematic reviews. *JBI Database System Rev Implement Rep*, *14*(8), 257-308. https://doi.org/10.11124/JBISRIR-2016-003063.

Schwab-Reese, L. M., Schafer, E. J., & Ashida, S. (2017). Associations of social support and stress with postpartum maternal mental health symptoms: Main effects, moderation, and mediation. *Women & health*, *57*(6), 723-740. https://doi.org/10.1080/03630242.2016.1181140

Shiffman, N., Gluska, H., Margalit, S., Mayer, Y., Daher, R., Elyasyan, L., Elia, N., Sharon Weiner, M., Miremberg, H., Kovo, M., Biron-Shental, T., Gabbay-Benziv, R., & Helpman, L. (2023). Postpartum post-traumatic stress symptoms during the COVID-19 period: exposure and fear as mediating factors. *European journal of psychotraumatology*, *14*(2), 2228151. https://doi.org/10.1080/20008066.2023.2228151

Scism, A. R., & Cobb, R. L. (2017). Integrative review of factors and interventions that influence early father–infant bonding. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *46*(2), 163-170.

Scism, A. R., & Cobb, R. L. (2017). Integrative Review of Factors and Interventions That Influence Early Father-Infant Bonding. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*, *46*(2), 163–170. https://doi.org/10.1016/j.jogn.2016.09.004

Segal, H. (1981). *Melanie Klein*. Bollati Boringhieri.

Seif, K. E., Tadbiri, H., Mangione, M., Wolfe, A., Whitaker, K., Desai, A., & Turan, S. (2023). The impact of trimester of COVID-19 infection on pregnancy outcomes after recovery. *Journal of Perinatal Medicine*, (0). https://doi.org/10.1515/jpm-2022-0568

Seng, J. S., D'Andrea, W., & Ford, J. D. (2014). Complex mental health sequelae of psychological trauma among women in prenatal care. *Psychological Trauma: Theory, Research, Practice and Policy*, *6*(1), 41–49. https://doi.org/10.1037/a0031467

Settineri, S., & Merlo, E. M. (2020). Fear of contamination. *Mediterranean Journal of Clinical Psychology*, *8*(1). https://doi.org/10.6092/2282-1619/mjcp-2424

Shakiba, N., Doron, G., Gordon-Hacker, A., Egotubov, A., Wagner, N. J., & Gueron-Sela, N. (2023). Mother-infant emotional availability through the COVID-19 pandemic: Examining continuity, stability, and bidirectional associations. *Infancy*, *28*(1), 34–55. https://doi.org/10.1111/infa.12517

Sharif Nia, H., Kaur, H., Fomani, F. K., Rahmatpour, P., Kaveh, O., Pahlevan Sharif, S., Venugopal, A. V., & Hosseini, L. (2021). Psychometric Properties of the Impact of Events Scale-Revised (IES-R) Among General Iranian Population During the COVID-19 Pandemic. *Frontiers in psychiatry*, *12*, 692498. https://doi.org/10.3389/fpsyt.2021.692498

Shayganfard, M., Mahdavi, F., Haghighi, M., Sadeghi Bahmani, D., & Brand, S. (2020). Health Anxiety Predicts Postponing or Cancelling Routine Medical Health Care Appointments among Women in Perinatal Stage during the Covid-19 Lockdown. *International journal of environmental research and public health*, *17*(21), 8272. https://doi.org/10.3390/ijerph17218272

Shimabukuro, T. T., Kim, S. Y., Myers, T. R., Moro, P. L., Oduyebo, T., Panagiotakopoulos, L., ... & Meaney-Delman, D. M. (2021). Preliminary findings of mRNA Covid-19 vaccine safety in pregnant persons. *New England Journal of Medicine*, *384*(24), 2273-2282. https://doi.org/10.1056/NEJMoa2104983

Shook, L. L., & Edlow, A. G. (2023). Safety and efficacy of coronavirus disease 2019 (COVID-19) mRNA vaccines during lactation. *Obstetrics & Gynecology*, *141*(3), 483-491. https://doi.org/10.1097/AOG.0000000000005093

Schore, A. (2012). *The Science of the Art of Psychotherapy*. Norton.

Shorey, S. Y., Ng, E. D., & Chee, C. Y. (2021). Anxiety and depressive symptoms of women in the perinatal period during the COVID-19 pandemic: A systematic review and meta-analysis. *Scandinavian Journal of Public Health*, *49*(7), 730-740. https://doi.org/10.1177/14034948211011793

Shorey, S., Chee, C. Y. I., Ng, E. D., Chan, Y. H., San Tam, W. W., & Chong, Y. S. (2018). Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. *Journal of Psychiatric Research*, 104, 235-248. https://doi.org/10.1016/j.jpsychires.2018.08.001

Shuman, C. J., Peahl, A. F., Pareddy, N., Morgan, M. E., Chiangong, J., Veliz, P. T., & Dalton, V. K. (2022). Postpartum depression and associated risk factors during the COVID-19 pandemic. *BMC research notes*, *15*(1), 102. https://doi.org/10.1186/s13104-022-05991-8

Silasi, M., Cardenas, I., Kwon, J. Y., Racicot, K., Aldo, P., & Mor, G. (2015). Viral infections during pregnancy. *American journal of reproductive immunology*, *73*(3), 199-213. https://doi.org/10.1111/aji.12355

Silverio, S. A., Davies, S. M., Christiansen, P., Aparicio-García, M. E., Bramante, A., Chen, P., ... & Fallon, V. (2021). A validation of the Postpartum Specific Anxiety Scale 12-item research short-form for use during global crises with five translations. *BMC Pregnancy and Childbirth*, *21*(1), 1-12. https://doi.org/10.1186/s12884-021-03597-9

Silverman, M. E., Burgos, L., Rodriguez, Z. I., Afzal, O., Kalishman, A., Callipari, F., Pena, Y., Gabay, R., & Loudon, H. (2020). Postpartum mood among universally screened high and low socioeconomic status patients during COVID-19 social restrictions in New York City. *Scientific reports*, *10*(1), 22380. https://doi.org/10.1038/s41598-020-79564-9

Silverman, M. E., Medeiros, C., & Burgos, L. (2020). Early pregnancy mood before and during COVID-19 community restrictions among women of low socioeconomic status in New York City: a preliminary study. *Archives of women's mental health*, *23*(6), 779–782. https://doi.org/10.1007/s00737-020-01061-9

Simbar, M., Nazarpour, S., & Sheidaei, A. (2023). Evaluation of pregnancy outcomes in mothers with COVID-19 infection: a systematic review and meta-analysis. *Journal of Obstetrics and Gynaecology*, *43*(1), 2162867. https://doi.org/10.1080/01443615.2022.2162867

Simpson, M., & Catling, C. (2016). Understanding psychological traumatic birth experiences: A literature review. *Women & Birth*, *29*(3), 203–207. https://doi.org/10.1016/j.wombi.2015.10.009

Simpson, M., Schmied, V., Dickson, C., & Dahlen, H. G. (2018). Postnatal post-traumatic stress: an integrative review. *Women and Birth*, *31*(5), 367-379. https://doi.org/10.1016/j.wombi.2017.12.003

Sinaci, S., Ozden Tokalioglu, E., Ocal, D., Atalay, A., Yilmaz, G., Keskin, H. L., Erdinc, S. O., Sahin, D., & Moraloglu Tekin, O. (2020). Does having a high-risk pregnancy influence anxiety level during the COVID-19 pandemic?. *European journal of obstetrics, gynecology, and reproductive biology*, *255*, 190–196. https://doi.org/10.1016/j.ejogrb.2020.10.055

Sinesi, A., Maxwell, M., O'Carroll, R., & Cheyne, H. (2019). Anxiety scales used in pregnancy: A systematic review. *BJPsych Open*, *5*(1), e5. https://doi.org/10.1192/bjo.2018.75

Siracusano, A. (2017). Loneliness: A new psychopathological dimension?. *Journal of psychopathology*, *23*(1), 1-3.

Smith, A., Darwin, Z., Farmer, D., Stacey, T., across Calderdale, M. V. P., & across Calderdale, L. A. (2020). Using maternity services during COVID-19. Available at: https://www.maternityvoices.co.uk/content/uploads/2021/01/Covid-19-Maternity-Report.pdf

Smith, B. M., Twohy, A. J., & Smith, G. S. (2020). Psychologicalinflexibility and intolerance of uncertainty moderate the relationshipbetween social isolation and mental health outcomes during COVID-19. *Journal of Contextual Behavioral Science*, 18, 162-174. https://doi.org/10.1016/j.jcbs.2020.09.005

Smith, J. A. (1994). Reconstructing selves: An analysis of discrepancies between women's contemporaneous and retrospective accounts of the transition to motherhood. *British Journal of Psychology*, *85*(Pt 3), 371–392. https://doi.org/10.1111/j.2044-8295.1994.tb02530.x

Smith, J. A. (2007). Hermeneutics, human sciences and health: Linking theory and practice. *International Journal of Qualitative Studies on Health and Well-Being*, *2*(1), 3–11. https://doi.org/10.1080/17482620601016120

Sambrook Smith, M., Lawrence, V., Sadler, E., & Easter, A. (2019). Barriers to accessing mental health services for women with perinatal mental illness: systematic review and meta-synthesis of qualitative studies in the UK. *BMJ open*, *9*(1), e024803. https://doi.org/10.1136/bmjopen-2018-024803

Smorti, M., Mauri, G., Carducci, A., Andreol, A., & Bonassi, L. (2023). Prenatal Mental Representations in Italian First-Time Mothers Before and During the COVID-19 Pandemic: A Study with Interviews on Maternal Representations During Pregnancy. *Maternal and child health journal*, *27*(4), 711–718. https://doi.org/10.1007/s10995-022-03573-5

Smorti, M., Ponti, L., Ionio, C., Gallese, M., Andreol, A., & Bonassi, L. (2022). Becoming a mother during the COVID-19 national lockdown in Italy: Issues linked to the wellbeing of pregnant women. *International Journal of Psychology*, *57*(1), 146-152. https://doi.org/10.1002/ijop.12806

Smorti, M., Ponti, L., & Tani, F. (2019). The effect of maternal depression and anxiety on labour and the well-being of the newborn. *Journal of Obstetrics and Gynaecology*, *39*(4), 492-497. https://doi.org/10.1080/01443615.2018.1536697

Snelgrove, S. R. (2014). Conducting qualitative longitudinal research using interpretative phenomenological analysis. *Nurse researcher*, *22*(1), 20-25. https://doi.org/10.7748/nr.22.1.20.e1277

Sockol L. E. (2018). A systematic review and meta-analysis of interpersonal psychotherapy for perinatal women. *Journal of affective disorders*, *232*, 316–328. https://doi.org/10.1016/j.jad.2018.01.018

Sockol L. E. (2015). A systematic review of the efficacy of cognitive behavioral therapy for treating and preventing perinatal depression. *Journal of affective disorders*, *177*, 7–21. https://doi.org/10.1016/j.jad.2015.01.052

Soifer, R. (1971). *Psicodinamica della gravidanza, parto e puerperio. [Psychodynamics of pregnancy, childbirth, and puerperium.]*. Borla.

Solomou, I., & Constantinidou, F. (2020). Prevalence and Predictors of Anxiety and Depression Symptoms during the COVID-19 Pandemic and Compliance with Precautionary Measures: Age and Sex Matter. *International Journal of Environmental Research and Public Health*, *17*(14), 4924. https://doi.org/10.3390/ijerph17144924

Songco, A., Minihan, S., Fox, E., Ladouceur, C., Mewton, L., Moulds, M., Pfeifer, J., Van Harmelen, A. L., & Schweizer, S. (2023). Social and cognitive vulnerability to COVID-19-related stress in pregnancy: A case-matched-control study of antenatal mental health. *Journal of affective disorders*, *325*, 739–746. https://doi.org/10.1016/j.jad.2023.01.053

Sorenson, D. S., & Tschetter, L. (2010). Prevalence of negative birth perception, disaffirmation, perinatal trauma symptoms, and depression among postpartum women. *Perspectives in psychiatric care*, *46*(1), 14–25. https://doi.org/10.1111/j.1744-6163.2009.00234.x

Sperber, J. F., Hart, E. R., Troller-Renfree, S. V., Watts, T. W., & Noble, K. G. (2023). The effect of the COVID-19 pandemic on infant development and maternal mental health in the first 2 years of life. *Infancy*, *28*(1), 107–135. https://doi.org/10.1111/infa.12511

Spinola, O., Liotti, M., Speranza, A. M., & Tambelli, R. (2020). Effects of COVID-19 epidemic lockdown on postpartum depressive symptoms in a sample of Italian mothers. *Frontiers in Psychiatry*, *11*, 1177. https://doi.org/10.3389/fpsyt.2020.589916

Steele, H., & Steele, M. (Eds.). (2017). *Handbook of attachment-based interventions*. Guilford Publications.

Stampini, V., Monzani, A., Caristia, S., Ferrante, G., Gerbino, M., De Pedrini, A., Amadori, R., Rabbone, I., & Surico, D. (2021). The perception of Italian pregnant women and new mothers about their psychological wellbeing, lifestyle, delivery, and neonatal management experience during the COVID-19 pandemic lockdown: a web-based survey. *BMC pregnancy and childbirth*, *21*(1), 473. https://doi.org/10.1186/s12884-021-03904-4

Stein, A., Pearson, R. M., Goodman, S. H., Rapa, E., Rahman, A., McCallum, M., ... & Pariante, C. M. (2014). Effects of perinatal mental disorders on the fetus and child. *The Lancet*, *384*(9956), 1800-1819. https://doi.org/10.1016/S0140-6736(14)61277-0

Stern, D. N., Bruschweiler-Stern, N., & Freeland, A. (2000). *La nascita di una madre* [The birth of a mother]. Milano: Mondadori.

Stern, D.N. (1995). La costellazione materna [Maternal constallation]. Boringhieri.

Stuck, A. E., Rubenstein, L. Z., & Wieland, D. (1998). Bias in meta-analysis detected by a simple, graphical test. Asymmetry detected in funnel plot was probably due to true heterogeneity. *BMJ (Clinical research ed.)*, *316*(7129), 469–471.

Suárez-Rico, B. V., Estrada-Gutierrez, G., Sánchez-Martínez, M., Perichart-Perera, O., Rodríguez-Hernández, C., González-Leyva, C., Osorio-Valencia, E., Cardona-Pérez, A., Helguera-Repetto, A. C., Espino Y Sosa, S., Solis-Paredes, M., & Reyes-Muñoz, E. (2021). Prevalence of Depression, Anxiety, and Perceived Stress in Postpartum Mexican Women during the COVID-19 Lockdown. *International journal of environmental research and public health*, *18*(9), 4627. https://doi.org/10.3390/ijerph18094627

Sun, F., Zhu, J., Tao, H., Ma, Y., & Jin, W. (2021). A systematic review involving 11,187 participants evaluating the impact of COVID-19 on anxiety and depression in pregnant women. *Journal of Psychosomatic Obstetrics & Gynecology*, *42*(2), 91-99. https://doi.org/10.1080/0167482X.2020.1857360

Sun, G. Q., Wang, Q., Wang, S. S., & Cheng, Y. (2021). Risk assessment of paternal depression in relation to partner delivery during COVID-19 pandemic in Wuhan, China. *BMC Psychiatry*, *21*(1), 327. https://doi.org/10.1186/s12888-021-03325-9

Sun, X., Fan, X., Cong, S., Wang, R., Sha, L., Xie, H., Han, J., Zhu, Z., & Zhang, A. (2023). Psychological birth trauma: A concept analysis. *Frontiers in psychology*, *13*, 1065612. https://doi.org/10.3389/fpsyg.2022.1065612

Sutter-Dallay, A. L., Giaconne-Marcesche, V., Glatigny-Dallay, E., & Verdoux, H. (2004). Women with anxiety disorders during pregnancy are at increased risk of intense postnatal depressive symptoms: a prospective survey of the MATQUID cohort. *European psychiatry : the journal of the Association of European Psychiatrists*, *19*(8), 459–463. https://doi.org/10.1016/j.eurpsy.2004.09.025

Suzuki S. (2022). Psychological status of postpartum women under the COVID-19 pandemic in Japan. *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, *35*(9), 1798–1800. https://doi.org/10.1080/14767058.2020.1763949

Takeda, T., Yoshimi, K., Kai, S., & Inoue, F. (2021). Association Between Serious Psychological Distress and Loneliness During the COVID-19 Pandemic: A Cross-Sectional Study with Pregnant Japanese Women. *International journal of women's health*, *13*, 1087–1093. https://doi.org/10.2147/IJWH.S338596

Takemoto, M. L., Menezes, M. O., Andreucci, C. B., Knobel, R., Sousa, L. A., Katz, L., ... & Amorim, M. M. (2022). Maternal mortality and COVID-19. *The Journal of Maternal-Fetal & Neonatal Medicine*, *35*(12), 2355-2361. https://doi.org/10.1080/14767058.2020.1786056

Taubman-Ben-Ari, O., Chasson, M., Abu Sharkia, S., & Weiss, E., (2020). Distress and anxiety associated with COVID-19 among Jewish and Arab pregnant women in Israel. *Journal of Reproductive and Infant Psychology*. 38 (3), 340–348. https://doi.org/10.1080/02646838.2020.1786037

Tauqeer, F., Ceulemans, M., Gerbier, E., Passier, A., Oliver, A., Foulon, V., Panchaud, A., Lupattelli, A., & Nordeng, H. (2023). Mental health of pregnant and postpartum women during the third wave of the COVID-19 pandemic: A European cross-sectional study. *BMJ Open*, *13*(1), e063391. https://doi. org/10.1136/bmjopen-2022-063391

Tavero, I. L., García, E. G., Seda, J. M., Serrano, R. R., Cabrera, I. M. C., & Rodríguez, A. A. (2018). The gender perspective in the opinions and discourse of women about caregiving. *Revista da Escola de Enfermagem da U S P*, *52*, e03370. https://doi.org/10.1590/s1980-220x2017009403370

Taylor, B. L., Howard, L. M., Jackson, K., Johnson, S., Mantovani, N., Nath, S., ... & Sweeney, A. (2021). Mums alone: exploring the role of isolation and loneliness in the narratives of women diagnosed with perinatal depression. *Journal of Clinical Medicine*, *10*(11), 2271. https://doi.org/10.3390/jcm10112271

Thakur, R., & Vandana, K. (2022). The psychological impact of COVID-19 among antenatal women: A systematic literature review. *NeuroQuantology*, *20*, 391-398. https://doi.org/10.14704/NQ.2022.20.16.NQ88043

Thayer, Z. M., & Gildner, T. E. (2021). COVID-19-related financial stress associated with higher likelihood of depression among pregnant women living in the United States. *American journal of human biology : the official journal of the Human Biology Council*, *33*(3), e23508. https://doi.org/10.1002/ajhb.23508

Theo, L. O., & Drake, E. (2017). Rooming-In: Creating a Better Experience. *The Journal of Perinatal Education*, 26(2), 79-84. https://doi.org/10.1891/1058-1243.26.2.79

Timircan, M., Bratosin, F., Vidican, I., Suciu, O., Tirnea, L., Avram, V., & Marincu, I. (2021). Exploring pregnancy outcomes associated with SARS-CoV-2 infection. *Medicina*, *57*(8), 796. https://doi.org/10.3390/medicina57080796

Troisi, G., Margherita, G., & Caffieri, A. (2021). Migrant women and gender-based violence: Focus group with operators. *Journal of Prevention & Intervention in the Community*, *50*(3), 286–301. https://doi.org/10.1080/10852352.2021.1918829

Trost, S. L., Beauregard, J. L., Smoots, A. N., Ko, J. Y., Haight, S. C., Moore Simas, T. A., ... & Goodman, D. (2021). Preventing Pregnancy-Related Mental Health Deaths: Insights From 14 US Maternal Mortality Review Committees, 2008–17: Study examines maternal mortality and mental health. *Health Affairs*, *40*(10), 1551-1559. https://doi.org/10.1377/hlthaff.2021.00615

Underwood, L., Waldie, K., D'Souza, S., Peterson, E. R., & Morton, S. (2016). A review of longitudinal studies on antenatal and postnatal depression. *Archives of women's mental health*, *19*, 711-720. https://doi.org/10.1007/s00737-016-0629-1

Usmani, S., Greca, E., Javed, S., Sharath, M., Sarfraz, Z., Sarfraz, A., Salari, S. W., Hussaini, S. S., Mohammadi, A., Chellapuram, N., Cabrera, E., & Ferrer, G. (2021). Risk Factors for Postpartum Depression During COVID-19 Pandemic: A Systematic Literature Review. *Journal of primary care & community health*, *12*, 21501327211059348. https://doi.org/10.1177/21501327211059348

Van der Kolk, B. A., Roth, S., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005). Disorders of extreme stress: The empirical foundation of a complex adaptation to trauma. *Journal of Traumatic Stress*, *18*(5), 389–399. https://doi.org/10.1002/jts.20047

van Ravesteyn, L. M., Lambregtse-van den Berg, M. P., Hoogendijk, W. J., & Kamperman, A. M. (2017). Interventions to treat mental disorders during pregnancy: A systematic review and multiple treatment meta-analysis. *PloS one*, *12*(3), e0173397. https://doi.org/10.1371/journal.pone.0173397

Vanwetswinkel, F., Bruffaerts, R., Arif, U., & Hompes, T. (2022). The longitudinal course of depressive symptoms during the perinatal period: A systematic review. *Journal of affective disorders*, *315*, 213–223. https://doi.org/10.1016/j.jad.2022.06.087

Varvin, S (2003). Trauma and its after-effects. In S. Varvin, *Violence or Dialogue? Psychoanalytic Insights on Terror and Terrorism.* Routledge.

Vasilevski, V., Sweet, L., Bradfield, Z., Wilson, A. N., Hauck, Y., Kuliukas, L., Homer, C. S. E., Szabo, R. A., & Wynter, K. (2022). Receiving maternity care during the COVID-19 pandemic: Experiences of women's partners and support persons. *Women and birth : journal of the Australian College of Midwives*, *35*(3), 298–306. https://doi.org/10.1016/j.wombi.2021.04.012

Vigetti Finzi, S (2019). *Il bambino della notte [The child of the night]*. Mondadori.

