Prevalence of postnatal anxiety disorders in mothers of preterm infants: a systematic review protocol

Gilles Ndjomo[1,2], Sylvie Blairy[2], Nancy Durieux[3,4]

[1]*Laboratory of Behavioral Sciences and Applied Psychology (LAPSA), Douala University, Douala, Cameroon,* [2]*Psychology and Neuroscience of Cognition Research Unit (PsyNCog), University of Liège, Liège, Belgium,* [3]*Research Unit for a Life-Course Perspective on Health and Education (RUCHE), University of Liège, Liège, Belgium, and 4JBI Belgium: A JBI Affiliated Group, Leuven, Belgium*

ABSTRACT :

Objective: The objective of this systematic review is to evaluate and synthesize the available evidence on the prevalence of postnatal anxiety disorders in mothers of preterm infants within 12 months of delivery.

Introduction: Mothers of preterm infants report more postpartum psychological problems than other mothers. Anxiety disorders are among the most frequently reported manifestations, and affect the quality of maternal care and the baby's development. However, data on the prevalence of postnatal anxiety disorders in mothers of preterm infants are inconsistent and imprecise. It is, therefore, necessary to estimate the prevalence of anxiety disorders among mothers of premature infants in order to develop appropriate interventions for screening, support, and treatment.

Inclusion criteria: This review will consider studies conducted in any setting and any geographical location that report on the prevalence of any anxiety disorders in mothers of preterm infants within 12 months of delivery. Any analytical or descriptive observational studies and experimental or quasi-experimental studies will be included.

Methods: MEDLINE (Ovid), PsycINFO (Ovid), Embase (Elsevier), CINAHL (EBSCOhost), Google Scholar, MedNar, and the World Health Organization website will be searched for studies written in English or French. Screening, critical appraisal, and data extraction will be performed by 2 independent reviewers using the relevant JBI systematic review tools. The findings will be presented in narrative format, including tables and figures to aid in data presentation.

Review registration: PROSPERO CRD42023428202

Introduction

When delivery occurs before the 37th week of amenorrhea, the birth is considered to be premature. A substantial body of literature suggests that preterm birth is a significant risk factor for the occurrence of postpartum disorders in mothers.[1,2] Mothers of preterm infants report more postpartum psychological problems than other mothers.[3] These mothers experience premature birth as a bodily phenomenon: it is a perinatal complication that poses life-threatening risks for them,[4] as well as for their babies.[5] It is, therefore, a potentially traumatic and anxiety-inducing experience for mothers. In addition, after preterm birth, many other stressors can arise, increasing maternal anxiety. Sources of anxiety and fear include the baby's appearance,[6] changes in the parents' role in relation to the baby, daily concerns related to hospitalization,[7] the duration of hospitalization,[8] the infant's poor condition or medical complications,[9] separation from the infant after birth, and apprehension regarding the infant's hospital discharge.[10] Mothers are more exposed than fathers to these situations and their consequences and, therefore, are potentially more at risk than fathers of developing disorders related to them.[11] Given that mothers are often the major caregivers of premature babies, their children are also more exposed than other newborns to adverse outcomes. The mother's precarious mental health is a major risk for premature newborns, particularly in the first years of life, which appears to be a critical period because of the preterm newborn's need for maternal care and the potential impact of mental disorders on the quality of this maternal care.

Maternal postpartum disorders are associated with several factors that adversely affect the wellbeing of both mother and newborn. Postnatal mood and anxiety disorders affect the mother's beliefs and cognitions, as well as her attachment to and relationship with the newborn.[12] These psychological disorders also affect the baby's development.[12] Depression, in particular, is associated with a higher risk of common childhood illnesses, malnutrition, reduced breastfeeding,[13] and parenting deficits.[14] Postnatal anxiety in mothers has negative effects on breastfeeding, mother-child bonding and interactions, infant temperament and sleep, health, mental development, internalized behavior, and adolescent behavioral problems.[15] Anxiety is also associated with low maternal sensitivity.[16] Maternal stress is related to low maternal bonding,[17] post-traumatic stress disorder (PTSD), and low breastfeeding rates.[18]