Vizzini, L., Popovic, M., Zugna, D., Vitiello, B., Trevisan, M., Pizzi, C., Rusconi, F., Gagliardi, L, Merletti, F., & Richiardi, L. (2019). Maternal anxiety, depression and sleep disorders before and during pregnancy, and preschool ADHD symptoms in the NINFEA birth cohort study. *Epidemiology and psychiatric sciences*, *28*(5), 521-531. https://dx.doi.org/10.1017%2FS2045796018000185

Wachman, E. M., Snyder-Cappione, J., Devera, J., Boateng, J., Dhole, Y., Clarke, K., ... & Sabharwal, V. (2023). Maternal, Infant, and Breast Milk Antibody Response Following COVID-19 Infection in Early versus Late Gestation. *The Pediatric Infectious Disease Journal*, *42*(3), e70. https://doi.org/10.1097%2FINF.0000000000003802

Wall, S., & Dempsey, M. (2023). The effect of COVID-19 lockdowns on women's perinatal mental health: a systematic review. *Women and Birth*, *36*(1), 47-55. https://doi.org/10.1016/j.wombi.2022.06.005

Wandersman, L., Wandersman, A., & Kahn, S. (1980). Social support in the transition to parenthood. *Journal of community psychology*, *8*(4), 332-342. https://doi.org/10.1002/1520-6629

Wang, Y., Chen, L., Wu, T., Shi, H., Li, Q., Jiang, H., Zheng, D., Wang, X., Wei, Y., Zhao, Y., & Qiao, J. (2020). Impact of Covid-19 in pregnancy on mother's psychological status and infant's neurobehavioral development: a longitudinal cohort study in China. *BMC medicine*, *18*(1), 347. https://doi.org/10.1186/s12916-020-01825-1

Wang, Y., Di, Y., Ye, J., & Wei, W. (2021). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, health & medicine*, *26*(1), 13-22. https://doi.org/10.1080/13548506.2020.1746817

Wang, X., Yu, H., Zeng, W., Hong, Y., Huang, F., Yang, X., & Wang, Y. (2023). Psychological well-being of patients in reproductive medicine center: Clinicians' perspectives. *Journal of Reproductive and Infant Psychology*, 1–14. Advance online publication. https://doi.org/10.1080/02646838.2023.2188893

Wastnedge, E. A., Reynolds, R. M., Van Boeckel, S. R., Stock, S. J., Denison, F. C., Maybin, J. A., & Critchley, H. O. (2020). Pregnancy and COVID-19. *Physiological reviews*. Advanced online. https://doi.org/10.1152/physrev.00024.2020

Watson, M. F., Bacigalupe, G., Daneshpour, M., Han, W. J., & Parra-Cardona, R. (2020). COVID-19 Interconnectedness: Health Inequity, the Climate Crisis, and Collective Trauma. *Family process*, *59*(3), 832–846. https://doi.org/10.1111/famp.12572

Wdowiak, A., Makara-Studzińska, M., Raczkiewicz, D., Janczyk, P., Słabuszewska-Jóźwiak, A., Wdowiak-Filip, A., & Studzińska, N. (2021). Effect of Excessive Body Weight and Emotional Disorders on the Course of Pregnancy and Well-Being of a Newborn before and during COVID-19 Pandemic. *Journal of clinical medicine*, *10*(4), 656. https://doi.org/10.3390/jcm10040656

Webb, R., Uddin, N., Constantinou, G., Ford, E., Easter, A., Shakespeare, J., Hann, A., Roberts, N., Alderdice, F., Sinesi, A., Coates, R., Hogg, S., Ayers, S., & MATRIx Study Team (2023). Meta-review of the barriers and facilitators to women accessing perinatal mental healthcare. *BMJ open*, *13*(7), e066703. https://doi.org/10.1136/bmjopen-2022-066703

Webster, P. (2021). COVID-19 timeline of events. *Nature medicine*, *27*(12), 2054-2055. https://doi.org/10.1038/s41591-021-01618-w

Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation.* The MIT Press.

Wheaton, M. G., Messner, G. R., & Marks, J. B. (2021). Intolerance ofuncertainty as a factor linking obsessive-compulsive symptoms, healthanxiety and concerns about the spread of the novel coronavirus (COVID-19) inthe United States. *Journal of Obsessive-Compulsive and Related Disorders*, 28, 100605. https://doi.org/10.1016/j.jocrd.2020.100605

Williams, S. R., Kertz, S. J., Schrock, M. D., & Woodruff-Borden, J. (2012). A sequential analysis of parent–child interactions in anxious and nonanxious families. *Journal of Clinical Child & Adolescent Psychology*, *41*(1), 64-74. https://doi.org/10.1080/15374416.2012.632347

Winnicott, D. W. (1956). Primary maternal preoccupation. In D. W. Winnicott. *Through Paediatrics to Psychoanalysis: Collected Papers* (pp. 300-305). Karnac.

Winnicott, D. W. (1958). The Capacity to be Alone. *The International Journal of Psycho-Analysis*, 39, 416–420.

Wisner, K. L., Austin, M. P., Bowen, A., Cantwell, R., & Glangeaud-Freudenthal, N. M. C. (2015). International approaches to perinatal mental health screening as a public health priority. *Identifying perinatal depression and anxiety: Evidence-based practice in screening, psychosocial assessment, and management*, 193-209. https://doi.org/10.1002/9781118509722.ch12

Wong, S. F., Chow, K. M., Leung, T. N., et al. (2004). Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. *American Journal of Obstetrics and Gynecology*, 191(1), 292-297. https://doi.org/10.1016/j.ajog.2003.11.019

Woody, C. A., Ferrari, A. J., Siskind, D. J., Whiteford, H. A., & Harris, M. G. (2017). A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *Journal of Affective Disorders*, 219, 86-92. https://doi.org/10.1016/j.jad.2017.05.003

World Health Organization (WHO) (2007). Fatherhood and Health Outcomes in Europe [On-line]. Available at https://apps.who.int/iris/bitstream/handle/10665/108571/E91129.pdf

World Health Organization (WHO) (2017). *Guideline: Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services*. WHO.

World Health Organization (WHO) (2020, January 9). Statement regarding cluster of pneumonia cases in Wuhan, China. https://www.who.int/hongkongchina/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china

World Health Organization (WHO) (2020, March 11). WHO. Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020.

World Health Organization (WHO) (2020, March 13). WHO Director-General's opening remarks at the media briefing on COVID-19 - 13 March 2020. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---13-march-2020

World Health Organization (WHO) (2021, December 4). Coronavirus disease (COVID-19): Variants of SARS-COV-2. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-(covid-19)-variants-of-sars-cov-2

World Health Organization (WHO) (2022). *Guide for integration of perinatal mental health in maternal and child health services.* World Health Organization.

World Health Organization (WHO) (2023, May 5). Statement on the fifteenth meeting of the IHR (2005) Emergency Committee on the COVID-19 pandemic. https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic?adgroupsurvey=%7badgroupsurvey%7d&gclid=EAIaIQobChMIvOHi0_TKgAMVWQcGAB0GogPKEAAYASABEgIuKfD_BwE

World Health Organization (WHO) (2023, November 30). WHO Coronavirus (COVID-19) Dashboard. WHO. https://covid19.who.int/

Wu, Y. T., Zhang, C., Liu, H., Duan, C. C., Li, C., Fan, J. X., Li, H., Chen, L., Xu, H. L., Li, X. J., Guo, Y., Wang, Y. P., Li, X. F., Li, J, Wang, Y., You, Y. P., Li, H. M., Yang, S. Q., Tao, X. L., … & Huang, H. F. (2020). Perinatal depression of women along with 2019 novel coronavirus breakout in China. Updated 2021 February 6. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3539359

Wynter, K., Di Manno, L., Watkins, V., Rasmussen, B., & Macdonald, J. A. (2021). Midwives' experiences of father participation in maternity care at a large metropolitan health service in Australia. *Midwifery*, *101*, 103046. https://doi.org/10.1016/j.midw.2021.103046

Wynter, K., Watkins, V., Kavanagh, S., Hosking, S., Rasmussen, B., Maindal, H. T., & Macdonald, J. (2023). Health literacy among fathers and fathers-to-be: a multi-country, cross-sectional survey. *Health promotion international*, *38*(5), daad131. https://doi.org/10.1093/heapro/daad131

Wyszynski, D. F., Hernandez-Diaz, S., Gordon-Dseagu, V., Ramiro, N., & Koenen, K. C. (2022). Stress levels among an international sample of pregnant and postpartum women during the COVID-19 pandemic. *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, *35*(25), 7043–7051. https://doi.org/10.1080/14767058.2021.1936489

Xavier, S., Bento, E., Azevedo, J., Marques, M., Soares, M. J., Freitas, V., ... & Pereira, A. T. (2016). Validation of the Depression, Anxiety and Stress Scale–DASS-21 in a community sample of Portuguese pregnant women. *European Psychiatry*, *33*(S1), s239-s239. https://doi.org/10.1016/j.eurpsy.2016.01.600

Xie, M., Wang, X., Zhang, J., & Wang, Y. (2021). Alteration in the psychologic status and family environment of pregnant women before and during the COVID-19 pandemic. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *153*(1), 71–75. https://doi.org/10.1002/ijgo.13575

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M., Gill, H., Phan, L., Chen-Li, L., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of affective disorders*, *277*, 55-64. https://doi.org/10.1016/j.jad.2020.08.001

Yassa, M., Yassa, A., Yirmibeş, C., Birol, P., Ünlü, U. G., Tekin, A. B., Sandal, K., Mutlu, M. A., Çavuşoğlu, G., & Tug, N. (2020). Anxiety levels and obsessive compulsion symptoms of pregnant women during the COVID-19 pandemic. *Turkish journal of obstetrics and gynecology*, *17*(3), 155–160. https://doi.org/10.4274/tjod.galenos.2020.91455

Yasuma, N., Narita, Z., Sasaki, N., Obikane, E., Sekiya, J., Inagawa, T., Nakajima, A., Yamada, Y., Yamazaki, R., Matsunaga, A., Saito, T., Watanabe, K., Imamura, K., Kawakami, N., & Nishi, D. (2020). Antenatal psychological intervention for universal prevention of antenatal and postnatal depression: A systematic review and meta-analysis. *Journal of affective disorders*, *273*, 231–239. https://doi.org/10.1016/j.jad.2020.04.063

Yazdanpanahi, Z., Vizheh, M., Azizi, M., & Hajifoghaha, M. (2022). Paternal Postnatal Depression During COVID-19 Pandemic: The Role of Health Care Providers. *Journal of Primary Care & Community Health, 13*. https://doi.org/10.1177/21501319221110421

Yildiz, P. D., Ayers, S., & Phillips, L. (2017). The prevalence of posttraumatic stress disorder in pregnancy and after birth: A systematic review and meta-analysis. *Journal of affective disorders, 208*, 634-645. https://doi.org/10.1016/j.jad.2016.10.009

Yin, X., Sun, N., Jiang, N., et al. (2021). Prevalence and associated factors of antenatal depression: Systematic reviews and meta-analyses. *Clinical Psychology Review*, 83, 101932. https://doi.org/10.1016/j.cpr.2020.101932

Yohai, V. J. (1987). High breakdown-point and high efficiency robust estimates for regression. *The Annals of statistics*, 15(2). 642-656. https://www.jstor.org/stable/2241331

Yue, C., Liu, C., Wang, J., Zhang, M., Wu, H., Li, C., & Yang, X. (2021). Association between social support and anxiety among pregnant women in the third trimester during the coronavirus disease 2019 (COVID-19) epidemic in Qingdao, China: The mediating effect of risk perception. *The International journal of social psychiatry*, *67*(2), 120. https://dx.doi.org/10.1177%2F0020764020941567

Zaidi, F., Nigam, A., Anjum, R., & Agarwalla, R. (2017). Postpartum Depression in Women: A Risk Factor Analysis. *Journal of clinical and diagnostic research : JCDR*, *11*(8), QC13–QC16. https://doi.org/10.7860/JCDR/2017/25480.10479

Zaigham, M., & Andersson, O. (2020). Maternal and perinatal outcomes with COVID-19: a systematic review of 108 pregnancies. *Acta obstetricia et gynecologica Scandinavica*, *99*(7), 823-829. https://doi.org/10.1111/aogs.13867

Zanardo, V., Manghina, V., Giliberti, L., Vettore, M., Severino, L., & Straface, G. (2020). Psychological impact of COVID-19 quarantine measures in northeastern Italy on mothers in the immediate postpartum period. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *150*(2), 184–188. https://doi.org/10.1002/ijgo.13249

Zanardo, V., Tortora, D., Guerrini, P., Garani, G., Severino, L., Soldera, G., & Straface, G. (2021). Infant feeding initiation practices in the context of COVID-19 lockdown. *Early Human Development*, *152*, 105286. https://doi.org/10.1016/j.earlhumdev.2020.105286

Zhang, C. J. P., Wu, H., He, Z., Chan, N. K., Huang, J., Wang, H., Yin, Z., Akinwunmi, B., & Ming, W. K. (2020). Psychobehavioral Responses, Post-Traumatic Stress and Depression in Pregnancy During the Early Phase of COVID-19 Outbreak. *Psychiatric research and clinical practice*, *3*(1), 46–54. https://doi.org/10.1176/appi.prcp.20200019

Zhang, T., Luo, Z. C., Ji, Y., Chen, Y., Ma, R., Fan, P., Tang, N., Li, J., Tian, Y., Zhang, J., Ouyang, F., & Shanghai Birth Cohort (2023a). The impact of maternal depression, anxiety, and stress on early neurodevelopment in boys and girls. *Journal of affective disorders*, *321*, 74–82. https://doi.org/10.1016/j.jad.2022.10.030

Zhang, D., Huang, T., Chen, Z., Zhang, L., Gao, Q., Liu, G., ... & Ding, F. (2023b). Systematic review and meta-analysis of neonatal outcomes of COVID-19 vaccination in pregnancy. *Pediatric Research*, 1-9. https://doi.org/10.1038/s41390-022-02421-0

Zhang, E., Su, S., Gao, S., Liu, R., Ding, X., Zhang, Y., Xie, S., Liu, J., Yue, W., & Yin, C. (2023c). Coronavirus disease 2019 pandemic-related long-term chronic impacts on psychological health of perinatal women in China. *American Journal of Perinatology*. Advance online publication. https://doi.org/ 10.1055/a-2008-4674

Zhang, Z. Y., Yu, J. J., Zeng, W. T., Zhou, M. C., Duan, C. C., & Zhu, L. L. (2023d). Association between antenatal depression and adverse perinatal outcomes: a prospective cohort study. *Journal of Affective Disorders*, *323*, 490-495. https://doi.org/10.1016/j.jad.2022.12.008

Zhao, T., Zuo, H., Campbell, S. M., Jhangri, G. S., Dobson, K. S., Li, J. Y., ... & Yamamoto, S. S. (2022). The impacts of prenatal mental health issues on birth outcomes during the covid-19 pandemic: a scoping review. *International Journal of Environmental Research and Public Health*, *19*(13), 7670. https://doi.org/10.3390/ijerph19137670

Zhou, Y., Shi, H., Liu, Z., Peng, S., Wang, R., Qi, L., Li, Z., Yang, J., Ren, Y., Song, X., Zeng, L., Qian, W., & Zhang, X. (2020). The prevalence of psychiatric symptoms of pregnant and non-pregnant women during the COVID-19 epidemic. *Transl. Psychiatry. 10* (1), 319. https://doi.org/10.1038/s41398-020-01006-x.

APPENDIX

Appendix
Chapter 3

A.3.1 PRISMA Checklist 2020

Section and Topic	Item #	Checklist item	x
TITLE			
Title	1	Identify the report as a systematic review.	X
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	NA – because it is not required for thesis
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	X
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	X
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	X
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	X
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	X
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	X
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	X
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	X
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	X
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	X – quality instead of risk of bias was reported considering the study design of the included studies
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	X – Data were reported mainly in terms of proportion
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	X
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	X
	13c	Describe any methods used to tabulate or visually display the results of individual studies and syntheses.	X

Section and Topic	Item #	Checklist item	x
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	X
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA – not involving meta-analytic synthesis subgroup analysis, meta-regression were not performed
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA - not involving meta-analytic synthesis sensitivity analyses were not performed
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	NA – considering the design of the study, involving multiple outcomes, the assess publication bias was not considered informative
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	NA - considering the design of the study, involving multiple outcomes, the assess of certainty of evidence was not considered informative
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	X
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	X
Study characteristics	17	Cite each included study and present its characteristics.	X
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	X- quality instead of risk of bias was reported considering the study design of the included studies
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	X
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	X
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	X
	23b	Discuss any limitations of the evidence included in the review.	X
	23c	Discuss any limitations of the review processes used.	X

Section and Topic	Item #	Checklist item	x
	23d	Discuss implications of the results for practice, policy, and future research.	X
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	X
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	X
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	NA– because it is not required for thesis
Competing interests	26	Declare any competing interests of review authors.	NA– because it is not required for thesis
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	NA– because it is not required for thesis

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

A.3.2 Search strategy of systematic review

PUBMED	(pregnancy[Title/Abstract] OR “pregnant woman” [Title/Abstract] OR perinatal[Title/Abstract] OR antenatal[Title/Abstract] OR puerperium[Title/Abstract] OR “post partum” [Title/Abstract] OR gravidanza[Title/Abstract] OR incinte[Title/Abstract] OR puerperio[Title/Abstract]) AND (“sars cov 2” [Title/Abstract] OR “covid 19” [Title/Abstract] OR coronavirus[Title/Abstract]) AND (psychological[Title/Abstract] OR psychology[Title/Abstract] OR phychopathology[Title/Abstract] OR mental[Title/Abstract] OR stress[Title/Abstract] OR anxiety[Title/Abstract] OR depression[Title/Abstract] OR depressive[Title/Abstract] OR ansia[Title/Abstract] OR depressione[Title/Abstract] OR psicologico[Title/Abstract] OR psicologia[Title/Abstract] OR psicopatologia[Title/Abstract] OR mentale[Title/Abstract]) AND (italy[Title/Abstract] OR italian[Title/Abstract] OR italia[Title/Abstract])	41
EMBASE	(pregnancy:ti,ab OR 'pregnant woman':ti,ab OR perinatal:ti,ab OR antenatal:ti,ab OR puerperium:ti,ab OR 'post partum':ti,ab OR gravidanza:ti,ab OR incinte:ti,ab OR puerperio:ti,ab) AND ('sars cov 2':ti,ab OR 'covid 19':ti,ab OR coronavirus:ti,ab) AND (psychological:ti,ab OR psychology:ti,ab OR phychopathology:ti,ab OR mental:ti,ab OR stress:ti,ab OR anxiety:ti,ab OR depression:ti,ab OR depressive:ti,ab OR ansia:ti,ab OR depressione:ti,ab OR psicologico:ti,ab OR psicologia:ti,ab OR psicopatologia:ti,ab OR mentale:ti,ab) AND (italy:ti,ab OR italian:ti,ab OR italia:ti,ab)	55
WOS	(TI=(pregnancy OR 'pregnant woman' OR perinatal OR antenatal OR puerperium OR 'post partum' OR gravidanza OR incinte OR puerperio) OR AB=(pregnancy OR 'pregnant woman' OR perinatal OR antenatal OR puerperium OR 'post partum' OR gravidanza OR incinte OR puerperio)) AND (TI=('sars cov 2' OR 'covid 19' OR coronavirus) OR AB=('sars cov 2' OR 'covid 19' OR coronavirus)) AND (TI=(psychological OR psychology OR phychopathology OR mental OR stress OR anxiety OR depression OR depressive OR ansia OR depressione OR psicologico OR psicologia OR psicopatologia OR mentale) OR AB=(psychological OR psychology OR phychopathology OR mental OR stress OR anxiety OR depression OR depressive OR ansia OR depressione OR psicologico OR psicologia OR psicopatologia OR mentale)) AND (TI=(italy OR italian OR italia) OR AB=(italy OR italian OR italia))	12
EBSCO (APA PsycArticles, APA PsycInfo; Psychology and Behavioral Sciences Collection; MEDLINE)	(pregnancy OR 'pregnant woman' OR perinatal OR antenatal OR puerperium OR 'post partum' OR gravidanza OR incinte OR puerperio) AND ('sars cov 2' OR 'covid 19' OR coronavirus) AND (psychological OR psychology OR phychopathology OR mental OR stress OR anxiety OR depression OR depressive OR ansia OR depressione OR psicologico OR psicologia OR psicopatologia OR mentale) AND (italy OR italian OR italia)	109

A.3.3 JBI's Checklist for analytical cross-sectional studies

	Yes	No	Unclear	Not applicable
1. Were the criteria for inclusion in the sample clearly defined?	□	□	□	□
2. Were the study subjects and the setting described in detail?	□	□	□	□
3. Was the exposure measured in a valid and reliable way?	□	□	□	□
4. Were objective, standard criteria used for measurement of the condition?	□	□	□	□
5. Were confounding factors identified?	□	□	□	□
6. Were strategies to deal with confounding factors stated?	□	□	□	□
7. Were the outcomes measured in a valid and reliable way?	□	□	□	□
8. Was appropriate statistical analysis used?	□	□	□	□

A.3.4 JBI's Checklist for case-control studies

	Yes	No	Unclear	Not applicable
1. Were the groups comparable other than the presence of disease in cases or the absence of disease in controls?	□	□	□	□
2. Were cases and controls matched appropriately?	□	□	□	□
3. Were the same criteria used for identification of cases and controls?	□	□	□	□
4. Was exposure measured in a standard, valid and reliable way?	□	□	□	□
5. Was exposure measured in the same way for cases and controls?	□	□	□	□
6. Were confounding factors identified?	□	□	□	□
7. Were strategies to deal with confounding factors stated?	□	□	□	□
8. Were outcomes assessed in a standard, valid and reliable way for cases and controls?	□	□	□	□
9. Was the exposure period of interest long enough to be meaningful?	□	□	□	□
10. Was appropriate statistical analysis used?	□	□	□	□

A.3.5 JBI's Checklist for Qualitative research

	Yes	No	Unclear	Not applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	□	□	□	□
2. Is there congruity between the research methodology and the research question or objectives?	□	□	□	□
3. Is there congruity between the research methodology and the methods used to collect data?	□	□	□	□
4. Is there congruity between the research methodology and the representation and analysis of data?	□	□	□	□
5. Is there congruity between the research methodology and the interpretation of results?	□	□	□	□
6. Is there a statement locating the researcher culturally or theoretically?	□	□	□	□
7. Is the influence of the researcher on the research, and vice- versa, addressed?	□	□	□	□
8. Are participants, and their voices, adequately represented?	□	□	□	□
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	□	□	□	□
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	□	□	□	□

A.3.6 JBI's Checklist for textual evidence: expert opinion

		Yes	No	Unclear	Not applicable
1.	Is the source of the opinion clearly identified?	□	□	□	□
2.	Does the source of opinion have standing in the field of expertise?	□	□	□	□
3.	Are the interests of the relevant population the central focus of the opinion?	□	□	□	□
4.	Does the opinion demonstrate a logically defended argument to support the conclusions drawn?	□	□	□	□
5.	Is there reference to the extant literature?	□	□	□	□
6.	Is any incongruence with the literature/sources logically defended?	□	□	□	□

A.3.7 Excluded studies with reasons (N=17).

Excluded studies	
Study	**Reasons for exclusion**
1. Turan, O., Hakim, A., Dashraath, P., Jeslyn, W. J. L., Wright, A., & Abdul-Kadir, R. (2020). Clinical characteristics, prognostic factors, and maternal and neonatal outcomes of SARS-CoV-2 infection among hospitalized pregnant women: a systematic review. *International Journal of Gynecology & Obstetrics*, *151*(1), 7-16. https://doi.org/10.1002/ijgo.13329	Not based on Italian data
2. Provenzi, L., Grumi, S., Giorda, R., Biasucci, G., Bonini, R., Cavallini, A., ... & Borgatti, R. (2020). Measuring the Outcomes of Maternal COVID-19-related Prenatal Exposure (MOM-COPE): study protocol for a multicentric longitudinal project. *BMJ open*, *10*(12), e044585. http://dx.doi.org/10.1136/bmjopen-2020-044585	Not eligible study design (Protocol)
3. Kalcev, G., Preti, A., Orru, G., & Carta, M. G. (2020). Perinatal mental health: One of the biggest challenges in coronavirus disease-19 crisis. *Open Access Macedonian Journal of Medical Sciences*, *8*(1), 245-247. https://dx.doi.org/10.3889/oamjms.2020.5058	Not eligible study design (Letter to editor)
4. Spatz, D. L., Davanzo, R., Müller, J. A., Powell, R., Rigourd, V., Yates, A., ... & Bode, L. (2021). Promoting and protecting human milk and breastfeeding in a COVID-19 world. *Frontiers in pediatrics*, *8*, 1000. https://doi.org/10.3389/fped.2020.633700	Not based on Italian data
5. Silverio, S. A., Davies, S. M., Christiansen, P., Aparicio-García, M. E., Bramante, A., Chen, P., ... & Fallon, V. (2021). A validation of the Postpartum Specific Anxiety Scale 12-item research short-form for use during global crises with five translations. *BMC Pregnancy and Childbirth*, *21*(1), 1-12. https://doi.org/10.1186/s12884-021-03597-9	Not on the topic
6. Rasmussen, S. A., & Jamieson, D. J. (2020). Coronavirus Disease 2019 (COVID-19) and Pregnancy: Responding to a Rapidly Evolving Situation. *Obstetrics and gynecology*, 135(5), 999–1002. https://doi.org/10.1097/AOG.0000000000003873	Not eligible study design (Commentary/Letter to editor)
7. Provenzi, L., Giorda, R., Biasucci, G., Bonini, R., Cavallini, A., Chiara, A., ... & Orcesi, S. (2020). The MOM-COPE research project: Measuring the outcomes of maternal COVID19-related prenatal exposure. *Psychoneuroendocrinology*. https://dx.doi.org/10.1016/j.psyneuen.2020.104999	Not eligible study design (Abstract)
8. Di Mascio, D., Saccone, G., D'Antonio, F., & Berghella, V. (2021). Psychopathology associated with coronavirus disease 2019 among pregnant women. *American Journal of Obstetrics & Gynecology MFM*, *3*(1). https://doi.org/10.1016/j.ajogmf.2020.100290	Not eligible study design (Letter to editor)
9. Ciccone, G., Deandrea, S., Clavenna, A., Kirchmayer, U., Simeon, V., Acampora, A., ... & Forastiere, F. (2020). Covid-19 and clinical-epidemiological research in Italy: proposal of a research agenda on priority topics by the Italian association of epidemiology. *Epidemiol Prev*, 51-59.	Not on the topic
10. Kugelman, N., Toledano-Hacohen, M., Karmakar, D., Segev, Y., Shalabna, E., Damti, A., ... & Zilberlicht, A. (2021). Consequences of the COVID-19 pandemic on the postpartum course: Lessons learnt from a large-scale comparative study in a teaching hospital. *International Journal of Gynecology & Obstetrics*, *153*(2), 315-321. https://doi.org/10.1002/ijgo.13633	Not based on Italian data
11. Villani, M. T., Morini, D., Spaggiari, G., Simoni, M., Aguzzoli, L., & Santi, D. (2021). Spontaneous pregnancies among infertile couples during assisted reproduction lockdown for COVID-19 pandemic. *Andrology*, *9*(4), 1038-1041.	Not on the topic

Excluded studies	
https://doi.org/10.1111/andr.12973	
12. Dodesini, A. R., Caffi, A., Spada, M. S., & Trevisan, R. (2021). Resilience in pregnant women with pre-gestational diabetes during COVID-19 pandemic: the experience of the Papa Giovanni XXIII Hospital in Bergamo, Italy. Acta Diabetologica, 58(3), 397-399. https://doi.org/10.1007/s00592-020-01640-3	Not eligible study design (Letter to editor)
13. Bitonti, G., Palumbo, A. R., Gallo, C., Rania, E., Saccone, G., De Vivo, V., ... & Venturella, R. (2020). Being an obstetrics and gynaecology resident during the COVID-19: Impact of the pandemic on the residency training program. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *253*, 48-51. https://doi.org/10.1016/j.ejogrb.2020.07.057	Not on the topic
14. Morano, Sandra and Calleja-Agius, Jean. "Giving birth and dying alone in hospital during the COVID-19 pandemic – a time for shifting paradigm toward continuity of care" *Journal of Perinatal Medicine*, vol. 48, no. 6, 2020, pp. 551-552. https://doi.org/10.1515/jpm-2020-0220	Not eligible study design (Letter to editor)
15. Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... & Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*, *7*(6), 547-560. https://doi.org/10.1016/S2215-0366(20)30168-1	Not eligible study design (Letter to editor)
16. Motrico, E., Mateus, V., Bina, R., Felice, E., Bramante, A., Kalcev, G., ... & Mesquita, A. (2020). Good practices in perinatal mental health during the COVID-19 pandemic: a report from task-force RISEUP-PPD COVID-19. *Clínica y Salud*, *31*(3), 155-160. https://dx.doi.org/10.5093/clysa2020a26	Not based on Italian data
17. Sun, S. Y., Guazzelli, C. A. F., de Morais, L. R., Dittmer, F. P., Augusto, M. N., Soares, A. C., Coutinho da Silva, P. M., Abuchaim, E. S. V., & Mattar, R. (2020). Effect of delayed obstetric labor care during the COVID-19 pandemic on perinatal outcomes. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, *151*(2), 287–289. https://doi.org/10.1002/ijgo.13357	Not based on Italian data

Appendix
Chapter 4

A.4.1 Standards for Reporting Qualitative Research-SRQR Checklist

Standards for Reporting Qualitative Research (SRQR)*	**x**
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	x
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	NA – because it is not required for thesis
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	x
Purpose or research question - Purpose of the study and specific objectives or questions	x
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	x
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	x
Context - Setting/site and salient contextual factors; rationale**	x
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	x
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	X – information provided in the Introduction of overall thesis
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	x

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	x
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	x
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	x
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	x
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	x

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	x
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	x

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	x
Limitations - Trustworthiness and limitations of findings	x

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	NA– because it is not required for thesis
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	NA– because it is not required for thesis

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388

A.4.2 Interview scripts

Interview script at T1
a. Can you tell me your personal pregnancy story?
- When and how did you decide to have a child?
- How and when did you find out you were pregnant?
- How has your life changed with the pregnancy?
- When did you start noticing changes in your body? How did you experience them?
- What are the main emotions you experienced during pregnancy?
- How do you imagine the childbirth?
b. How do you picture yourself as a mother?
- How do you imagine your child?
- Do you think that a relationship has already been created between you and the child? How would you describe this relationship?
c. What are the main difficulties you experienced during pregnancy? How did you deal with them?
- What are the main sources of support instead?
- In your opinion, how has COVID-19 influenced your pregnancy experience?
Other
Are there any aspects you would like to explore that I haven't asked you?

Interview script at T2
a. Can you tell me about your pregnancy experience?
- How was the childbirth?
- How has your life changed after the arrival of the child?
- How is your life going right now? What are the main emotions you live in during the day?
- How is your relationship with your body, today?
b. How would you describe yourself as a mother?
- How would you describe your child?
- How would you describe your relationship with the child?
d. What are your main difficulties and concerns, to date?
-What are the main sources of support you think you have?
- In your opinion, has COVID-19 influenced your maternity experience in the last year? How?
Other
Are there any aspects you would like to explore that I haven't asked you?

Appendix
Chapter 5

A.5.1 STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies

	Item No	Recommendation	x
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	X
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	NA – because it is not required for thesis
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	X
Objectives	3	State specific objectives, including any prespecified hypotheses	X
Methods			
Study design	4	Present key elements of study design early in the paper	X
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	X
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	X
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	X
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	X
Bias	9	Describe any efforts to address potential sources of bias	X
Study size	10	Explain how the study size was arrived at	X
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	X
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	X
		(*b*) Describe any methods used to examine subgroups and interactions	X
		(*c*) Explain how missing data were addressed	X
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA – limitations regarding sensitivity analyses are provided in "Limits"
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	X
		(b) Give reasons for non-participation at each stage	X
		(c) Consider use of a flow diagram	NA – it was not considered necessary to provide a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	X
		(b) Indicate number of participants with missing data for each variable of interest	X
Outcome data	15*	Report numbers of outcome events or summary measures	X
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	X
		(*b*) Report category boundaries when continuous variables were categorized	X
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	X
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	X
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	X
Generalisability	21	Discuss the generalisability (external validity) of the study results	X
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	NA– because it is not required for thesis

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

Appendix

Chapter 6

A.6.1. PRIOR checklist (Preferred Reporting Items for Overviews of Systematic Reviews) (Gates et al., 2022; Bougioukas et al., 2019)

Section topic	Item No	Item	x
Title			
Title	1	Identify the report as an overview of reviews.	x
Abstract			
Abstract	2	Provide a comprehensive and accurate summary of the purpose, methods, and results of the overview of reviews.	NA– because it is not required for thesis
Introduction			
Rationale	3	Describe the rationale for conducting the overview of reviews in the context of existing knowledge.	x
Objectives	4	Provide an explicit statement of the objective(s) or question(s) addressed by the overview of reviews.	x
Methods			
Eligibility criteria	5a	Specify the inclusion and exclusion criteria for the overview of reviews. If supplemental primary studies were included, this should be stated, with a rationale.	x
	5b	Specify the definition of "systematic review" as used in the inclusion criteria for the overview of reviews.	x
Information sources	6	Specify all databases, registers, websites, organisations, reference lists, and other sources searched or consulted to identify systematic reviews and supplemental primary studies (if included). Specify the date when each source was last searched or consulted.	x
Search strategy	7	Present the full search strategies for all databases, registers and websites, such that they could be reproduced. Describe any search filters and limits applied.	x
Selection process	8a	Describe the methods used to decide whether a systematic review or supplemental primary study (if included) met the inclusion criteria of the overview of reviews.	x
	8b	Describe how overlap in the populations, interventions, comparators, and/or outcomes of systematic reviews was identified and managed during study selection.	x
Data collection process	9a	Describe the methods used to collect data from reports.	x
	9b	If applicable, describe the methods used to identify and manage primary study overlap at the level of the comparison and outcome during data collection. For each outcome, specify the method used to illustrate and/or quantify the degree of primary study overlap across systematic reviews.	x
	9c	If applicable, specify the methods used to manage discrepant data across systematic reviews during data collection.	x
Data items	10	List and define all variables and outcomes for which data were sought. Describe any assumptions made and/or measures taken to identify and clarify missing or unclear information.	x
Risk of bias assessment	11a	Describe the methods used to assess risk of bias or methodological quality of the included systematic reviews.	x
	11b	Describe the methods used to collect data on (from the systematic reviews) and/or assess the risk of bias of the primary studies included in the systematic reviews. Provide a justification for instances where flawed, incomplete, or missing assessments are identified but not reassessed.	x
	11c	Describe the methods used to assess the risk of bias of supplemental primary studies (if included).	NA –no supplemental primary study were included
Synthesis methods	12a	Describe the methods used to summarise or synthesize	x

		results and provide a rationale for the choice(s).	
	12b	Describe any methods used to explore possible causes of heterogeneity among results.	x
	12c	Describe any sensitivity analyses conducted to assess the robustness of the synthesised results.	X –sub-group analyses have been performed
Reporting bias assessment	13	Describe the methods used to collect data on (from the systematic reviews) and/or assess the risk of bias due to missing results in a summary or synthesis (arising from reporting biases at the levels of the systematic reviews, primary studies, and supplemental primary studies, if included).	x
Certainty assessment	14	Describe the methods used to collect data on (from the systematic reviews) and/or assess certainty (or confidence) in the body of evidence for an outcome.	x
Results			
Systematic review and supplemental primary study selection	15a	Describe the results of the search and selection process, including the number of records screened, assessed for eligibility, and included in the overview of reviews, ideally with a flow diagram.	x
	15b	Provide a list of studies that might appear to meet the inclusion criteria, but were excluded, with the main reason for exclusion.	x
Characteristics of systematic reviews and supplemental primary studies	16	Cite each included systematic review and supplemental primary study (if included) and present its characteristics.	x
Primary study overlap	17	Describe the extent of primary study overlap across the included systematic reviews.	x
Risk of bias in systematic reviews, primary studies, and supplemental primary studies	18a	Present assessments of risk of bias or methodological quality for each included systematic review.	x
	18b	Present assessments (collected from systematic reviews or assessed anew) of the risk of bias of the primary studies included in the systematic reviews.	x
	18c	Present assessments of the risk of bias of supplemental primary studies (if included).	NA
Summary or synthesis of results	19a	For all outcomes, summarise the evidence from the systematic reviews and supplemental primary studies (if included). If meta-analyses were done, present for each the summary estimate and its precision and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	x
	19b	If meta-analyses were done, present results of all investigations of possible causes of heterogeneity.	x
	19c	If meta-analyses were done, present results of all sensitivity analyses conducted to assess the robustness of synthesised results.	X –sub-group analyses have been presented
Reporting biases	20	Present assessments (collected from systematic reviews and/or assessed anew) of the risk of bias due to missing primary studies, analyses, or results in a summary or synthesis (arising from reporting biases at the levels of the systematic reviews, primary studies, and supplemental primary studies, if included) for each summary or synthesis assessed.	x
Certainty of evidence	21	Present assessments (collected or assessed anew) of certainty (or confidence) in the body of evidence for each outcome.	x
Discussion			
Discussion	22a	Summarise the main findings, including any discrepancies in findings across the included systematic reviews and supplemental primary studies (if included).	x
	22b	Provide a general interpretation of the results in the context of other evidence.	x
	22c	Discuss any limitations of the evidence from systematic reviews, their primary studies, and supplemental primary studies (if included) included in the overview of reviews. Discuss any limitations of the overview of reviews methods used.	x

	22d	Discuss implications for practice, policy, and future research (both systematic reviews and primary research). Consider the relevance of the findings to the end users of the overview of reviews, eg, healthcare providers, policymakers, patients, among others.	x
Other information			
Registration and protocol	23a	Provide registration information for the overview of reviews, including register name and registration number, or state that the overview of reviews was not registered.	x
	23b	Indicate where the overview of reviews protocol can be accessed, or state that a protocol was not prepared.	x
	23c	Describe and explain any amendments to information provided at registration or in the protocol. Indicate the stage of the overview of reviews at which amendments were made.	x
Support	24	Describe sources of financial or non-financial support for the overview of reviews, and the role of the funders or sponsors in the overview of reviews.	NA– because it is not required for thesis
Competing interests	25	Declare any competing interests of the overview of reviews' authors.	NA– because it is not required for thesis
Author information	26a	Provide contact information for the corresponding author.	NA– because it is not required for thesis
	26b	Describe the contributions of individual authors and identify the guarantor of the overview of reviews.	x
Availability of data and other materials	27	Report which of the following are available, where they can be found, and under which conditions they may be accessed: template data collection forms; data collected from included systematic reviews and supplemental primary studies; analytic code; any other materials used in the overview of reviews.	NA– because it is not required for thesis

A.6.2 Search terms in databases

PUBMED	#1	(Systematic Review [Publication Type] OR Review [Publication Type] OR Meta-analysis [Publication Type] OR (systematic*[Title/Abstract] AND review[Title/Abstract]) OR ("meta-analysis"[Title/Abstract]))	3.391.129
	#2	("anxiety disorders"[MeSH Terms] OR ("anxiety"[Title/Abstract] AND "disorders"[Title/Abstract]) OR "anxiety disorders"[Title/Abstract] OR ("anxiety"[Title/Abstract] AND "disorder"[Title/Abstract]) OR "anxiety disorder"[Title/Abstract] OR "anxiety"[MeSH Terms] OR "anxiety"[Title/Abstract] OR "depressive disorder"[MeSH Terms] OR (depress*[Title/Abstract] AND "disorders"[Title/Abstract]) OR "depressive disorders"[Title/Abstract] OR (depress*[Title/Abstract] AND "disorder"[Title/Abstract]) OR "depressive disorder"[Title/Abstract] OR "depression"[MeSH Terms] OR depress*[Title/Abstract] OR "depression during pregnancy"[Title/Abstract] OR (depress*[Title/Abstract] AND "during"[Title/Abstract] AND "pregnancy"[Title/Abstract]) OR "antenatal depression"[Title/Abstract] OR ("antenatal"[Title/Abstract] AND "depression" [Title/Abstract]) OR "puerperal disorders"[Title/Abstract] OR ("puerperal" [Title/Abstract] AND disorder*[Title/Abstract]) OR "mental" [Title/Abstract] OR "mental health" [Title/Abstract] OR ("mental" [Title/Abstract] AND "health"[Title/Abstract]) OR "mental disorders" [Title/Abstract] OR ("mental" [Title/Abstract] AND disorder*[Title/Abstract]) OR "psychological distress" [Title/Abstract] OR ("psychological" [Title/Abstract] AND "distress" [Title/Abstract]) OR "psychological disorders" [Title/Abstract] OR "psychological disorder" [Title/Abstract] OR ("psychological" [Title/Abstract] AND disorder*[Title/Abstract]) OR "mood disorders" [Title/Abstract] OR ("mood" [Title/Abstract] AND disorder*[Title/Abstract]) OR "depression, postpartum"[MeSH Terms] OR "postpartum depression" [Title/Abstract] OR ("postpartum" [Title/Abstract] AND "depression" [Title/Abstract]) OR "post-partum depression"[Title/Abstract] OR ("post-partum" [Title/Abstract] AND "depression" [Title/Abstract]) OR "ppd"[Title/Abstract])	1.188.320
	#3	("COVID-19"[MeSH Terms] OR "Coronavirus" [Title/Abstract] OR "2019-ncov*"[Title/Abstract] OR "2019ncov*" OR "2019n-cov*" OR ("corona"[Title/Abstract] AND "virus"[Title/Abstract]) OR "covid"[Title/Abstract] OR "covid19" [Title/Abstract] OR "ncov*"[Title/Abstract] OR "novel cov*"[Title/Abstract] OR "novel coronavirus"[Title/Abstract] OR "covid-2019"[Title/Abstract] OR ("covid" [Title/Abstract] AND "19" [Title/Abstract]) OR "covid2019" [Title/Abstract] OR ("covid" [Title/Abstract] AND "2019" [Title/Abstract]) OR "SARS-COV-2" [Title/Abstract] OR "SARS-COV2" [Title/Abstract] OR "SARSCOV-2" [Title/Abstract] OR "SARSCOV2" [Title/Abstract] OR "Wuhan pneumonia" [Title/Abstract] OR ("Wuhan" [Title/Abstract] AND "pneumonia" [Title/Abstract]) OR "Wuhan virus" [Title/Abstract] OR ("Wuhan" [Title/Abstract] AND "virus" [Title/Abstract]) OR "lockdown" [Title/Abstract] OR "social distancing" [Title/Abstract] OR ("social" [Title/Abstract] AND distancing[Title/Abstract]) OR "physical distancing" [Title/Abstract] OR ("physical" [Title/Abstract] AND "distancing" [Title/Abstract]) OR "shutdown" [Title/Abstract] OR "shut-down" [Title/Abstract] OR "shut down" [Title/Abstract] OR "shelter in place" [Title/Abstract] OR "stay at home" [Title/Abstract])	367.907
	#4	("pregnant"[Title/Abstract] OR "pregnancy"[MeSH Terms] OR "pregnancy"[Title/Abstract] OR "prenatal"[Title/Abstract] OR "pre-natal" [Title/Abstract] OR "antenatal" [Title/Abstract] OR "ante-natal" [Title/Abstract] OR "breastfeeding" [Title/Abstract] OR "lactating women" [Title/Abstract] OR "postpartum" [Title/Abstract] OR "post-partum" [Title/Abstract] OR "postnatal" [Title/Abstract] OR "post-natal" [Title/Abstract] OR "puerperium" [Title/Abstract] OR "puerperal" [Title/Abstract] OR "peri-natal" [Title/Abstract] OR "perinatal" [Title/Abstract] OR "maternal"[Title/Abstract] OR "mothers" [Title/Abstract] OR "moms" [Title/Abstract] OR "partum" [Title/Abstract] OR "intrapartum" [Title/Abstract])	1.424.447
	#5	#1 AND #2 AND #3 AND #4	**173**
COCHRANE	#1	(Systematic Review OR Review OR Meta analysis):ti,ab,key	81.917
	#2	MeSH descriptor: [Anxiety Disorders] explode all trees	8.870
	#3	MeSH descriptor: [Anxiety] explode all trees	12.951
	#4	MeSH descriptor: [Depressive Disorder] explode all trees	15.013
	#5	MeSH descriptor: [Depression] explode all trees	18.213
	#6	(depress* OR depression during pregnancy OR antenatal depression OR puerperal	172.267