In mothers of preterm infants, depression, anxiety, and PTSD are the most documented disorders. A systematic review[19] published in 2010 investigated the prevalence of depression. That review included 26 studies and reported that 40% of mothers of preterm infants experienced depressive symptoms from delivery up to 52 weeks' postpartum. Two other systematic reviews have investigated the prevalence of post-traumatic symptoms.[20,21] The first one, published in 2015, included 23 studies and reported a prevalence of symptoms, such as intrusive reliving, avoidance, and neurovegetative hyperactivation, ranging from 23.8% to 77.8% from delivery up to 24 months.[20] This review addressed only posttraumatic stress symptoms and did not consider other anxiety manifestations that may potentially indicate other anxiety disorders. The second study, published in 2017, included 30 studies and reported a prevalence of symptoms ranging from 14% to 79% from

delivery up to 16 years' postpartum.[21] In addition to restricting its focus to post-traumatic stress symptoms, as the previous study did, this review included an overly long time period, which makes it difficult to appreciate the range of traumatic symptoms in the first years of the newborn's life. In a more recent systematic review, Nguyen et al.[11] investigated the prevalence of both depression and anxiety in mothers of preterm infants. These authors included 72 studies for depression and 21 for anxiety, and reported that 29.2% of mothers reported depressive symptoms and 37.7% reported anxiety symptoms from delivery until 12 months' postpartum.[11] These findings seem to suggest that anxious manifestations predominate over depressive manifestations in mothers of preterm infants. However, the search strategy for this review[11] was limited to the terms anxiety and anxious; thus, it excluded studies of anxiety disorders for which the chosen terms appear neither in the title nor in the abstract. A systematic review[22] of the prevalence of anxiety disorders in the general population of postpartum mothers reported that several other anxiety disorders could occur within 12 months of delivery. This review reported panic disorder (1.66%), generalized anxiety disorder (3.59%), obsessive-compulsive disorder (2.49%), specific phobias (0.03%), social phobia (1.28%), agoraphobia (0.68%), and PTSD (1.78%).[22] Knowing that mothers of premature babies are more at risk than others, we can expect the prevalence of these disorders to be higher in that population.

Current syntheses of evidence have so far considered only a limited sample of the potential manifestations of anxiety after premature delivery. This may suggest that the prevalence of anxiety disorders as a group could be even higher in mothers of premature babies. A synthesis of evidence focusing on the prevalence of anxiety disorders in that specific population has not yet been done. The results of this review will inform evidence-based recommendations for screening, monitoring, and follow-up of mothers after preterm delivery in order to improve mothers' well-being and maternal care to preterm infants.

The purpose of this systematic review is to investigate the prevalence of postnatal anxiety disorders among mothers of preterm infants up to 12 months' postpartum. Anxiety disorders are characterized by excessive fear and anxiety and related behavioural disturbances, including avoidance.[23] A preliminary search of JBI Evidence Synthesis, the Cochrane Database of Systematic Reviews (Ovid), PsycINFO (Ovid), MEDLINE (Ovid) and PROSPERO was conducted. No existing systematic review or registered protocol with the same purpose has been identified.

Review question

What are the reported prevalences of postnatal anxiety disorders in mothers of preterm infants within 12 months of delivery?

Inclusion criteria

PARTICIPANTS

This review will consider studies that include adults (≥ 18 years) in the postpartum period who gave birth prematurely (before 37 weeks) and whose babies were alive at the time of the anxiety assessment.

Studies will be considered regardless of fertilization method, including medically assisted fertilization. If a study includes mothers of both term and preterm babies, it may be included if the preterm mothers' data can be clearly identified and extracted separately. There will be no restrictions on origin or race. We will include all modes of delivery, birth outcomes, single or multiple gestation, and parity. Studies in which mothers were within 12 months of delivery will be considered for inclusion. Those where mothers were followed beyond 12 months will be excluded if it is not possible to extract data on the first 12 months separately.