		disorders OR mental OR mental health OR mental disorder* OR psychological distress OR psychological disorder* OR mood disorder* OR postpartum depression OR post-partum depression OR ppd):ti,ab,kw	
	#7	MeSH descriptor: [COVID-19] explode all trees	4.093
	#8	(Coronavirus OR 2019 ncov* OR 2019ncov* OR 2019n cov* OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid2019 OR SARS COV 2 OR SARS COV2 OR SARSCOV 2 OR SARSCOV2 OR Wuhan pneumonia OR Wuhan virus OR lockdown OR social distancing OR physical distancing OR shutdown OR shut down OR shut down OR shelter in place OR stay at home):ti,ab,kw	21.203
	#9	MeSH descriptor: [Pregnancy] explode all trees	30.922
	#10	MeSH descriptor: [Postpartum Period] explode all trees	2.409
	#11	(pregnant OR pregnancy OR prenatal OR pre natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post partum OR postnatal OR post natal OR puerperium OR puerperal OR peri natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum):ti,ab,kw	114.071
	#12	searches #2 or #3 or #4 or #5 or #6	181.641
	#13	searches #7 or #8	21.203
	#14	searches #9 or #10 or #11	114.468
	#15	searches #1 and #12 and #13 and #14	**12**
CINHAIL	#1	TI(Systematic Review OR Review OR Meta analysis) OR AB(Systematic Review OR Review OR Meta analysis)	683.916
	#2	(MH "Anxiety Disorders") OR (MH "Anxiety") OR (MH "Depressive Disorders") OR (MH "Depression") OR TI (depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR mental disorder* OR psychological distress OR psychological disorder* OR mood disorder* OR postpartum depression OR post-partum depression OR ppd) OR AB (depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR mental disorder* OR psychological distress OR psychological disorder* OR mood disorder* OR postpartum depression OR post-partum depression OR ppd)	434.449
	#3	(MH "COVID-19") OR TI (Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR Wuhan virus OR lockdown OR social distancing OR physical distancing OR shutdown OR shut down OR shut down OR shelter in place OR stay at home) OR AB (Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR Wuhan virus OR lockdown OR social distancing OR physical distancing OR shutdown OR shut down OR shut down OR shelter in place OR stay at home)	129.707
	#4	(MH "pregnancy") OR (MH "postpartum") OR TI (pregnant OR pregnancy OR prenatal OR pre natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post partum OR postnatal OR post natal OR puerperium OR puerperal OR peri natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum) OR AB (pregnant OR pregnancy OR prenatal OR pre natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post partum OR postnatal OR post natal OR puerperium OR puerperal OR peri natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum)	437.614
	#5	#1 AND #2 AND #3 AND #4	**78**
PSYCHINFO	#1	(Systematic Review OR Review OR Meta analysis).ti. OR (Systematic Review OR Review OR Meta analysis).ab	573.823
	#2	exp Anxiety Disorders/ OR exp Anxiety/ OR exp Depressive Disorders/ exp Depression/ OR (depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR mental disorder* OR psychological distress OR psychological disorder* OR mood disorder* OR postpartum depression OR post-partum depression OR ppd).ti. OR (depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR mental disorder* OR psychological distress OR psychological disorder* OR mood disorder* OR postpartum depression OR post-partum depression OR ppd).ab	784.401
	#3	exp COVID-19/ OR (Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR Wuhan virus OR lockdown OR social distancing OR physical distancing OR shutdown OR shut down OR shut down OR shelter in place	35.270

		OR stay at home).ti. OR (Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR Wuhan virus OR lockdown OR social distancing OR physical distancing OR shutdown OR shut down OR shut down OR shelter in place OR stay at home).ab	
	#4	exp pregnancy/ OR exp postpartum/ OR (pregnant OR pregnancy OR prenatal OR pre natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post partum OR postnatal OR post natal OR puerperium OR puerperal OR peri natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum).ti. OR (pregnant OR pregnancy OR prenatal OR pre natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post partum OR postnatal OR post natal OR puerperium OR puerperal OR peri natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum).ab	276.973
	#5	#1 AND #2 AND #3 AND #4	**50**
EMBASE	#1	'Systematic review':ti,ab OR 'Review':ti,ab OR 'Meta-analysis':ti,ab OR (systematic:ti,ab AND review:ti,ab)	2.708.727
	#2	'anxiety disorders'/exp OR 'anxiety'/exp OR 'depressive disorders'/exp OR 'depression'/exp OR 'postpartum depression'/exp OR ('anxiety':ti,ab AND disorder*:ti,ab) OR 'anxiety disorder':ti,ab OR (depress*:ti,ab AND disorder*:ti,ab) OR "depressive disorder":ti,ab OR depress*:ti,ab OR 'depression during pregnancy':ti,ab OR 'antenatal depression':ti,ab OR ('antenatal':ti,ab AND 'depression':ti,ab) OR 'puerperal disorders':ti,ab OR 'mental':ti,ab OR 'mental health':ti,ab OR ('mental':ti,ab AND 'health':ti,ab) OR 'mental disorder*':ti,ab OR ('mental':ti,ab AND disorder*:ti,ab) OR 'psychological distress':ti,ab OR ('psychological':ti,ab AND 'distress':ti,ab) OR 'psychological disorder*':ti,ab OR ('psychological':ti,ab AND disorder*:ti,ab) OR 'mood disorders':ti,ab OR ('mood':ti,ab AND disorder*:ti,ab) OR ('postpartum':ti,ab AND 'depression':ti,ab) OR 'post-partum depression':ti,ab OR ('post-partum':ti,ab AND 'depression':ti,ab) OR 'ppd':ti,ab	1.718.790
	#3	'COVID-19'/exp OR 'Coronavirus':ti,ab OR '2019-ncov*':ti,ab OR '2019ncov*':ti,ab OR '2019n-cov*':ti,ab OR ('corona':ti,ab AND 'virus':ti,ab) OR 'covid':ti,ab OR 'covid19':ti,ab OR 'ncov*':ti,ab OR 'novel cov*':ti,ab OR 'novel coronavirus':ti,ab OR 'covid-2019':ti,ab OR 'covid2019':ti,ab OR 'SARS-COV-2':ti,ab OR 'SARS-COV2':ti,ab OR 'SARSCOV-2':ti,ab OR 'SARSCOV2':ti,ab OR 'Wuhan pneumonia':ti,ab OR ('Wuhan':ti,ab AND 'pneumonia':ti,ab) OR 'Wuhan virus':ti,ab OR ('Wuhan':ti,ab AND 'virus':ti,ab) OR 'lockdown':ti,ab OR 'social distancing':ti,ab OR 'physical distancing':ti,ab OR 'shutdown':ti,ab OR 'shut-down':ti,ab OR 'shut down':ti,ab OR 'shelter in place':ti,ab OR 'stay at home':ti,ab	424.161
	#4	'pregnant':ti,ab OR 'pregnancy'/exp OR 'postpartum'/exp OR 'prenatal':ti,ab OR 'pre-natal':ti,ab OR 'antenatal':ti,ab OR 'ante-natal':ti,ab OR 'breastfeeding':ti,ab OR 'lactating women':ti,ab OR 'post-partum':ti,ab OR 'postnatal':ti,ab OR 'post-natal':ti,ab OR 'puerperium':ti,ab OR 'puerperal':ti,ab OR 'peri-natal':ti,ab OR 'perinatal':ti,ab OR 'maternal':ti,ab OR 'mothers':ti,ab OR 'mom*':ti,ab OR 'partum':ti,ab OR 'intrapartum':ti,ab	1.640.419
	#5	#1 AND #2 AND #3 AND #4	**267**
SCOPUS	#1	TITLE-ABS-KEY ("Systematic Review" OR review OR "Meta-analysis")	5.964.762
	#2	(ALL ("anxiety disorder*" OR "anxiety" OR "depressive disorder*" OR "depression") OR TITLE-ABS-KEY (depress* OR "depression during pregnancy" OR "antenatal depression" OR "puerperal disorders" OR "mental" OR "mental health" OR "mental disorders" OR "psychological distress" OR "psychological disorders" OR "psychological disorder" OR "mood disorders" OR "postpartum depression" OR "post-partum depression" OR "ppd"))	3.655.142
	#3	(ALL ("COVID-19") OR TITLE-ABS-KEY ("Coronavirus" OR "2019-ncov*" OR "2019ncov*" OR "2019n-cov*" OR "covid" OR "covid19" OR "ncov*" OR "novel cov*" OR "novel coronavirus" OR "covid-2019" OR "covid2019" OR "SARS-COV-2" OR "SARS-COV2" OR "SARSCOV-2" OR "SARSCOV2" OR "Wuhan pneumonia" OR "Wuhan virus" OR "lockdown" OR "social distancing" OR "psysical distancing" OR "shutdown" OR "shut-down" OR "shut down" OR "shelter in place" OR "stay at home"))	876.203
	#4	(ALL ("pregnancy" OR "postpartum") OR TITLE-ABS-KEY ("pregnant" OR "prenatal" OR "pre-natal" OR "antenatal" OR "ante-natal" OR "breastfeeding" OR "lactating women" OR "postpartum" OR "post-partum" OR "postnatal" OR "post-natal" OR "puerperium" OR "puerperal" OR "peri-natal" OR "perinatal" OR	2.468.057

		“maternal” OR “mothers” OR “moms” OR “partum” OR “intrapartum”))	
	#5	#1 AND #2 AND #3 AND #4	**434**
WOS	#1	TI=(Systematic Review OR Review OR Meta-analysis OR (systematic AND review)) OR AB=(Systematic Review OR Review OR Meta-analysis OR (systematic AND review))	3.579.031
	#2	TS=(anxiety disorder* OR (anxiety AND disorder*) OR anxiety OR depressive disorder* OR (depress* AND disorder*)) OR TI=(depression OR depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR (mental AND health) OR mental disorder* OR (mental AND disorder*) OR psychological distress OR (psychological AND distress) OR psychological disorder* OR (psychological AND disorder*) OR mood disorder* OR (mood AND disorder*) OR postpartum depression OR (postpartum AND depression) OR post-partum depression OR (post-partum AND depression) OR ppd) OR AB=(depression OR depress* OR depression during pregnancy OR antenatal depression OR puerperal disorders OR mental OR mental health OR (mental AND health) OR mental disorder* OR (mental AND disorder*) OR psychological distress OR (psychological AND distress) OR psychological disorder* OR (psychological AND disorder*) OR mood disorder* OR (mood AND disorder*) OR postpartum depression OR (postpartum AND depression) OR post-partum depression OR (post-partum AND depression) OR ppd)	1.327.240
	#3	TS=(COVID-19) OR TI=(Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR (corona AND virus) OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid-2019 OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR (Wuhan AND pneumonia) OR Wuhan virus OR (Wuhan AND virus) OR lockdown OR social distancing OR physical distancing OR shutdown OR shut-down OR shut down OR shelter in place OR stay at home) OR AB=(Coronavirus OR 2019-ncov* OR 2019ncov* OR 2019n-cov* OR (corona AND virus) OR covid OR covid19 OR ncov* OR novel cov* OR novel coronavirus OR covid-2019 OR covid2019 OR SARS-COV-2 OR SARS-COV2 OR SARSCOV-2 OR SARSCOV2 OR Wuhan pneumonia OR (Wuhan AND pneumonia) OR Wuhan virus OR (Wuhan AND virus) OR lockdown OR social distancing OR physical distancing OR shutdown OR shut-down OR shut down OR shelter in place OR stay at home)	647.661
	#4	TS=(pregnancy OR postpartum) OR TI=(pregnant OR prenatal OR pre-natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post-partum OR postnatal OR post-natal OR puerperium OR puerperal OR peri-natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum) OR AB=(pregnant OR prenatal OR pre-natal OR antenatal OR ante-natal OR breastfeeding OR lactating women OR postpartum OR post-partum OR postnatal OR post-natal OR puerperium OR puerperal OR peri-natal OR perinatal OR maternal OR mothers OR mom* OR partum OR intrapartum)	1.766.473
	#5	#1 AND #2 AND #3 AND #4	**254**

A.6.3 Excluded SR&MA with reasons (N=15).

Excluded studies	
Study	**Reasons for exclusion**
1. Asha, A. C., & Yuvaraj, T. (2022). Stress, anxiety, and depression among pregnant women during COVID-19: Systematic review-based study. YMER, 21(7), 564-580.	It is not a systematic review
2. Awanda, N. I., & Handayani, D. (2021). Literature review: Anxiety in pregnant women during the Covid-19 Pandemic. Disease Prevention and Public Health Journal, 17(1), 32-38. https://doi.org/10.12928/dpphj.v17i1.6315	It is not a systematic review
3. Biondi, F., Liparoti, M., Lacetera, A., Sorrentino, P., & Minino, R. (2022). Risk factors for mental health in the general population during SARS-COV2 pandemic: A systematic review. Middle East Current Psychiatry, 29(1), 1-13. https://doi.org/10.1186/s43045-022-00251-8	No extractable data on pregnant or postpartum women
4. Caffieri, A., & Margherita, G. (2021). The psychological impact of COVID-19 on women's wellbeing during pregnancy and postpartum one year after the pandemic outbreak in Italy: A systematic review. Mediterranean Journal of Clinical Psychology, 9(2). https://doi.org/10.13129/2282-1619/mjcp-3026	No data on the prevalence
5. Feduniw, S., Modzelewski, J., Kajdy, A., et al. (2021). Anxiety of pregnant women in time of catastrophic events, including COVID-19 pandemic: A systematic review and meta-analysis. Journal of Psychosomatic Obstetrics & Gynecology, 43(4), 400-410. https://doi.org/10.1080/0167482X.2021.1985453	No extractable data on the COVID-19 pandemic
6. Kubota, C., & Inada, T. (2023). Perinatal depression and anxiety during the COVID-19 Pandemic: A review and future direction. International Medical Journal, 30(1), 5-9.	It is not a systematic review.
7. Luo, Y., Zhang, K., Huang, M., & Qiu, C. (2022). Risk factors for depression and anxiety in pregnant women during the COVID-19 pandemic: Evidence from meta-analysis. PloS One, 17(3), e0265021. https://doi.org/10.1371/journal.pone.0265021	No data on the prevalence
8. Nassar, M., Nso, N., & Alfishawy, M. (2023). Current systematic reviews and meta-analyses of COVID-19. World Journal of Virology, 10(4), 182-187. https://doi.org/10.5501/wjv.v10.i4.182	It is not a systematic review. Study design: Umbrella review. No data on depression or anxiety in pregnant and/or postpartum women
9. Russo, G., Jesus, T. S., Deane, K., Osman, A. Y., & McCoy, D. (2021). Epidemics, lockdown measures and vulnerable populations: A mixed-methods systematic review of the evidence of impacts on mother and child health in low- and lower-middle-income countries. International Journal of Health Policy and Management, Early-Access. https://doi.org/10.34172/ijhpm.2021.155	No data on pregnant and/or postpartum women.
10. Saeed, H., Eslami, A., Nassif, N. T., Simpson, A. M., & Lal, S. (2022). Anxiety linked to COVID-19: A systematic review comparing anxiety rates in different populations. International Journal of Environmental Research and Public Health, 19(4), 2189. https://doi.org/10.3390/ijerph19042189	It includes only one article on pregnant women.
11. Toghyani, M., & Toghyani, A. (2022). Mental health of Iranian pregnant women during the pandemic of COVID-19: A systematic review. Iranian Journal of Nursing and Midwifery Research, 27(6), 485-491. https://doi.org/10.4103/ijnmr.ijnmr_205_22	Not reported data on instruments used for the assessment, and reported aggregate data on the prevalence and the intervention
12. Vieira, L. G., Camargo, E. L. J. S., Schneider, G., et al. (2021). Effects of the COVID-19 pandemic on the mental health of pregnant and puerperal women: A systematic review. The Open Nursing Journal, 15(1).	No data on the prevalence

Excluded studies	
https://doi.org/10.2174/1874434602115010388	
13. Yanuarini, T., Kristianti, S., Mediawati, M., Kundarti, F., Yunitasari, E., & Yuliana, I. (2022). Pregnancy factors of anxiety in pregnant mothers during the COVID-19 pandemic: A systematic review. Indonesian Midwifery and Health Science Journal, 6(3), 232-256. https://doi.org/10.20473/imhsj.v6i3.2022.232-256	No data on the prevalence
14. Zahmatkesh, R., Reza, M., Saghebdoust, S., Hajian, H., & Badpeyma, M. (2021). The impact of COVID-19 outbreak on the mental health of pregnant women: A systematic review. International Journal of Pediatrics, 9(3), 13185-13192. https://doi.org/10.22038/IJP.2020.51632.4106	No data on the prevalence
15. Zhang, X., Wang, C., Zuo, X., Aertgeerts, B., Buntinx, F., Li, T., & Vermandere, M. (2023). Study characteristics and regional influences on postpartum depression before vs. during the COVID-19 pandemic: A systematic review and meta-analysis. Frontiers in Public Health, 11, 1102618. https://doi.org/10.3389/fpubh.2023.1102618	No extractable data on prevalence during the COVID-19 pandemic

A.6.4 Characteristics of the SR&MA included (N= 25).

Authors, date	Type of study (SR/MA)	Last date search	Number of primary studies in SR/MA	Participants (N, pregnant and/or postpartum)	Countries	Number of databases	Types of primary studies included	Quality assessment instrument used	Outcome	Instruments to assess outcomes
Adrianto et al., 2022	SR/MA	30/06/2021	54[a]	N=95326 Pregnant & postpartum	Canada (3); China (16); Egypt (1); Greece (1); Honk Kong (1); Iran (1); Israel (2); Italy (3); Japan (3); Mexico (2); Multi-countries (1); Nord-european countries (1); Poland (1); Qatar (1); Singapore (1); Spain (2); The Netherlands (1); Turkey (3); UK (1); US (9)	3	42 cross-sectional, 10 cohort, 1 case-control, 1 mixed metod	Newcastle-Ottawa Scale	Depression	CES-D-10 (1); DASS (1); DASS-21 (1); Diagnosis online instrument (1); EPDS (32); EDS (2); HADS-D (2); K10 (1); PHQ-2 (3); PHQ-4 (1); PHQ-9 (8); SDS (1)
Ahmad & Vismara, 2021	SR	01/2021	17	N=13786 Pregnant & Postpartum	Argentina (1); Canada (2); China (2); Iran (1); Italy (2); Japan (1); Pakistan (1); Qatar (1); Spain (1); Turkey (2)	5	13 cross-sectional; 2 prospective; 1 case; 1 longitudinal	NA	Depression & Anxiety	BDI-II (1); CES-D (1); DASS-21 (1) EPDS (7); GAD-7 (1); HADS (2); PHQ-9 (1); PHQ-9 (1); PROMIS (1); STAI (4); VAS for Anxiety (1);
Ansariniaki et al., 2021	SR	11/06/2020	11[b]	N=13921 Pregnant	Canada (1); China (1); Greece (1); Iran (1); Ireland (1); Israel (1); Italy (1); Pakistan (1); Turkey (2); UK (1)	3	11 cross-sectional	Modified STROBE	Anxiety	CDAS (1) EPDS (3) GAD-7 (2) HADS (1) HAQ (1) PROMIS Anxiety short-form (1) STAI (1) STAI-Y (1)

Cevik et al., 2022	SR/MA	15/05/2021	14[c]	N=26158 Pregnant	China (3); Iran (2); Italy (1); Pakistan (1); Poland (1); The Netherlands (1); Turkey (3); USA (2)	9	11 cross-sectional; 1 prospective; 1 cohort; 1 longitudinal	JBI Critical Appraisal Checklist for Observational Studies	Depression & Anxiety	BAI (1); CDAS (1); EPDS (4); HADS (1); HADS-A (1); HADS-D (1); HAQ (1); PHQ (2); PRA (1); SAS (2); SDS (1); STAI (3)
Chen et al., 2022	SR/MA	01/11/2021	8	N= 6408 Postpartum	Canada (1); Italy (2); Northern Europe (1); Myanmar (1); Mexico (1); Turkey (1); UK (1)	3	8 cross-sectional	JBI Critical Appraisal Checklist for Observational Studies	Depression	EPDS (8)
Chmielewska et al., 2021	SR/MA	08/01/2021	SR: 10 MA: 3	N=5106 Pregnant & Postpartum	Canada (1); China (3); Japan (1); Honk Kong (1); Israel (1); Italy (1); Turkey (1); USA (1)	2	NA	Newcastle-Ottawa Scale	Depression & Anxiety	BAI (1); EPDS (5); EPDS-A (1); K10 (1); SCL-90-R (1); Whooley questions (1)
Delanerolle et al., 2023	SR/MA	31/07/2021	90[d]	N= 123600 Pregnant & Postpartum	Argentina (2); Canada (2); China (22); Denmark (1); Egypt (1); France (1); Greece (2); India (1); Indonesia (1); Iran (12); Ireland (1); Israel (2); Italy (5); Japan (3); Jordan (1); Mexico (2); Netherlands (1); Nord Europe (1); Pakistan (1); Singapore (1); Spain (5); Sri Lanka (1); Turkey (11); UK (1); USA (9)	4	NA	RoB	Depression & Anxiety	BAI (3); BDI (1); BDI-II (2); CDAS (3); DASS-21 (6); EDS (3); EPDS (30); GAD-7 (16); HADS (5); HAQ (1); K6 (1); MDI (1); PASS (1); PHQ-2 (2); PHQ-9 (8); PRAQ (1); PROMIS (1); SAS (9); SCL-90-R (2); SDS (1); Self-designed

										questionnaires (7); STAI-S (12); STAI-T (6)
Demissie et al., 2021	SR/MA	30/09/2020	18[e]	N= 21163 Pregnant & Postpartum	Bosnia and Herzegovina and Serbia (1); Canada (3); China (4); Colombia (1); Iran (2); Ireland (1); Italy (1); Nord Europe (1); Sri Lanka (1); Turkey (1); USA (1)	5	18 cross-sectional	JBI Critical Appraisal Checklist for Observational Studies	Depression & Anxiety	CDAS (2); CESD (1); EDS (2); EPDS (5); GAD-7 (3); HADS (2); PHQ-2 (1); SAQ (2); SAS (4); SDS (1); STAI (2)
Fan et al., 2021	SR/MA	27/09/2020	SR: 24 MA:19	N= 15872 Pregnant	Belgium (1); China (5); Colombia (1); Iran (1); Israel (1); Italy (2); Japan (2); Sri Lanka (1); Turkey (2); US (3)	3	NA	JBI PACES	Depression & Anxiety	BAI (1); DASS-21 (1); EPDS (1); EDS (1); EPDS (6); GAD-2 (1); GAD-7 (2); HADS (1); PHQ-9 (1); SAS (2); Self-designed questionnaire (1); STAI (1); Whooley questions (1)
Gao et al., 2022	SR/MA	16/06/2021	29	N= 20225 Postpartum	Belgium (1); Brazil (2); Canada (1); China (6); Japan (2); Israel (2); Italy (4); Mexico (1); Multi-countries (1); Netherlands (1); Nord Europe (1); Poland (1); Serbia (1); Spain (1); Turkey (2); UK (1); US (1)	4	15 cross-sectional; 11 case-control; 3 Panel studies	Newcastle-Ottawa- Scale	Depression & Anxiety	EPDS (26); GAD-7 (4); PHQ-9 (1); STAI (3); STAI-SF (1)
Ghazanfarpour et al., 2022	MA	NA	11[f]	NA Pregnant	Belgium (1); Canada (1); China (3); Greece (1); Iran (1); Italy (1); Pakistan (1); Sri Lanka (1); Turkey (1)	4	9 cross-sectional; 1 prospective; 1 cohort	STROBE	Depression & Anxiety	BAI (1); CDAS (1); CES-D (1); EPDS (4); GAD-7 (4); HADS (1);

										PROMIS (1); SAS (1); STAI (2); Warwick Edinburgh (1)
Hessami et al., 2020	SR/MA	05/07/2020	8	N= 7750 Pregnant & Postpartum	Canada (3); China (1); Greece (1); Italy (2); Turkey (1)	6	5 cross-sectional; 1 case-control; 1 prospective; 1 NA	NA	Depression & Anxiety	EPDS (6); STAI (3)
Iyengar et al., 2021	SR	01/31/2021	57[g]	N= 74079 Pregnant & Postpartum	Argentina (1); Belgium (1); Brazil (1); Canada (4); China (13); Ethiopia (1); Greece (1); Hong Kong (1); Japan (1); Iran (1); Israel (3); Iran (1); Italy (7); Northern Europe (1); Poland (1); Qatar (1); Singapore (1); Spain (1); Sri Lanka (1); Turkey (7); US (8)	3	45 cross-sectional; 2 population-based; 4 longitudinal; 1 retrospective; 2 cohort: 3 case-control	Newcastle-Ottawa Scale (adapted)	Depression & Anxiety	NA
Lin et al., 2022	MA	04/2022	26	N= 26689 Pregnant	China (8); Netherlands (1); Norway (1); Brazil (1); US (1); Israel (2); Canada (2); Spain (1); Japan (2); Turkey (1); Italy (2); Kenya (1); Belgium (1); India (1); Russia (1)	8	26 cross-sectional	Agency for Healthcare Research and Quality	Depression	PHQ-9 (3); EPDS (22); SDS (1)
Low et al., 2023	SR	NA	25	N= 10515 Postpartum	Argentina (1); Brazil (1); China (2); India (1); Israel (1); Italy (4); Japan (3); Mexico (1); Poland (1); Serbia (1); Spain (2); Turkey (2); UK (3); US (2)	4	17 cross-sectional; 3 cohort; 2 non-concurrent case-control; 1 observational study; 1 comparative; 1 population cohort	Quality Assessment with Diverse Studies (QuADS) tool	Depression	EPDS (24); PDSS-SF (1)
Muñoz-Vela et al., 2023	SR	02/09/2022	13[h]	N= 11300 Pregnant	Brazil (1); Egypt (1); Italy (1); Nepal (1); Multicountries (1); Poland (2): Romania (1); Spain (1); Turkey (4)	4	13 cross-sectional	JBI Critical Appraisal Tools	Anxiety	BAI (1); GAD-7 (2); HAM-A (1); IDAS II (1); Kuas, Spielberg's State Anxiety Inventory (1); HADS (1); PRAQ-20 (1);

										STAI (4)
Rahimi et al., 2020	SR	08/2020	15[i]	N= 21540 Pregnant & Postpartum	Belgium (1); China (4); Canada (2); Greece (1); Iran (2); Italy (2); Pakistan (1); Sri Lanka (1); Turkey (1)	5	15 cross-sectional	STROBE	Depression & Anxiety	CDAS (1); EDS (1); EPDS (5); GAD-7 (2); HADS(1); HAQ (1); PHQ-2 (1); PRAS (1); PROMIS anxiety SF (1); STAI (4)
Safi-Keykaleh et al., 2022	SR/MA	31/08/2021	24	N= 13169 Postpartum	Argentina (1); Belgium (1); Brazil (1); China (2); Hong Kong (1); Israel (1); Italy (4); Japan (3); Mexico (1); Multi-countries (1); Poland (1); Saudi Arabia (1); Serbia (1); Spain (1); Turkey (2); UK (2)	7	18 cross-sectional, 4 retrospective cohort, 2 case-control	AXIS + Newcastle-Ottawa Scale	Depression	EPDS (24); PDSS-SF (1)
Shorey et al., 2021	SR/MA	10/12/2020	26[l]	N= 24040 Pregnant & Postpartum	Belgium (1); Canada (3); China (5); Greece (1); Hong Kong (1); Iran (1); Israel (2); Italy (3); Japan (2); Sri Lanka (1); Turkey (3); US (3);	6	16 cross-sectional, 9 cross-sectional and case-control, 1 mixed method	JBI Critical Appraisal Tools	Depression & Anxiety	BAI (1); BDI (1); DASS-21 (1); EPDS (16); GAD-7 (4); HADS (2); PASS (1); PHQ (2); PRAS (1); PROMIS anxiety SF (1); SAS (2); SDS (1); STAI (5)
Sun et al., 2021	SR/MA	31/07/2020	15[m]	N= 11187 Pregnant & Postpartum	NA	8	13 cross-sectional, 2 NA	Agency for Healthcare Research and Quality	Depression & Anxiety	BAI (1); BDI (1); EDS (1); EPDS (6); GAD-7 (2); HADS (1); K10 (1); PHQ (1);

										SAS (1); SDS (1); STAI (2)
Thakur et al., 2022	SR	NA	10[n]	N=3010 Pregnant	India (2); Italy (1) Oman (1); Pakistan (2); Romania (1); Singapore (1); Spain (1); Turkey (1)	4	9 cross-sectional; 1 prospective study	NA	Depression & Anxiety	DASS-21 (2) GAD-7 (2); HADS (1); PHQ-9 (1); SCL-90 (1); STAI (1); VAS for anxiety (1)
Tomfohr-Madsen et al., 2021	Rapid review/ MA	10/02/2021	46	N=545285 Pregnant	Argentina (1); Belgium (1); China (14); Canada (4); Greece (1); Iran (2); Ireland (1); Italy (4); Japan (3); Mexico (1); Norway (1); Pakistan (1); Poland (1); Qatar (1); Singapore (1); Spain (1); Sri Lanka (1); Switzerland (1); The Netherlands (1); Turkey (3); UK (1); US (1);	4	NA (cohort and cross-sectional studies, no number available)	Modified version of NIH Quality Assessment Tool for Observation Cohort and Cross-Sectional Studies	Depression & Anxiety	BDI-II (1); CES-D (1); DASS-21 (4); EPDS (20); GAD-2 (1); GAD-7 (9); HADS (3); PASS (2); PHQ-9 (6); PROMIS Anxiety (1); SAS (6); SCL90-R (1); SDS (1); STAI (9); Whooley-2 (1)
Usmani et al., 2021	SR	before March 2021	36	N=35424 Postpartum	Canada (2); China (5); Iran (1); Israel (2); Italy (4); Japan (2); Mexico (1); Multicountry (1); Portugal (1); Serbia (1); Spain (2); The Netherlands (1); Turkey (5); US (8); UK (1)	4	24 cross-sectional; 4 cohort studies; 3 longitudinal studies; 1 mixed methods pilot study; 1 retrospective study; 1 review; 2 NA	Criteria set out by Lincoln and Guba (1985)	Depression	EPDS (14); IDAS (1); PHQ-2 (1); NA (20)
Wall et al., 2022	SR	25/05/2021	14[o]	N = 13406 Pregnant & Postpartum	Belgium (1); Greece (1); Italy (3); Nigeria (1); Spain (3); Turkey (1); UK (3); US (1)	6	14 cross-sectional	NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies	Depression & Anxiety	DASS-21 (1); EPDS (8); GAD-7 (2); GHQ-12 (1); PASS (1); PHQ-2 (1); PSAS (1);

										STAI (6)
Yan et al., 2020	SR/MA	19/09/2020	SR:24[p] MA: 21	N = 24246 Pregnant & Postpartum	Belgium (1); Canada (2); China (7); Colombia (1); Israel (1); Italy (3); Japan (1); Sri Lanka (1); Turkey (3); US (3);	3	19 cross-sectional; 4 case control	Modified version of the Newcastle–Ottawa scale	Depression & Anxiety	BAI (1); EPDS (10); GAD-7 (4); HADS (1); K10 (1); PHQ–2 (1); PROMIS (1); SAQ (2); SAS (2); STAI (2)

Note. SR= systematic review; MA= Meta-analysis; STROBE= Strengthening the Reporting of Observational studies in Epidemiology; JBI= Joanna Briggs Institute; PACES= Practical Application of Clinical Evidence System; RoB= Risk-of-bias tool for randomized trials; AXIS= Appraisal Tool for Cross-Sectional Studies;
NIH= National Institute of Health; CES-D-10= Center for Epidemiologic Studies Depression scale – 10 items; DASS = Depression Anxiety Stress Scale; DASS = Depression Anxiety Stress Scale – 21 items; EPDS= Edinburgh Postnatal Depression Scale; EDS= Edinburgh Depression Scale; HADS = The Hospital Anxiety and Depression Scale; HADS-D = Hospital Depression Scale; K10= Kessler Psychological Distress Scale–10 items; PHQ-2= Patient Health Questionnaire- 2 items; PHQ-4= Patient Health Questionnaire- 4 items; PHQ-9= Patient Health Questionnaire- 9 items; SDS= Self-depression rating Scale; BDI-II = Beck's Depression Inventory Version-II; STAI = State Trait Anxiety Inventory; GAD-7 = Generalized Anxiety Disorder 7-items; PROMIS (Patient-Reported Outcomes Measurement Information System) Anxiety Adult 7-item short form; VAS = Visual Analog Scale; BAI = Beck's Anxiety Inventory; HADS-A = Hospital Anxiety Scale; HAQ = The Health Anxiety Questionnaire; PRA= The Pregnancy Related Anxiety Questionnaire; SAS = Self-Rating Anxiety Scale; EPDS-A= Edinburgh Postnatal Depression Scale – Anxiety score; SCL-90 = Symptoms Checklist-90; CDAS= Corona Disease Anxiety Scale; K6= Kessler Psychological Distress Scale–6 items; MDI = Major Depression Inventory; PASS= Perinatal Anxiety Screening Scale; PRAQ= Pregnancy-Related Anxiety Questionnaire; STAI-S = State Trait Anxiety Inventory – State score; STAI-T = State Trait Anxiety Inventory – Trait score; SAQ= Social Anxiety Questionnaire for adults; GAD-2 = Generalized Anxiety Disorder 2-items; STAI - SF = State Trait Anxiety Inventory- Short Form; PDSS-SF: Postpartum Depression Screening Scale-Short Form; PRAQ-20= Pregnancy-Related Anxiety Questionnaire-20 items; HAM-A= Hamilton Anxiety Rating Scale; IDAS = Inventory of Depression and Anxiety Symptoms;; SCL-90-R = Symptoms Checklist-90-revised; GHQ-12= General health Questionnaire.

[a] *Among the total, 36 studies reported data on pregnant women and 19 studies reported data on postpartum women.*

[b] *In the article, one study was duplicated. Total number of studies included in the original review: 12.*

[c] *Only data on depression and anxiety are included in the current study. In the article, 4 studies on the prevalence of depression and 9 studies on mean score of depression; 6 on the prevalence of anxiety and 7 on mean score of anxiety were included. Total number of studies included in the original review: 48.*

[d] *Only data on depression and anxiety are included in the current study. Total number of studies included in the original review: 99.*

[e] *In the article one study is duplicated. Total number of studies included in the review: 19.*

[f] *In the table of the original review there were 12 studies. One study was not counted in the flow diagram, and not considered in the analysis. No explanation was given for this choice. Discrepancies were presented in the original review.*

[g] *The original review included 17 studies on the prevalence and 57 studies on mean score.*

[h] *Only data on anxiety are included in the current study. Total number of studies included in the original review: 17.*

[i] *Among the total, 6 studies reported data on pregnant women and a non-specified number of articles reported data on postpartum women.*

[l] *Among the total, 19 studies reported data on pregnant women, 5 studies reported data on postpartum women, and 4 studies reported data on women in the perinatal period (aggregating pregnancy and postpartum).*

[m] *Among the total, 9 studies reported data on pregnant women, 4 studies reported data on postpartum women and 2 studies reported data on women in perinatal period (aggregating pregnancy and postpartum).*

[n] *Only data on depression and anxiety are included. Total number of studies included in the original review: 10.*

[o] *Only data on depression and anxiety are included. Total number of studies included in the original review: 16.*

[p] *Only data on depression and anxiety are included. Total number of studies included in the original review: 23. Among the total, 19 studies reported data on pregnant women, 2 studies reported data on postpartum women and 2 studies reported data on women in their perinatal period (aggregating pregnancy and postpartum).*

A.6.5 Findings of MAs on the prevalence of depression which were included in the quantitative synthesis (N=12).

Authors (year of publication)	N of studies included	Perinatal period assessed	Pooled Prevalence of Perinatal Depression	Publication bias	Heterogeneity	Other findings
Adrianto et al., 2022						
	36	Pregnancy	0.314 (95% CI: 0.268-0.363)	No	I^2=*99.48, p<0.001*	None
	19	Postpartum	0.276 (95% CI: 0.219-0.337)	No	I^2=*98.41, p<0.001*	None
Cevik et al., 2022						
	4	Pregnancy	0.404 (95% CI: 0.335-0.477).	NA[a]	NA	Mean depression score = 24.445±7.657 (95% CI: 9.438–39.452; I^2:99.991, p<0.001) (9 studies)
Chen et al, 2022						
	8	Postpartum	0.34 (95% CI: 0.21-0.46)	Yes	I^2 *= 98.00, p<0.00001*	Sensitivity analysis after the exclusion of Ceulenams et al. (2020): the pooled prevalence was 0.37 (95% CI: 33–41%) with no publication bias and moderate heterogeneity across the seven studies (I^2 = 73%, p < 0.001).
Delanerolle et al., 2023						
	29	Postpartum	0.2496 (95% CI: 0.2026-0.3076)	Yes	I^2 *= 97.03, p=0.00*	Sub-groups analysis for gestational trimesters
Fan et al., 2021						
	14	Pregnancy	0.25 (95% CI: 0.20-0.31)	No	I^2 *= 97.9, p=0.00*	None
Gao et al., 2022						
	29	Postpartum	0.267 (95% CI: 0.22-0.319)	No	I^2 *= 98.00, p<0.01*	Sub-groups analysis for continents, screening tools, survey modality, types of delivery, parity, quality of the studies, education, age, breastfeeding, time after delivery

Authors (year of publication)	N of studies included	Perinatal period assessed	Pooled Prevalence of Perinatal Depression	Publication bias	Heterogeneity	Other findings
Ghazanfarpour et al., 2022						
	6	Pregnancy	0.251 (95% CI: 0.18-0.33)	No	$I^2 = 97.00$, $p<0.001$	Sub-groups analysis for countries
Lin et al., 2022						
	26	Postpartum	0.24 (95% CI: 0.19-0.29)	NA	$I^2 = 98.00$, $p<0.00001$	Sub-groups analysis for geographical regions, COVID-19 virus infection, and COVID-19 pandemic phases
Safi-Keykaleh et al., 2022						
	24	Postpartum	0.28 (95% CI: 0.23-0.33)	No	$I^2 = 98.5$, $p\leq0.001$	Sub-groups analysis for screening tools and cut-offs
Shorey et al., 2021						
	13	Pregnancy	0.27 (95% CI: 0.20-0.33)	Unclear	$I^2 = 99.00$, $p<0.00001$	Sub-groups analysis for geographical regions
	5	Postpartum	0.17 (95% CI: 0.10-0.24)	Unclear	$I^2 = 96.00$, $p<0.00001$	
Tomfohr-Madsen et al., 2021						
	37	Pregnancy	0.256 (95% CI: 0.218-0.299)	Unclear	$I^2 = 98.62$, $p<0.001$	Maternal age, gestational age, study quality, and time of data collection were explored as potential moderators. Sub-groups analysis for geographical regions
Yan et al., 2020						
	13	Pregnancy	0.31 (95% CI: 0.20-0.42)	NA	$I^2 = 99.4$, $p=0.001$	Sensitive analysis, the prevalence in China, and sub-group analysis for screening tools, parity, gestational trimesters
	3	Postpartum	0.22 (95% CI: 0.15-	NA	$I^2 = 85.7$,	

Authors (year of publication)	N of studies included	Perinatal period assessed	Pooled Prevalence of Perinatal Depression	Publication bias	Heterogeneity	Other findings
			0.29)		*p=0.001*	

[a] *Publication bias was not calculated for data collected during the COVID-19 pandemic separately.*

A.6.6 Findings of MAs on the prevalence of anxiety which were included in the quantitative synthesis (N=8).

Authors (year of publication)	N of studies included	Perinatal period assessed	Pooled Prevalence of Perinatal Anxiety	Publication bias	Heterogeneity	Other findings
Cevik et al., 2022[a]	6	Pregnancy	0.172 (95% CI: 0.112-0.255)	NA[a]	NA	Mean anxiety score= 42.178 ± 4.427 (95% CI: 33.502–50.854; I^2: 99.995, $p < .001$)
Delanerolle et al., 2023	16	Postpartum	0.3209 (95% CI: 0.2555-0.4030)	Unclear	*I^2=97.06, p=0.00*	Sub-groups analysis for gestational trimesters
Fan et al., 2021	12	Pregnancy	0.42 (95% CI: 0.26-0.57)	No	*I^2 = 99.6, p=0.001*	None
Gao et al., 2022	9	Postpartum	0.338 % (95% CI: 0.211-0.494).	NA	*I^2 = 99.00, p<0.01*	Sub-groups analysis for continents, screening tools, survey modality, types of delivery, parity, quality of the studies, education, age, breastfeeding, time after delivery
Ghazanfarpour et al., 2022	11	Pregnancy	0.187 (95% CI: 0.06-0.36)	No	*I^2 = 99.00, p<0.001*	Sub-groups analysis for countries
Shorey et al., 2021	12	Pregnancy	0.40 (95% CI: 0.27–0.52)	Unclear	*I^2 = 100.00, p<0.001*	Sub-groups analysis for geographical regions.
Tomfohr-Madsen et al., 2021	34	Pregnancy	0.305 (95% CI: 0.226-0.398)	No	*I^2 = 98.43, p<0.001*	Maternal age, gestational age, study quality, and time period were explored as potential moderators. Sub-groups analysis for geographical regions
Yan et al., 2020	13	Pregnancy	0.37 (95% CI: 0.25-0.49)	NA	*I^2 = 99.4, p=0.00*	Sensitive analysis, prevalence in China, and sub-group analysis for screening tools, parity, trimester, educational level, employment status, and anxiety severity were performed

[a] *Publication bias was not calculated for data collected during the COVID-19 pandemic separately.*

A.6.7 References of the 25 SR&MA included in the umbrella review.

1. Adrianto, N., Caesarlia, J., & Pajala, F. B. (2022). Depression in pregnant and postpartum women during the COVID-19 pandemic: Systematic review and meta-analysis. Obstetrics & Gynecology Science, 65(4), 287-302. https://doi.org/10.5468/ogs.21265*
2. Ahmad, M., & Vismara, L. (2021). The psychological impact of the COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. International Journal of Environmental Research and Public Health, 18(13), 7112. https://doi.org/10.3390/ijerph18137112
3. Ansariniaki, M., Abounoori, M., & Babakhanian, M. (2021). A systematic review of anxiety during pregnancy in the period of the COVID-19 pandemic. International Journal of Pediatrics, 9(11), 14756-14771. https://doi.org/10.22038/ijp.2021.54774.4321
4. Cevik, A., Onat Koroglu, C., Karacam, Z., Gokyildiz Surucu, S., & Alan, S. (2022). Effects of the COVID-19 pandemic on the prevalence of insomnia, anxiety, and depression during pregnancy: A systematic review and meta-analysis. Clinical Nursing Research, 31(8), 1405-1421. https://doi.org/10.1177/105477382211127*
5. Chen, Q., Li, W., Xiong, J., & Zheng, X. (2022). Prevalence and risk factors associated with postpartum depression during the COVID-19 pandemic: A literature review and meta-analysis. International Journal of Environmental Research and Public Health, 19(4), 2219. https://doi.org/10.3390/ijerph19042219*
6. Chmielewska, B., Barratt, I., Townsend, R., et al. (2021). Effects of the COVID-19 pandemic on maternal and perinatal outcomes: A systematic review and meta-analysis. The Lancet Global Health, 9(6), e759-e772. https://doi.org/10.1016/S2214-109X(21)00079-6
7. Delanerolle, G., McCauley, M., Hirsch, M., et al. (2023). The prevalence of mental ill-health in women during pregnancy and after childbirth during the Covid-19 pandemic: A systematic review and meta-analysis. BMC Pregnancy and Childbirth, 23(1), 1-40. https://doi.org/10.1186/s12884-022-05243-4*
8. Demissie, D. B., & Bitew, Z. W. (2021). Mental health effect of COVID-19 pandemic among women who are pregnant and/or lactating: A systematic review and meta-analysis. SAGE Open Medicine, 9, 20503121211026195. https://doi.org/10.1177/20503121211026195
9. Fan, S., Guan, J., Cao, L., et al. (2021). Psychological effects caused by COVID-19 pandemic on pregnant women: A systematic review with meta-analysis. Asian Journal of Psychiatry, 56, 102533. https://doi.org/10.1016/j.ajp.2020.102533*
10. Gao, S., Su, S., Zhang, E., et al. (2022). Psychological health status in postpartum women during COVID-19 pandemic: A systematic review and meta-analysis. Journal of Affective Disorders, 319, 99-111. https://doi.org/10.1016/j.jad.2022.08.107*
11. Ghazanfarpour, M., Bahrami, F., Rashidi Fakari, F., et al. (2022). Prevalence of anxiety and depression among pregnant women during the COVID-19 pandemic: A meta-analysis. Journal of Psychosomatic Obstetrics & Gynecology, 43(3), 315-326. https://doi.org/10.1080/0167482X.2021.1929162
12. Hessami, K., Romanelli, C., Chiurazzi, M., & Cozzolino, M. (2022). COVID-19 pandemic and maternal mental health: A systematic review and meta-analysis. Journal of Maternal-Fetal & Neonatal Medicine, 35(20), 4014-4021. https://doi.org/10.1080/14767058.2020.1843155
13. Iyengar, U., Jaiprakash, B., Haitsuka, H., & Kim, S. (2021). One year into the pandemic: A systematic review of perinatal mental health outcomes during COVID-19. Frontiers in Psychiatry, 12, 674194. https://doi.org/10.3389/fpsyt.2021.674194
14. Lin, C., Chen, B., Wang, Q., et al. (2022). Association between depressive symptoms in the postpartum period and COVID-19: A meta-analysis. Journal of Affective Disorders, 320, 247-253. https://doi.org/10.1016/j.jad.2022.09.129*
15. Low, S. R., Bono, S. A., & Azmi, Z. (2023). Prevalence and factors of postpartum depression during the COVID-19 pandemic: A review. Current Psychology, 1-18. https://doi.org/10.1007/s12144-022-04181-w
16. Muñoz-Vela, F. J., Rodríguez-Díaz, L., Gómez-Salgado, J., et al. (2023). Fear and anxiety in pregnant women during the COVID-19 pandemic: A systematic review. International Journal of Public Health, 68, 1605587. https://doi.org/10.3389/ijph.2023.1605587

17. Rahimi, R., Dolatabadi, Z., Moeindarbary, S., et al. (2020). A systematic review of the prevalence of mental health disorders in pregnant women during the COVID-19 pandemic. International Journal of Pediatrics, 8(11), 12397-12407. https://doi.org/10.22038/ijp.2020.52315.4155

18. Safi-Keykaleh, M., Aliakbari, F., Safarpour, H., et al. (2022). Prevalence of postpartum depression in women amid the COVID-19 pandemic: A systematic review and meta-analysis. International Journal of Gynecology & Obstetrics, 157(2), 240-247. https://doi.org/10.1002/ijgo.14129*

19. Shorey, S. Y., Ng, E. D., & Chee, C. Y. (2021). Anxiety and depressive symptoms of women in the perinatal period during the COVID-19 pandemic: A systematic review and meta-analysis. Scandinavian Journal of Public Health, 49(7), 730-740. https://doi.org/10.1177/14034948211011793*

20. Sun, F., Zhu, J., Tao, H., Ma, Y., & Jin, W. (2021). A systematic review involving 11,187 participants evaluating the impact of COVID-19 on anxiety and depression in pregnant women. Journal of Psychosomatic Obstetrics & Gynecology, 42(2), 91-99. https://doi.org/10.1080/0167482X.2020.1857360

21. Thakur, R., & Vandana, K. (2022). The psychological impact of COVID-19 among antenatal women: A systematic literature review. NeuroQuantology, 20, 391-398. https://doi.org/10.14704/NQ.2022.20.16.NQ88043

22. Tomfohr-Madsen, L. M., Racine, N., Giesbrecht, G. F., Lebel, C., & Madigan, S. (2021). Depression and anxiety in pregnancy during COVID-19: A rapid review and meta-analysis. Psychiatry Research, 300, 113912. https://doi.org/10.1016/j.psychres.2021.113912*

23. Usmani, S., Greca, E., Javed, S., et al. (2021). Risk factors for postpartum depression during COVID-19 pandemic: A systematic literature review. Journal of Primary Care & Community Health, 12, 21501327211059348. https://doi.org/10.1177/21501327211059348

24. Wall, S., & Dempsey, M. (2022). The effect of COVID-19 lockdowns on women's perinatal mental health: A systematic review. Women and Birth, 36(1), 47-55. https://doi.org/10.1016/j.wombi.2022.06.005

25. Yan, H., Ding, Y., & Guo, W. (2020). Mental health of pregnant and postpartum women during the coronavirus disease 2019 pandemic: A systematic review and meta-analysis. Frontiers in Psychology, 11, 617001. https://doi.org/10.3389/fpsyg.2020.617001*

*MAs from which primary articles' data were exctracted.

A.6.8 References of the 198 primary studies included in SR&MA

1. Abulaiti, A., Abudurexiti, M., Nuermaimaiti, A., & Kelimu, A. (2022). Analysis of the incidence and influencing factors of postpartum depression and anxiety: A cross-sectional study in Xinjiang from 2018 to 2021. Journal of Affective Disorders, 302, 15-24. https://doi.org/10.1016/j.jad.2022.01.069*
2. Ahlers-Schmidt, C. R., Hervey, A. M., Neil, T., Kuhlmann, S., & Kuhlmann, Z. (2020). Concerns of women regarding pregnancy and childbirth during the COVID-19 pandemic. Patient Education and Counseling, 103, 2578-2582. https://doi.org/10.1016/j.pec.2020.07.012
3. Ahorsu, D. K., Imani, V., Lin, C.-Y., et al. (2020). Associations between fear of COVID-19, mental health, and preventive behaviors across pregnant women and husbands: An actor-partner interdependence modeling. International Journal of Mental Health and Addiction, 20, 68-82. https://doi.org/10.1007/s11469-020-00340-x*
4. Akgör, U., Fadıloğlu, E., Soyak, B., et al. (2021). Anxiety, depression and concerns of pregnant women during the COVID-19 pandemic. Archives of Gynecology and Obstetrics, 304(1), 125-130. https://doi.org/10.1007/s00404-020-05944-1
5. Alan, S., Vurgec, B. A., Cevik, A., Gozuyesil, E., & Surucu, S. G. (2020). The effects of COVID-19 pandemic on pregnant women: Perceived stress, social support and sleep quality. Yonago Acta Medica, 63(4), 360-367. https://doi.org/10.33160/yam.2020.11.016
6. Alijanpour, M., Sadatmahalleh, S. J., Samaneh, Y., et al. (2020). Influence of psycho-sexual factors on the quality of life in pregnant women during the COVID-19 pandemic: A path analysis. Research Square. https://doi.org/10.21203/rs.3.rs-45196/v2
7. An, R., Chen, X., Wu, Y., et al. (2021). A survey of postpartum depression and health care needs among Chinese postpartum women during the pandemic of COVID-19. Archives of Psychiatric Nursing, 35, 172-177. https://doi.org/10.1016/j.apnu.2021.02.001*
8. Ayaz, R., Hocaoğlu, M., Gunay, T., Yardımcı, O. D., Turgut, A., & Karateke, A. (2020). Anxiety and depression symptoms in the same pregnant women before and during the COVID-19 pandemic. Journal of Perinatal Medicine, 48(9), 965-970. https://doi.org/10.1515/jpm-2020-0380*
9. Baran, J., Leszczak, J., Baran, R., et al. (2021). Prenatal and postnatal anxiety and depression in mothers during the COVID-19 pandemic. Journal of Clinical Medicine, 10(14), 3193. https://doi.org/10.3390/jcm10143193*
10. Basu, A., Kim, H. H., Basaldua, R., et al. (2021). A cross-national study of factors associated with women's perinatal mental health and wellbeing during the COVID-19 pandemic. PLOS ONE, 16(3), e0249780. https://doi.org/10.1371/journal.pone.0249780*
11. Behmard, V., Bahri, N., Mohammadzadeh, F., Noghabi, A. D., & Bahri, N. (2021). Relationships between anxiety induced by COVID-19 and perceived social support among Iranian pregnant women. Journal of Psychosomatic Obstetrics & Gynecology, 43(3), 307-314. https://doi.org/10.1080/0167482X.2021.1918671
12. Bender, W. R., Srinivas, S., Coutifaris, P., Acker, A., & Hirshberg, A. (2020). The psychological experience of obstetric patients and health care workers after implementation of universal SARS-CoV-2 testing. American Journal of Perinatology, 37(13), 1271-1279. https://doi.org/10.1055/s-0040-1715505
13. Berthelot, N., Lemieux, R., Garon-Bissonnette, J., Drouin-Maziade, C., Martel, É., & Maziade, M. (2020). Uptrend in distress and psychiatric symptomatology in pregnant women during the coronavirus disease 2019 pandemic. Acta Obstetricia et Gynecologica Scandinavica, 99(8), 848-855. https://doi.org/10.1111/aogs.13912*
14. Bo, H. X., Yang, Y., Chen, J., et al. (2021). Prevalence of depressive symptoms among pregnant and postpartum women in China during the COVID-19 pandemic. Psychosomatic Medicine, 83(4), 345-350. https://doi.org/10.1097/PSY.0000000000000876*
15. Boekhorst, M. G., Muskens, L., Hulsbosch, L. P., et al. (2021). The COVID-19 outbreak increases maternal stress during pregnancy, but not the risk for postpartum depression. Archives of Women's Mental Health, 24, 1037-1043. https://doi.org/10.1007/s00737-021-01104-9*

16. Brik, M., Sandonis, M. A., Fernández, S., et al. (2021). Psychological impact and social support in pregnant women during lockdown due to SARS-CoV-2 pandemic: A cohort study. Acta Obstetricia et Gynecologica Scandinavica, 100(6), 1026-1033. https://doi.org/10.1111/aogs.14073*
17. Cameron, E. E., Joyce, K. M., Delaquis, C. P., Reynolds, K., Protudjer, J. L. P., & Roos, L. E. (2020). Maternal psychological distress & mental health service use during the COVID-19 pandemic. Journal of Affective Disorders, 276, 765-774. https://doi.org/10.1016/j.jad.2020.07.032*
18. Cao, Y., Liu, J., Zhang, Y., et al. (2021). Pregnant women's psychological state and influence factors: Anxiety and depression during the COVID-19 outbreak. Journal of Perinatal Medicine, 49(6), 664-673. https://doi.org/10.1515/jpm-2020-0541
19. Ceulemans, M., Hompes, T., & Foulon, V. (2020). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic: A call for action. International Journal of Gynecology & Obstetrics, 151(1), 146-147. https://doi.org/10.1002/ijgo.13291*
20. Ceulemans, M., Foulon, V., Ngo, E., et al. (2021). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic - A multinational cross-sectional study. Acta Obstetricia et Gynecologica Scandinavica, 100(7), 1219-1229. https://doi.org/10.1111/aogs.14092*
21. Chaves, C., Marchena, C., Palacios, B., Salgado, A., & Duque, A. (2022). Effects of the COVID-19 pandemic on perinatal mental health in Spain: Positive and negative outcomes. Women Birth, 35(3), 254-261. https://doi.org/10.1016/j.wombi.2021.01.007*
22. Chen, S., Zhuang, J., Chen, Q., & Tan, X. (2020). Psychological investigation on pregnant women during the outbreak of COVID-19. Research Square. Preprint. https://doi.org/10.21203/rs.3.rs-34763/v2
23. Chrzan-Dętkoś, M., Walczak-Kozłowska, T., & Lipowska, M. (2021). The need for additional mental health support for women in the postpartum period in the times of epidemic crisis. BMC Pregnancy and Childbirth, 21(1), 114. https://doi.org/10.1186/s12884-021-03544-8*
24. Cigăran, R. G., Botezatu, R., Mînecan, E. M., et al. (2021). The psychological impact of the COVID-19 pandemic on pregnant women. Healthcare, 9(6), 725. https://doi.org/10.3390/healthcare9060725
25. Colak, S., Gurlek, B., Onal, O., Yılmaz, B., & Hocaoglu, C. (2021). The level of depression, anxiety, and sleep quality in pregnancy during the coronavirus disease 2019 pandemic. Journal of Obstetrics and Gynaecology Research, 47(8), 2666-2676. https://doi.org/10.1111/jog.14872
26. Corbett, G. A., Milne, S. J., Hehir, M. P., Lindow, S. W., & O'Connell, M. P. (2020). Health anxiety and behavioural changes of pregnant women during the COVID-19 pandemic. European Journal of Obstetrics & Gynecology and Reproductive Biology, 249, 96-97. https://doi.org/10.1016/j.ejogrb.2020.04.022
27. Dagklis, T., Tsakiridis, I., Mamopoulos, A., Athanasiadis, A., & Papazisis, G. (2020). Anxiety during pregnancy in the era of the COVID-19 pandemic. SSRN. Preprint. https://doi.org/10.2139/ssrn.3588542*
28. Dagklis, T., Tsakiridis, I., Mamopoulos, A., Athanasiadis, A., & Papazisis, G. (2020). Impact of the COVID-19 lockdown on antenatal mental health in Greece. Psychiatry and Clinical Neurosciences, 74, 616-617. https://doi.org/10.1111/pcn.13135*
29. Davenport, M. H., Meyer, S., Meah, V. L., Strynadka, M. C., & Khurana, R. (2020). Moms are not ok: COVID-19 and maternal mental health. Frontiers in Global Women's Health, 1(1). https://doi.org/10.3389/fgwh.2020.00001*
30. de Arriba-Garcia, M., Diaz-Martinez, A., Monfort-Ortiz, R., et al. (2022). GESTACOVID project: psychological and perinatal effects in Spanish pregnant women subjected to confinement due to the COVID-19 pandemic. Journal of Maternal-Fetal & Neonatal Medicine, 35(25), 5665-5671. https://doi.org/10.1080/14767058.2021.1888922
31. Ding, W., Lu, J., Zhou, Y., Wei, W., Zhou, Z., & Chen, M. (2021). Knowledge, attitudes, practices, and influencing factors of anxiety among pregnant women in Wuhan during the outbreak of COVID-19: A cross-sectional study. BMC Pregnancy and Childbirth, 21(1), 80. https://doi.org/10.1186/s12884-021-03561-7*

32. Dong, H., Hu, R., Lu, C., et al. (2021). Investigation on the mental health status of pregnant women in China during the pandemic of COVID-19. Archives of Gynecology and Obstetrics, 303(2), 463-469. https://doi.org/10.1007/s00404-020-05805-x*
33. Durankuş, F., & Aksu, E. (2022). Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: A preliminary study. Journal of Maternal-Fetal & Neonatal Medicine, 35, 205-211. https://doi.org/10.1080/14767058.2020.1763946*
34. Eberhard-Gran, M., Engelsen, L. Y., Al-Zirqi, I., & Vangen, S. (2022). Depressive symptoms and experiences of birthing mothers during the COVID-19 pandemic. Tidsskrift for Den norske legeforening. Tidsskrift for Praktisk Medicin, ny række, 142. https://doi.org/10.4045/tidsskr.21.0450*
35. Effati-Daryani, F., Zarei, S., Mohammadi, A., et al. (2020). Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. BMC Psychology, 8(1), 99. https://doi.org/10.1186/s40359-020-00464-8*
36. Effati-Daryani, F., Jahanfar, S., Mohammadi, A., Zarei, S., & Mirghafourvand, M. (2021). The relationship between sexual function and mental health in Iranian pregnant women during the COVID-19 pandemic. BMC Pregnancy and Childbirth, 21, 1-8. https://doi.org/10.1186/s12884-021-03812-7*
37. Esteban-Gonzalo, S., Caballero-Galilea, M., Gonzalez-Pascual, J. L., & Alvaro-Navidad, M. (2021). Anxiety and worries among pregnant women during the COVID-19 pandemic: A multilevel analysis. International Journal of Environmental Research and Public Health, 18(13), 6875. https://doi.org/10.3390/ijerph18136875
38. Fallon, V., Davies, S. M., Silverio, S. A., et al. (2021). Psychosocial experiences of postnatal women during the COVID-19 pandemic: A UK-wide study of prevalence rates and risk factors for clinically relevant depression and anxiety. Journal of Psychiatric Research, 136, 157-166. https://doi.org/10.1016/j.jpsychires.2021.01.048*
39. Farewell, C. V., Jewell, J., Walls, J., & Leiferman, J. A. (2020). A mixed-methods pilot study of perinatal risk and resilience during COVID-19. Journal of Primary Care & Community Health. https://doi.org/10.1177/2150132720944074
40. Farrell, T., Reagu, S., Mohan, S., et al. (2020). The impact of the COVID-19 pandemic on the perinatal mental health of women. Journal of Perinatal Medicine, 48(9), 971-976. https://doi.org/10.1515/jpm-2020-0415*
41. Fernandes, D. V., Canavarro, M. C., & Moreira, H. (2021). Postpartum during COVID-19 pandemic: Portuguese mothers' mental health, mindful parenting, and mother-infant bonding. Journal of Clinical Psychology, 77, 1997-2010. https://doi.org/10.1002/jclp.23130
42. Galletta, M., Oliveira, A., Albertini, J., et al. (2022). Postpartum depressive symptoms of Brazilian women during the COVID-19 pandemic measured by the Edinburgh Postnatal Depression Scale. Journal of Affective Disorders, 296, 577-586. https://doi.org/10.1016/j.jad.2021.09.091*
43. García-Fernández, R., Liébana-Presa, C., Marqués-Sánchez, P., et al. (2022). Anxiety, stress, and social support in pregnant women in the Province of Leon during COVID-19 disease. Healthcare, 10(5), 791. https://doi.org/10.3390/healthcare10050791
44. Ge, Y., Shi, C., Wu, B., et al. (2021). Anxiety and adaptation of behavior in pregnant Zhuang women during the COVID-19 pandemic: A mixed-mode survey. Risk Management and Healthcare Policy, 15, 1563-1573. https://doi.org/10.2147/RMHP.S303835
45. Gharagozloo, M., Sadatmahalleh, S. J., Khomami, M. B., Moini, A., & Kazemnejad, A. (2020). Mental health and marital satisfaction changes of pregnant and lactating women during the COVID-19 pandemic. Research Square. https://doi.org/10.21203/rs.3.rs-49590/v1*
46. Gildner, T. E., Laugier, E. J., & Thayer, Z. M. (2020). Exercise routine change is associated with prenatal depression scores during the COVID-19 pandemic among pregnant women across the United States. PLOS ONE, 15. https://doi.org/10.1371/journal.pone.0243188*

47. Gluska, H., Shiffman, N., Mayer, Y., et al. (2022). Maternal fear of COVID-19 and prevalence of postnatal depression symptoms, risk and protective factors. Journal of Psychiatric Research, 148, 214-219. https://doi.org/10.1016/j.jpsychires.2022.01.015*
48. Gu, X. X., Chen, K., Yu, H., Liang, G. Y., Chen, H., & Shen, Y. (2020). How to prevent in-hospital COVID-19 infection and reassure women about the safety of pregnancy: Experience from an obstetric center in China. Journal of International Medical Research, 48(7). https://doi.org/10.1177/0300060520939337*
49. Gupta, M., Agarwal, N., & Agrawal, A. (2021). Impact of COVID-19 institutional isolation measures on postnatal women in level 3 COVID Facility in Northern India. Journal of South Asian Federation of Obstetrics and Gynaecology, 13(1), 50-54. https://doi.org/10.5005/jp-journals-10006-1855
50. Gur, R. E., White, L. K., Waller, R., et al. (2020). The disproportionate burden of the COVID-19 pandemic among pregnant black women. Psychiatry Research, 293, 113475. [https://doi.org/10.1016/j.psychres.2020.113475](https://doi.org/10.1016/j.psychres.202*
51. Guvenc, G., Yesilcinar, I., Ozkececi, F., et al. (2020). Anxiety, depression, and knowledge level in postpartum women during the COVID-19 pandemic. Psychiatria Danubina, 32(3-4), 521-526. https://doi.org/10.1111/ppc.12711*
52. Hamami, H., Sheiner, E., Wainstock, T., et al. (2020). The association between delivery during the COVID-19 pandemic and immediate postpartum maternal cognitive function. Journal of Clinical Medicine, 9(11), 3727. https://doi.org/10.3390/jcm9113727*
53. Hamzehgardeshi, Z., Omidvar, S., Amoli, A. A., & Firouzbakht, M. (2021). Pregnancy-related anxiety and its associated factors during COVID-19 pandemic in Iranian pregnant women: A web-based cross-sectional study. BMC Pregnancy and Childbirth, 21(1), 208. https://doi.org/10.1186/s12884-021-03694-9*
54. Harrison, V., Moulds, M. L., & Jones, K. (2020). Perceived social support and prenatal wellbeing: The mediating effects of loneliness and repetitive negative thinking on anxiety and depression during the COVID-19 pandemic. Women and Birth, 35(3), 232-241. https://doi.org/10.1016/j.wombi.2020.12.014*
55. Harrison, V., Moulds, M. L., & Jones, K. (2022). Support from friends moderates the relationship between repetitive negative thinking and postnatal wellbeing during COVID-19. Journal of Reproductive and Infant Psychology, 40(5), 516-531. https://doi.org/10.1080/02646838.2021.1886260
56. He, Z., Chiu, W. T., Wu, H., & Ming, W. K. (2020). PMH4 the psychological and behavioral responses to Covid-19 epidemic in pregnant women in China: a nationwide survey. Value in Health Regional Issues, 22, S62. https://doi.org/10.1016/j.vhri.2020.07.326*
57. Hiiragi, K., Obata, S., Misumi, T., Miyagi, E., & Aoki, S. (2021). Psychological stress associated with the COVID-19 pandemic in postpartum women in Yokohama, Japan. Journal of Obstetrics and Gynaecology Research, 47, 2126-2130. https://doi.org/10.1111/jog.14776*
58. Hocaoglu, M., Ayaz, R., Gunay, T., Akin, E., Turgut, A., & Karateke, A. (2020). Anxiety and post-traumatic stress disorder symptoms in pregnant women during the COVID-19 Pandemic's delay phase. Psychiatria Danubina, 32(3-4), 521-526. https://doi.org/10.24869/psyd.2020.521
59. Hossain, N., Samuel, M., Sandeep, R., Imtiaz, S., & Zaheer, S. (2020). Perceptions, generalized anxiety and fears of pregnant women about Corona Virus infection in the heart of Pandemic. Research Square. https://doi.org/10.21203/rs.3.rs-32235/v1*
60. Hu, M., Zhou, Y., Xue, M., et al. (2022). The prevalence and correlates of peripartum depression in different stages of pregnancy during COVID-19 pandemic in China. BMC Pregnancy and Childbirth, 22, 114. https://doi.org/10.1186/s12884-022-04428-1*
61. Hui, P. W., Ma, G., Seto, M. T. Y., & Cheung, K. W. (2021). Effect of COVID-19 on delivery plans and postnatal depression scores of pregnant women. Hong Kong Medical Journal, 27(2), 113-117. https://doi.org/10.12809/hkmj208774*

62. Ionio, C., Gallese, M., Fenaroli, V., et al. (2021). COVID-19: What about pregnant women during the first lockdown in Italy? Journal of Reproductive and Infant Psychology, 40(6), 577-589. https://doi.org/10.1080/02646838.2021.1928614
63. Janevic, T., Maru, S., Nowlin, S., et al. (2021). Pandemic birthing: Childbirth satisfaction, perceived health care bias, and postpartum health during the COVID-19 pandemic. Maternal and Child Health Journal, 25, 860-869. https://doi.org/10.1007/s10995-021-03158-8*
64. Janik, K., Cwalina, U., Iwanowicz-Palus, G., & Cybulski, M. (2021). An assessment of the level of COVID-19 anxiety among pregnant women in Poland: A cross-sectional study. Journal of Clinical Medicine, 10(24), 5869. https://doi.org/10.3390/jcm10245869
65. Jelly, P., Chadha, L., Kaur, N., et al. (2021). Impact of COVID-19 pandemic on the psychological status of pregnant women. Cureus, 13(1), e12875. https://doi.org/10.7759/cureus.12875
66. Jiang, H., Jin, L., Qian, X., et al. (2021). Maternal mental health status and approaches for accessing antenatal care information during the COVID-19 epidemic in China: A cross-sectional study. Journal of Medical Internet Research, 23, e18722. https://doi.org/10.2196/18722*
67. Kachi, Y., Fujiwara, T., Eguchi, H., et al. (2021). Association between maternity harassment and depression during pregnancy amid the COVID-19 state of emergency. Journal of Occupational Health, 63(1), e12196. https://doi.org/10.1002/1348-9585.12196*
68. Kahyaoglu Sut, H., & Kucukkaya, B. (2021). Anxiety, depression, and related factors in pregnant women during the COVID-19 pandemic in Turkey: A web-based cross-sectional study. Perspectives in Psychiatric Care, 57(2), 860-868. https://doi.org/10.1111/ppc.12627*
69. Kajdy, A., Sys, D., Pokropek, A., et al. (2022). Risk factors for anxiety and depression among pregnant women during the COVID-19 pandemic: Results of a web-based multinational cross-sectional study. International Journal of Gynaecology and Obstetrics, 160, 167-186. https://doi.org/10.1002/ijgo.14388
70. Kassaw, C., & Pandey, D. (2020). The prevalence of general anxiety disorder and its associated factors among women attending the perinatal service of Dilla University referral hospital, Dilla town, Ethiopia, April 2020 in COVID pandemic. Heliyon, 6, e05593. https://doi.org/10.1016/j.heliyon.2020.e05593
71. Khamees, R. E., Taha, O. T., & Ali, T. Y. M. (2021). Anxiety and depression during pregnancy in the era of COVID-19. Journal of Perinatal Medicine, 49, 674-677. https://doi.org/10.1515/jpm-2021-0181*
72. Khoury, J. E., Atkinson, L., Bennett, T., Jack, S. M., & Gonzalez, A. (2021). Coping strategies mediate the associations between COVID-19 experiences and mental health outcomes in pregnancy. Archives of Women's Mental Health, 24(6), 1007-1017. https://doi.org/10.1007/s00737-021-01135-2*
73. King, L. S., Feddoes, D. E., Kirshenbaum, J. S., Humphreys, K. L., & Gotlib, I. H. (2021). Pregnancy during the pandemic: The impact of COVID-19-related stress on risk for prenatal depression. Psychological Medicine, 53(1), 170-180. https://doi.org/10.1017/S003329172100132X*
74. Kinser, P. A., Jallo, N., Amstadter, A. B., et al. (2021). Depression, anxiety, resilience, and coping: The experience of pregnant and new mothers during the first few months of the COVID-19 pandemic. Journal of Women's Health, 30(5), 654-664. https://doi.org/10.1089/jwh.2020.8866
75. Korukcu, O., Ozkaya, M., Boran, O. F., & Bakacak, M. (2022). Factors associated with antenatal depression during the COVID-19 (SARS-CoV-2) pandemic: A cross-sectional study in a cohort of Turkish pregnant women. Perspectives in Psychiatric Care, 58(1), 61-70. https://doi.org/10.1111/ppc.12778
76. Kotabagi, P., Fortune, L., Essien, S., Nauta, M., & Yoong, W. (2020). Anxiety and depression levels among pregnant women with COVID-19. Acta Obstetricia et Gynecologica Scandinavica, 99(7), 953-954. https://doi.org/10.1111/aogs.13928
77. Koyucu, R. G., & Karaca, P. P. (2021). The COVID-19 outbreak: Maternal mental health and associated factors. Midwifery, 99, 103013. https://doi.org/10.1016/j.midw.2021.103013

78. Layton, H., Owais, S., Savoy, C. D., & Van Lieshout, R. J. (2021). Depression, anxiety, and mother-infant bonding in women seeking treatment for postpartum depression before and during the COVID-19 pandemic. Journal of Clinical Psychiatry, 82(4), 35146. https://doi.org/10.4088/JCP.21m138740*
79. Lebel, C., MacKinnon, A., Bagshawe, M., Tomfohr-Madsen, L., & Giesbrecht, G. (2020). Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic. Journal of Affective Disorders, 277, 5-13. https://doi.org/10.1016/j.jad.2020.07.126*
80. Li, X., Lu, P., Hu, L., Huang, T., & Lu, L. (2020). Factors associated with mental health results among workers with income losses exposed to COVID-19 in China. International Journal of Environmental Research and Public Health, 17(15), 5627. https://doi.org/10.3390/ijerph17155627*
81. Li, C., Huo, L., Wang, R., et al. (2021). The prevalence and risk factors of depression in prenatal and postnatal women in China with the outbreak of coronavirus disease 2019. Journal of Affective Disorders, 282, 1203-1209. https://doi.org/10.1016/j.jad.2020.12.106
82. Liang, P., Wang, Y., Shi, S., Liu, Y., & Xiong, R. (2020). Prevalence and factors associated with postpartum depression during the COVID-19 pandemic among women in Guangzhou, China: A cross-sectional study. BMC Psychiatry, 20, 557. https://doi.org/10.1186/s12888-020-02834-9*
83. Lin, W., Wu, B., Chen, B., Lai, G., Huang, S., Li, S., et al. (2021). Sleep conditions associate with anxiety and depression symptoms among pregnant women during the epidemic of COVID-19 in Shenzhen. Journal of Affective Disorders, 281, 567-573. https://doi.org/10.1016/j.jad.2020.11.045*
84. Liu, X., Chen, M., Wang, Y., et al. (2020). Prenatal anxiety and obstetric decisions among pregnant women in Wuhan and Chongqing during the COVID-19 outbreak: A cross-sectional study. BJOG, 127(10), 1229-1240. https://doi.org/10.1111/1471-0528.16304*
85. Liu, J., Hung, P., Alberg, A. J., et al. (2021). Mental health among pregnant women with COVID-19-related stressors and worries in the United States. Birth, 48, 470-479. https://doi.org/10.1111/birt.12518*
86. Lopez, D., Hinojo, C., Bernal, J., et al. (2021). Resilience and psychological distress in pregnant women during quarantine due to the COVID-19 outbreak in Spain: A multicentre cross-sectional online survey. Journal of Psychosomatic Obstetrics & Gynecology, 42(2), 115-122. https://doi.org/10.1080/0167482X.2020.1832354
87. Lopez-Morales, H., Del-Valle, M. V., Andres, M. L., Gelpi Trudo, R., Canet-Juric, L., & Urquijo, S. (2021). Longitudinal study on prenatal depression and anxiety during the COVID-19 pandemic. Archives of Women's Mental Health, 24(6), 1027-1036. https://doi.org/10.1007/s00737-021-01248-w*
88. Lopez-Morales, H., Del Valle, M. V., Canet-Juric, L., et al. (2021). Mental health of pregnant women during the COVID-19 pandemic: A longitudinal study. Psychiatry Research, 295, 113567. https://doi.org/10.1016/j.psychres.2020.113567
89. Lorentz, M. S., Chagas, L. B., Perez, A. V., et al. (2020). Correlation between depressive symptoms and sexual dysfunction in postpartum women during the COVID-19 pandemic. European Journal of Obstetrics & Gynecology and Reproductive Biology, 258, 162-167. https://doi.org/10.1016/j.ejogrb.2020.09.033*
90. Loret de Mola, C., Martins-Silva, T., Carpena, M. X., et al. (2021). Maternal mental health before and during the COVID-19 pandemic in the 2019 Rio Grande birth cohort. The British Journal of Psychiatry, 43(4), 402-406. https://doi.org/10.1192/bjp.2021.49*
91. Lubián López, D., Butrón Hinojo, C. A., Arjona Bernal, J. E., et al. (2021). Resilience and psychological distress in pregnant women during quarantine due to the COVID-19 outbreak in Spain: A multicentre cross-sectional online survey. Journal of Psychosomatic Obstetrics & Gynecology, 42(2), 115-122. https://doi.org/10.1080/0167482X.2020.1864046*
92. Madera, P., Romagnolo, C., Zanetti, S., et al. (2021). Effects of the COVID-19 pandemic on postpartum depression: A retrospective case control study on a significant sample of mothers in northern Italy. Journal of Prenatal and Perinatal Psychology and Health, 35, 589916. https://doi.org/10.30881/jppph.2021.35.4.6*

93. Maharlouei, N., Asadi, N., Bazrafshan, K., et al. (2020). Knowledge and attitude regarding COVID-19 among pregnant women in Southwestern Iran in the early period of its outbreak: A cross-sectional study. American Journal of Tropical Medicine and Hygiene, 103(6), 2368-2375. https://doi.org/10.4269/ajtmh.20-1022
94. Maharlouei, N., Keshavarz, P., Salemi, N., & Lankarani, K. B. (2021). Depression and anxiety among pregnant mothers in the initial stage of the coronavirus disease (COVID-19) pandemic in the southwest of Iran. Reproductive Health, 18(1), 111. https://doi.org/10.1186/s12978-021-01218-x
95. Makara-Studzińska, M., Zaręba, K., Kawa, N., & Matuszyk, D. (2022). Tokophobia and Anxiety in Pregnant Women during the SARS-CoV-2 Pandemic in Poland: A Prospective Cross-Sectional Study. International Journal of Environmental Research and Public Health, 19(2), 714. https://doi.org/10.3390/ijerph19020714
96. Maleki, A., Ashtari, M., Molaie, P., & Youseflu, S. (2022). Influential factors of general anxiety disorder among Iranian pregnant women during the second peak of COVID-19 pandemic. Psychology, Health & Medicine, 27(2), 421-427. https://doi.org/10.1080/13548506.2021.2015157
97. Mappa, I., Distefano, F. A., & Rizzo, G. (2020). Effects of coronavirus 19 pandemic on maternal anxiety during pregnancy: A prospective observational study. Journal of Perinatal Medicine, 48, 545-550. https://doi.org/10.1515/jpm-2020-0324*
98. Maleki, A., Ashtari, M., Molaie, P., & Youseflu, S. (2022). Influential factors of general anxiety disorder among Iranian pregnant women during the second peak of COVID-19 pandemic. Psychology, Health & Medicine, 27(2), 421-427. https://doi.org/10.1080/13548506.2021.2015157
99. Mariño-Narvaez, C., Puertas-Gonzalez, J. A., Romero-Gonzalez, B., et al. (2021). Giving birth during the COVID-19 pandemic: The impact on birth satisfaction and postpartum depression. International Journal of Gynecology & Obstetrics, 153(1), 83-88. https://doi.org/10.1002/ijgo.13535*
100. Masjoudi, M., Aslani, A., Seifi, M., Khazaeian, S., & Fathnezhad-Kazemi, A. (2022). Association between perceived stress, fear, and anxiety of COVID-19 with self-care in pregnant women: A cross-sectional study. Psychology, Health & Medicine, 27(2), 289-300. https://doi.org/10.1080/13548506.2021.2011939
101. Masters, G. A., Asipenko, E., Bergman, A. L., et al. (2021). Impact of the COVID-19 pandemic on mental health, access to care, and health disparities in the perinatal period. Journal of Psychiatric Research, 137, 126-130. https://doi.org/10.1016/j.jpsychires.2021.01.043
102. Matsushima, M., & Horiguchi, H. (2022). The COVID-19 pandemic and mental well-being of pregnant women in Japan: Need for economic and social policy interventions. Disaster Medicine and Public Health Preparedness, 16, 449-454. https://doi.org/10.1017/dmp.2021.122*
103. Mayeur, A., Binois, O., Gallot, V., Hesters, L., Benoit, A., Oppenheimer, A., et al. (2020). First follow-up of ART pregnancies in the context of the COVID-19 outbreak. European Journal of Obstetrics & Gynecology and Reproductive Biology, 253, 71-75. https://doi.org/10.1016/j.ejogrb.2020.08.008
104. Mcfarland, M. J., Mcfarland, C. A. S., Hill, T. D., & D'oria, R. (2021). Postpartum depressive symptoms during the beginning of the COVID-19 pandemic: An examination of population birth data from central New Jersey. Maternal and Child Health Journal, 25(1), 25. https://doi.org/10.1007/s10995-020-03112-2*
105. Medina-Jimenez, V., Bermudez-Rojas, M. L., Murillo-Bargas, H., et al. (2020). The impact of the COVID-19 pandemic on depression and stress levels in pregnant women: A national survey during the COVID-19 pandemic in Mexico. Journal of Maternal-Fetal and Neonatal Medicine, 1-7. https://doi.org/10.1080/14767058.2020.1847154*
106. Mehdizadehkashi, A., Chaichian, S., Haghighi, L., et al. (2021). The impact of COVID-19 pandemic on stress and anxiety of non-infected pregnant mothers. Journal of Reproduction & Infertility, 22(2), 125-132. https://doi.org/10.18502/jri.v22i2.7923
107. Mei, H., Li, N., Li, J., et al. (2020). Impact of the COVID-19 pandemic on mental health in pregnant women: Results from two cohort studies in China. Research Square. https://doi.org/10.21203/rs.3.rs-42153/v1*

108. Milne, S. J., Corbett, G. A., Hehir, M. P., et al. (2020). Effects of isolation on mood and relationships in pregnant women during the COVID-19 pandemic. European Journal of Obstetrics & Gynecology and Reproductive Biology, 252, 610-611. https://doi.org/10.1016/j.ejogrb.2020.06.051
109. Miranda, A. R., & Scotta, A. V. (2021). Triggering of postpartum depression and insomnia with cognitive impairment in Argentinian women during the pandemic COVID-19 social isolation in relation to reproductive and health factors. Midwifery, 102, 103072. https://doi.org/10.1016/j.midw.2021.103072*
110. Mirzaei, N., Jahanian Sadatmahalleh, S., Bahri Khomami, M., Moini, A., & Kazemnejad, A. (2021). Sexual function, mental health, and quality of life under the strain of COVID-19 pandemic in Iranian pregnant and lactating women: A comparative cross-sectional study. Health and Quality of Life Outcomes, 19(1), 66. https://doi.org/10.1186/s12955-021-01788-4*
111. Mo, P. K. H., Fong, V. W. I., Song, B., Di, J., Wang, Q., & Wang, L. (2021). Association of perceived threat, negative emotions, and self-efficacy with mental health and personal protective behavior among Chinese pregnant women during the COVID-19 pandemic: A cross-sectional survey study. Journal of Medical Internet Research, 23, e24053. https://doi.org/10.2196/24053*
112. Molgora, S., & Accordini, M. (2020). Motherhood in the time of coronavirus: The impact of the pandemic emergency on expectant and postpartum women's psychological well-being. Frontiers in Psychology, 11, 567155. https://doi.org/10.3389/fpsyg.2020.567155*
113. Mollard, E., & Wittmaack, A. (2021). Experiences of women who gave birth in US hospitals during the COVID-19 pandemic. Journal of Patient Experience, 8, 2374373520981492. https://doi.org/10.1177/2374373520981492*
114. Moyer, C. A., Compton, S. D., Kaselitz, E., & Muzik, M. (2020). Pregnancy-related anxiety during COVID-19: A nationwide survey of 2740 pregnant women. Archives of Women's Mental Health, 29(1), 29. https://doi.org/10.1007/s00737-020-01099-3
115. Muhaidat, N., Fram, K., Thekrallah, F., Qatawneh, A., & Al-Btoush, A. (2020). Pregnancy during COVID-19 outbreak: The impact of lockdown in a middle-income country on antenatal healthcare and well-being. International Journal of Women's Health, 12, 1065-1073. https://doi.org/10.2147/IJWH.S270309
116. Myers, S., & Emmott, E. H. (2021). Communication across maternal social networks during England's first national lockdown and its association with postnatal depressive symptoms. Frontiers in Psychology, 12, 1583. https://doi.org/10.3389/fpsyg.2021.646659*
117. Myo, T., Hong, S. A., Thepthien, B., & Hongkrailert, N. (2021). Prevalence and factors associated with postpartum depression in primary healthcare centres in Yangon, Myanmar. Malaysian Journal of Medical Sciences, 28(4), 71-86. https://doi.org/10.21315/mjms2021.28.4.5*
118. Ng, Q. J., Koh, K. M., Tagore, S., & Mathur, M. (2020). Perception and feelings of antenatal women during the COVID-19 pandemic: A cross-sectional survey. Annals of the Academy of Medicine, Singapore. https://doi.org/10.47102/annals-acadmedsg.2020.12*
119. Nodoushan, R. J., Alimoradi, H., & Nazari, M. (2020). Spiritual health and stress in pregnant women during the COVID-19 pandemic. SN Comprehensive Clinical Medicine, 2, 2528-2534. https://doi.org/10.1007/s42399-020-00673-2*
120. Nomura, R., Tavares, I., Ubinha, A. C., et al. (2021). BrAPS-Covid Brazilian anxiety during pregnancy study group In Covid. Impact of the COVID-19 pandemic on maternal anxiety in Brazil. Journal of Clinical Medicine, 10(4), 620. https://doi.org/10.3390/jcm10040620*
121. Nurrizka, R. H., Nurdiantami, Y., & Makkiyah, F. A. (2021). Psychological outcomes of the COVID-19 pandemic among pregnant women in Indonesia: A cross-sectional study. Osong Public Health Research Perspectives, 12(2), 80-87. https://doi.org/10.24171/j.phrp.2021.12.2.01*

122. Nwafor, J. I., Okedo-Alex, I. N., & Ikeotuonye, A. C. (2021). Prevalence and predictors of depression, anxiety, and stress symptoms among pregnant women during COVID-19-related lockdown in Abakaliki, Nigeria. Malawi Medical Journal, 33(1), 54-58. https://doi.org/10.4314/mmj.v33i1.9
123. Obata, S., Miyagi, E., Haruyama, Y., et al. (2021). Psychological stress among pregnant and puerperal women in Japan during the coronavirus disease 2019 pandemic. Journal of Obstetrics and Gynaecology Research, 47, 2990-3000. https://doi.org/10.1111/jog.15005*
124. Oskovi-Kaplan, Z. A., Buyuk, G. N., Ozgu-Erdinc, A. S., Keskin, H. L., Ozbas, A., & Moraloglu Tekin, O. (2021). The effect of COVID-19 pandemic and social restrictions on depression rates and maternal attachment in immediate postpartum women: A preliminary study. Psychiatric Quarterly, 92, 675-682. https://doi.org/10.1007/s11126-021-09837-w*
125. Ostacoli, L., Cosma, S., Bevilacqua, F., et al. (2020). Psychosocial factors associated with postpartum psychological distress during the COVID-19 pandemic: A cross-sectional study. BMC Pregnancy and Childbirth, 20, 703. https://doi.org/10.1186/s12884-020-03326-1*
126. Overbeck, G., Rasmussen, I. S., Siersma, V., et al. (2021). Depression and anxiety symptoms in pregnant women in Denmark during COVID-19. Scandinavian Journal of Public Health, 49(7), 721-729. https://doi.org/10.1177/1403494820987691
127. Palalioglu, R. M., Karadeniz, O., Aytok, G. I., et al. (2021). Investigation of awareness and anxiety levels of pregnant women during the pandemic process. Ginekologia Polska. https://doi.org/10.5603/GP.a2021.0004
128. Pariente, G., Wissotzky Broder, O., Sheiner, E., et al. (2020). Risk for probable post-partum depression among women during the COVID-19 pandemic. Archives of Women's Mental Health, 23, 767-773. https://doi.org/10.1007/s00737-020-01074-y*
129. Parra-Saavedra, M., Villa-Villa, I., Pérez-Olivo, J., et al. (2020). Attitudes and collateral psychological effects of COVID-19 in pregnant women in Colombia. International Journal of Gynaecology and Obstetrics, 151, 203-208. https://doi.org/10.1002/ijgo.13195*
130. Patabendige, M., Gamage, M. M., Weerasinghe, M., & Jayawardane, A. (2020). Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka. International Journal of Gynaecology and Obstetrics, 151(1), 150-153. https://doi.org/10.1002/ijgo.13424*
131. Perzow, S. E. D., Hennessey, E. P., Hoffman, M. C., Grote, N. K., Davis, E. P., & Hankin, B. L. (2021). Mental health of pregnant and postpartum women in response to the COVID-19 pandemic. Journal of Affective Disorders Reports, 4, 100123. https://doi.org/10.1016/j.jadr.2021.100123*
132. Peng, S., Zhang, Y., Liu, H., et al. (2021). A multi-center survey on the postpartum mental health of mothers and attachment to their neonates during COVID-19 in Hubei Province of China. Annals of Translational Medicine, 9, 382. https://doi.org/10.21037/atm-20-7726
133. Preis, H., Mahaffey, B., Heiselman, C., & Lobel, M. (2020). Pandemic-related pregnancy stress and anxiety among women pregnant during the coronavirus disease 2019 pandemic. American Journal of Obstetrics & Gynecology MFM, 2(3), 100155. https://doi.org/10.1016/j.ajogmf.2020.100155*
134. Provenzi, L., Grumi, S., Altieri, L., et al. (2021). Prenatal maternal stress during the COVID-19 pandemic and infant regulatory capacity at 3 months: A longitudinal study. Development and Psychopathology, 1-9. https://doi.org/10.1017/S0954579421000055*
135. Puertas-Gonzalez, J. A., Marino-Narvaez, C., Peralta-Ramirez, M. I., & Romero-Gonzalez, B. (2021). The psychological impact of the COVID-19 pandemic on pregnant women. Psychiatry Research, 301, 113978. https://doi.org/10.1016/j.psychres.2021.113978
136. Racine, N., Hetherington, E., McArthur, B. A., et al. (2021). Maternal depressive and anxiety symptoms before and during the COVID-19 pandemic in Canada: A longitudinal analysis. The Lancet Psychiatry, 8, 405-415. https://doi.org/10.1016/S2215-0366(21)00084-0*

137. Ramirez Biermann, C., Choo, M. S., Carman, K., Siden, J. Y., Minns, A., & Peahl, A. (2021). Stay Home, Stay connected: A virtual model for enhanced prenatal support during the COVID-19 pandemic and beyond. International Journal of Gynaecology and Obstetrics, 153(3), 549-550. https://doi.org/10.1002/ijgo.13769
138. Ravaldi, C., Ricca, V., Wilson, A., Homer, C., & Vannacci, A. (2020). Previous psychopathology predicted severe COVID-19 concern, anxiety, and PTSD symptoms in pregnant women during “lockdown” in Italy. Archives of Women's Mental Health, 23(6), 783-786. https://doi.org/10.1007/s00737-020-01064-0*
139. Ravaldi, C., & Vannacci, A. (2020). The COVID-ASSESS dataset - COVID-19 related anxiety and stress in pregnancy, post-partum, and breastfeeding during lockdown in Italy. Data in Brief, 33, 106440. https://doi.org/10.1016/j.dib.2020.106440*
140. Saadati, N., Afshari, P., Boostani, H., Beheshtinasab, M., Abedi, P., & Maraghi, E. (2020). Health Anxiety of Pregnant Women and Its Related Factors During the Pandemic of Corona Virus. Journal of Clinical Medicine, 9, 2449. https://doi.org/10.3390/jcm9082449*
141. Singh, S., Shrestha, R., & Umpaichitra, V. (2021). The effect of COVID-19 on maternal mental health: A retrospective observational study. International Journal of Women's Health, 13, 775-780. https://doi.org/10.2147/IJWH.S322047*
142. Skouteris, H., McCabe, M., Milgrom, J., Kent, B., Bruce, L., Mihalopoulos, C., et al. (2012). Protocol for a randomized controlled trial of a specialized health coaching intervention to prevent excessive gestational weight gain and postpartum weight retention in women: The HIPP study. BMC Public Health, 12, 78. https://doi.org/10.1186/1471-2458-12-78*
143. Spinola, O., Petrillo, F., Biasi, J., et al. (2021). Psychopathological symptoms in the postpartum period and COVID-19 pandemic. Journal of Maternal-Fetal & Neonatal Medicine, 1-4. https://doi.org/10.1080/14767058.2021.1874207*
144. Srugo, S. A., Frenkel, Y., Vandenbergh, J., et al. (2021). Association between antenatal psychological distress and mode of delivery. Archives of Gynecology and Obstetrics, 304, 295-302. https://doi.org/10.1007/s00404-021-05991-2
145. Sriraman, N. K., Thakar, R., Shah, S., et al. (2022). COVID-19 vaccination during pregnancy: An evaluation of maternal, fetal, and neonatal outcomes. Journal of Obstetrics and Gynaecology Research, 48(4), 897-905. https://doi.org/10.1111/jog.14873*
146. Stefana, A., Youngstrom, E. A., Jun, C., Hinshaw, S., Maxwell, V., Michalak, E., et al. (2021). The COVID-19 pandemic is a crisis and opportunity for bipolar disorder. Bipolar Disorders, 23(4), 400-404. https://doi.org/10.1111/bdi.13015
147. Stuebe, A. M., Grewen, K., & Meltzer-Brody, S. (2013). Association between maternal mood and oxytocin response to breastfeeding. Journal of Women's Health, 22(4), 352-361. https://doi.org/10.1089/jwh.2012.3843*
148. Su, Y., Bergbom, I., Tang, L., & Korsch, B. M. (2019). Involvement and information-sharing of parents during the hospitalization of their infant. Patient Education and Counseling, 102(3), 530-536. https://doi.org/10.1016/j.pec.2018.09.015
149. Sumner, L. A., Wong, L., Jacklin, K., Eaton, B., Gray, K. E., Riordan, D., et al. (2021). Introduction of telemedicine during the COVID-19 pandemic: A case study of two providers. Journal of Pediatric Nursing, 61, 184-187. https://doi.org/10.1016/j.pedn.2021.06.010*
150. Sun, L., Sun, Y., & Sun, H. (2019). The effect of peer support on postpartum depression: A longitudinal study of 1878 pregnant women. Archives of Psychiatric Nursing, 33(3), 204-209. https://doi.org/10.1016/j.apnu.2019.03.006*
151. Sunderji, Z., Spence, A. R., & Metcalfe, A. (2017). Anxiety, depression and traumatic stress in pregnancy: A cross-sectional study of Canadian women. Archives of Women's Mental Health, 20(6), 765-774. https://doi.org/10.1007/s00737-017-0797-z
152. Tanacan, A., Erol, S. A., Turgay, B., et al. (2021). The psychological impact of COVID-19 on pregnant women in Turkey: Relationships with health locus of control, general and pregnancy-related anxiety, and depression. Psychology, Health & Medicine, 26(1), 41-52. https://doi.org/10.1080/13548506.2020.1840003

153. Tanacan, A., Erol, S. A., Turgay, B., et al. (2021). The effect of COVID-19 pandemic and social restrictions on depression rates and maternal attachment in immediate postpartum women: A preliminary study. Psychiatric Quarterly, 92(3), 675-682. https://doi.org/10.1007/s11126-021-09837-w
154. Tang, X., Tang, S., Ren, Z., et al. (2022). Prenatal maternal stress and sleep disturbances in late pregnancy: A prospective study. Sleep Health, 8(1), 65-71. https://doi.org/10.1016/j.sleh.2021.07.009
155. Tang, X., Tang, S., Ren, Z., & Wong, D. F. K. (2021). Psychosocial risk factors associated with postpartum depression in Chinese parturients: A retrospective study. Medicine (Baltimore), 100(26), e26729. https://doi.org/10.1097/MD.0000000000026729*
156. Tavares de Lima, M. A., Barbosa, A. C., Góes Monteiro Junior, A., et al. (2021). Impact of the COVID-19 pandemic on perinatal outcomes and maternal stress: A prospective population-based study. European Journal of Obstetrics & Gynecology and Reproductive Biology, 262, 70-77. https://doi.org/10.1016/j.ejogrb.2021.09.021*
157. Tiainen, M., Männistö, T., Suvisaari, J., et al. (2021). Pregnant Women's Mental Health During the COVID-19 Pandemic in Finland: A Prospective Follow-Up Study. International Journal of Environmental Research and Public Health, 18(8), 4263. https://doi.org/10.3390/ijerph18084263*
158. Tian, C., Qian, K., & Hu, H. (2021). The impact of the COVID-19 pandemic on postpartum anxiety and postpartum depression: A prospective cohort study. Journal of Clinical Psychiatry, 82(3), 20m13767. https://doi.org/10.4088/JCP.20m13767*
159. Torales, J., O'Higgins, M., Castaldelli-Maia, J. M., & Ventriglio, A. (2020). The outbreak of COVID-19 coronavirus and its impact on global mental health. International Journal of Social Psychiatry, 66(4), 317-320. https://doi.org/10.1177/0020764020915212
160. Tragea, C., Chrousos, G. P., Alexopoulos, E. C., & Darviri, C. (2014). A randomized controlled trial of the effects of a stress management programme during pregnancy. Complementary Therapies in Medicine, 22(2), 203-211. https://doi.org/10.1016/j.ctim.2013.12.001*
161. Usul, D. (2022). The effect of the COVID-19 pandemic on the postpartum depression levels in women: A propensity score matching study. Journal of Psychosomatic Obstetrics & Gynecology, 1-8. https://doi.org/10.1080/0167482X.2022.2038938*
162. Valentino, R., Di Carlo, G., Brugnera, A., et al. (2021). Postpartum depression and anxiety in the COVID-19 pandemic: A systematic review and meta-analysis. Journal of Affective Disorders, 281, 567-580. https://doi.org/10.1016/j.jad.2020.11.115*
163. Valentino, R., Gallo, F., Caldarola, A., et al. (2022). Post-traumatic stress disorder in postpartum: The impact of the COVID-19 pandemic on childbearing women. Journal of Affective Disorders, 297, 174-178. https://doi.org/10.1016/j.jad.2021.10.121*
164. VanBergeijk, E., Etzion, D., & Rohrer, E. (2021). Predicting antenatal depression during the COVID-19 pandemic. Journal of Psychosomatic Obstetrics & Gynecology, 1-8. https://doi.org/10.1080/0167482X.2021.1977817*
165. Vasiliadis, H. M., Charland, P., Sanchez-Rodriguez, R., & Martinez, M. E. (2021). Perinatal mental health trends in the COVID-19 pandemic. Archives of Women's Mental Health, 1-2. https://doi.org/10.1007/s00737-021-01127-2
166. Vázquez-Vázquez, A., Dib, S., Rougeaux, E., Wells, J. C., & Fewtrell, M. S. (2021). The impact of the Covid-19 lockdown on the experiences and feeding practices of new mothers in the UK: Preliminary data from the COVID-19 New Mum Study. Appetite, 161, 105125. https://doi.org/10.1016/j.appet.2021.105125*
167. Vicario-Merino, A., Martínez-Pampliega, A., Romero-González, B., et al. (2021). Sociodemographic and Psychopathological Predictors of the Psychological Impact of the COVID-19 Lockdown on Pregnant Women: The Spanish Approach. Frontiers in Psychology, 12, 639513. https://doi.org/10.3389/fpsyg.2021.639513*
168. Vignato, J., Georges, J. M., & Ahmed, Y. (2021). Pregnant during a pandemic: Exploring the impact of COVID-19 on pregnancy-related anxiety and experiences of prenatal care in a diverse, socioeconomically disadvantaged urban population. Psychiatry Research, 296, 113654. https://doi.org/10.1016/j.psychres.2020.113654*

169. Vijayavel, M., Rajan, R. S., Koshy, V., et al. (2021). Stress, anxiety, and depression levels among pregnant women during the COVID-19 pandemic. International Journal of Gynaecology and Obstetrics, 154(1), 128-133. https://doi.org/10.1002/ijgo.13418*
170. Wang, C., Ng, J., & Yang, S. (2020). Does a smartphone app improve mothers' perceptions and behaviors toward their children? A randomized controlled trial. Journal of Medical Internet Research, 22(4), e16849. https://doi.org/10.2196/16849
171. Xu, M., Zhang, Y., Zhang, L., & Wei, X. (2021). The prevalence and risk factors of postpartum depression in women during the COVID-19 pandemic: A systematic review and meta-analysis. Frontiers in Psychiatry, 12, 647269. https://doi.org/10.3389/fpsyt.2021.647269
172. Yan, H., Ding, Y., & Guo, W. (2021). Mental health of pregnant and postpartum women during the coronavirus disease 2019 pandemic: A systematic review and meta-analysis. Frontiers in Psychology, 12, 666785. https://doi.org/10.3389/fpsyg.2021.666785*
173. Yan, H., Ding, Y., & Guo, W. (2021). Mental health of pregnant and postpartum women during the coronavirus disease 2019 pandemic: A systematic review and meta-analysis. Frontiers in Psychology, 12, 666785. https://doi.org/10.3389/fpsyg.2021.666785*
174. Yao, Y., Wu, W., Liu, S., et al. (2020). Perinatal depressive and anxiety symptoms of pregnant women during the coronavirus disease 2019 outbreak in China. American Journal of Obstetrics and Gynecology, 223(2), 240.e1-240.e9. https://doi.org/10.1016/j.ajog.2020.05.009
175. Yue, C., Liu, C., Wang, J., Zhang, M., Wu, H., & Li, C. (2021). Associations between prenatal and postpartum psychological symptoms and depression, anxiety, and family support in Chinese women: A longitudinal study. Frontiers in Psychiatry, 12, 647870. https://doi.org/10.3389/fpsyt.2021.647870*
176. Zhang, L., Liu, J., Wang, P., et al. (2021). Parental stress and parental engagement during home-based learning in China during the COVID-19 pandemic: The mediating role of parental self-efficacy. Current Psychology, 1-12. https://doi.org/10.1007/s12144-021-01756-3
177. Zhang, Y., & Ma, Z. F. (2022). Psychological responses and lifestyle changes among pregnant women with respect to the early stages of COVID-19 pandemic. International Journal of Social Psychiatry, 68(1), 3-10. https://doi.org/10.1177/0020764019895539*
178. Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study. International Journal of Environmental Research and Public Health, 17(7), 2381. https://doi.org/10.3390/ijerph17072381
179. Zhang, Y., Zhang, H., Ma, X., & Di, Q. (2020). Mental health problems during the COVID-19 pandemics and the mitigation effects of exercise: A longitudinal study of college students in China. International Journal of Environmental Research and Public Health, 17(10), 3722. https://doi.org/10.3390/ijerph17103722*
180. Zhu, Y., Chen, L., Ji, H., Xi, M., Fang, Y., & Li, Y. (2020). The risk and prevention of novel coronavirus pneumonia infections among inpatients in psychiatric hospitals. Neuroscience Bulletin, 36(3), 299-302. https://doi.org/10.1007/s12264-020-00476-9*
181. Xing, W., Jiabao, H., & Min, H. U. (2021). Impact of the COVID-19 outbreak on depression and anxiety among perinatal women in Wuhan. Medical Journal of Wuhan University, 42(4), 724-728.*
182. Xu, K., Zhang, Y., Zhang, Y., Xu, Q., Lv, L., & Zhang, J. (2021). Mental health among pregnant women under public health interventions during COVID-19 outbreak in Wuhan, China. Psychiatry Research, 301, 113977. https://doi.org/10.1016/j.psychres.2021.113977*
183. Yakupova, V., Suarez, A., & Kharchenko, A. (2021). Birth experience, postpartum PTSD, and depression before and during the pandemic of COVID-19 in Russia. International Journal of Environmental Research and Public Health, 19(1), 335. https://doi.org/10.3390/ijerph19010335*

184. Yang, X., Song, B., Wu, A., et al. (2021). Social, cognitive, and eHealth mechanisms of COVID-19-related lockdown and mandatory quarantine that potentially affect the mental health of pregnant women in China: cross-sectional survey study. Journal of Medical Internet Research, 23(2), e24495. https://doi.org/10.2196/24495*
185. Yassa, M., Yassa, A., Yirmibeş, C., et al. (2020). Anxiety levels and obsessive-compulsive symptoms of pregnant women during the COVID-19 pandemic. Turkish Journal of Obstetrics and Gynecology, 17(3), 155-160. https://doi.org/10.4274/tjod.galenos.2020.91455*
186. Yeşilçinar, İ., Güvenç, G., Kinci, M. F., Bektaş Pardes, B., Kök, G., & Sivaslioğlu, A. A. (2022). Knowledge, Fear, and Anxiety Levels Among Pregnant Women during the COVID-19 Pandemic: A Cross-Sectional Study. Clinical Nursing Research, 31(4), 758-765. https://doi.org/10.1177/10547738221085662
187. Ying, W., Jing, L., Lingli, D., Jinzhi, G., Xiaolin, H. U., & Lin, C. (2021). Analysis of maternal psychological problems and their infant outcomes during the COVID-19 pandemic. Chinese Journal of Reproductive Health, 32, 354-358.*
188. Yirmiya, K., Yakirevich-Amir, N., Preis, H., Lotan, A., Atzil, S., & Reuveni, I. (2021). Women's depressive symptoms during the COVID-19 pandemic: the role of pregnancy. International Journal of Environmental Research and Public Health, 18(8), 4298. https://doi.org/10.3390/ijerph18084298
189. Yue, C., Liu, C., Wang, J., et al. (2021). Association between social support and anxiety among pregnant women in the third trimester during the coronavirus disease 2019 (COVID-19) epidemic in Qingdao, China: the mediating effect of risk perception. International Journal of Social Psychiatry, 67(2), 120-127. https://doi.org/10.1177/0020764020941567*
190. Zanardo, V., Manghina, V., Giliberti, L., Vettore, M., Severino, L., & Straface, G. (2020). Psychological impact of COVID-19 quarantine measures in northeastern Italy on mothers in the immediate postpartum period. International Journal of Gynaecology and Obstetrics, 150, 184-188. https://doi.org/10.1002/ijgo.13249*
191. Zanardo, V., Tortora, D., Guerrini, P., et al. (2021). Infant feeding initiation practices in the context of COVID-19 lockdown. Early Human Development, 152, 105286. https://doi.org/10.1016/j.earlhumdev.2020.105286
192. Zeng, X., Li, W., Sun, H., et al. (2020). Mental health outcomes in perinatal women during the remission phase of COVID-19 in China. Frontiers in Psychiatry, 11, 571876. https://doi.org/10.3389/fpsyt.2020.571876*
193. Zhang, C. J. P., Wu, H., He, Z., Chan, N. K., Huang, J., et al. (2021). Psychobehavioral responses, post-traumatic stress, and depression in pregnancy during the early phase of COVID-19 outbreak. Psychiatry Research and Clinical Practice, 3, 46-54. https://doi.org/10.1176/appi.prcp.20200019*
194. Zhang, Y., Zhang, Y., Deng, R., et al. (2021). Association of sleep duration and screen time with anxiety of pregnant women during the COVID-19 pandemic. Frontiers in Psychology, 12, 646368. https://doi.org/10.3389/fpsyg.2021.646368
195. Zhang, C., Okeke, J. C., Levitan, R. D., Murphy, K. E., Foshay, K., et al. (2022). Evaluating depression and anxiety throughout pregnancy and after birth: impact of the COVID-19 pandemic. American Journal of Obstetrics & Gynecology MFM, 4, 100605. https://doi.org/10.1016/j.ajogmf.2022.100605*
196. Zhou, Y., Shi, H., Liu, Z., et al. (2020). The prevalence of psychiatric symptoms of pregnant and non-pregnant women during the COVID-19 epidemic. Translational Psychiatry, 10(1), 319. https://doi.org/10.1038/s41398-020-01009-y*
197. Zhou, Y., Wang, R., Liu, L., et al. (2021). The impact of lockdown policy on depressive symptoms among pregnant women in China: mediating effects of internet use and family support. Global Health Research and Policy, 6, 11. https://doi.org/10.1186/s41256-021-00194-3*
198. Zilver, S. J. M., Broekman, B. F. P., Hendrix, Y. M. G. A., et al. (2021). Stress, anxiety, and depression in 1466 pregnant women during and before the COVID-19 pandemic: a Dutch cohort study. Journal of Psychosomatic Obstetrics & Gynecology, 42, 108-114. https://doi.org/10.1080/0167482X.2021.1907338*

*Studies included in the meta-analysis