CONDITION

The review will consider studies reporting prevalence data of anxiety disorders, including generalized anxiety disorder, panic disorder, agoraphobia, specific phobia, social phobia, anxiety disorder due to a general medical condition, and anxiety disorder not specified under the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5).[23] The review will also consider studies reporting the prevalence data on obsessive-compulsive disorder, PTSD, and acute stress disorder. These will be included, both because they are disorders with anxiety manifestations, and because the review will consider studies from the DSM-IV-TR period in which they were still categorized as anxiety disorders.[24] Anxiety must be described as a specific outcome in eligible studies, and the time of its assessment should be specified. Anxiety disorders will be considered when participants report levels of anxiety considered to be pathological on validated scales such as the Generalized Anxiety Disorder-7.[25] Studies in which participants are diagnosed with any anxiety disorder mentioned in this protocol, using validated diagnostic methods, such as DSM-IV or DSM-5 diagnostic criteria, will be also considered.

CONTEXT

This review will include studies conducted in any setting, regardless of the medical condition of the infants or mothers. All study settings will be considered, including studies in which data were collected during hospitalization in health services and during ambulatory monitoring of child health at home or in health services. The review will include studies conducted in any geographical location.

TYPES OF STUDIES

Analytical or descriptive observational studies will be considered for inclusion. Experimental or quasi-experimental study designs that report on prevalence will also be considered for inclusion. The review will exclude case reports, case-control studies, and case series studies.

Methods

The proposed systematic review will be conducted in accordance with the JBI methodology for systematic reviews of prevalence and incidence.[26] The protocol has been registered with PROSPERO (CRD42023 428202).

SEARCH STRATEGY

The review will consider both published and unpublished studies. An initial limited search was performed in MEDLINE (Ovid), PsycINFO (Ovid), CINAHL (EBSCOhost), and Embase (Elsevier) to identify relevant papers on the topic of interest. The index terms used to describe these papers in the databases were also used to develop a full search strategy for MEDLINE (Ovid; see Appendix I). The search strategy was developed collaboratively by GN and ND (ND specializes in evidence searching) using an iterative process to test potential search terms for relevance. The search strategy, including keywords and index terms, will be adapted for each database included. The reference lists of all studies selected for critical appraisal will be screened for additional studies of interest.

The search will include all studies published since the inception of each database. There will be no restriction on the language in which the paper is written, but the review will include only studies published in English and French (languages the authors are proficient in). However, the full systematic review will provide a list of potentially relevant studies excluded on the basis of language.

The databases to be searched will be MEDLINE (Ovid), PsycINFO (Ovid), Embase (Elsevier), and CINAHL (EBSCOhost). Sources of unpublished studies and gray literature to be searched include Google Scholar, MedNar, and the World Health Organization (WHO) website. For Google Scholar, MedNar, and the WHO website, only the first 100 results will be considered.

STUDY SELECTION

Following the search, all identified citations will be collated and uploaded into Zotero v.6.0.30 (Corporation for Digital Scholarship and Roy Rosenzweig Center for History and New Media, VA, USA) and duplicates removed. Citations will then be uploaded into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia).[27] Following a pilot test, titles and abstracts will be screened by 2 independent reviewers. The 2 independent reviewers will screen the full text of potentially relevant papers to select studies for data extraction according to the inclusion criteria.

The reasons for exclusion will be recorded and presented in the final review. At each stage of the selection process, the 2 reviewers will resolve any disagreements through discussion or with a third reviewer when consensus cannot be achieved. The final review will report and present the processes of screening and selection in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.[28]

ASSESSMENT OF METHODOLOGICAL QUALITY

Two independent reviewers will critically appraise the eligible studies for methodological quality. They will use the JBI standardized critical appraisal instrument for studies reporting prevalence data.[29] Authors of papers will be contacted once to request missing or additional data for clarification, where required. The 2 reviewers will resolve any disagreements that arise between them through discussion or with a third reviewer. The results of the critical appraisal will be reported in narrative format and in tables. All studies, regardless of their methodological quality, will be subject to data extraction and synthesis, where possible.

DATA EXTRACTION

The standardized JBI data extraction form for prevalence in JBI SUMARI[27] will be used to extract data from papers included in the review. The data extracted will include citation details; objectives of the study; specific details about the population, condition, context, and study methods; and data about the review question. These will include geographical location, age, degree of prematurity, sample size, recorded anxiety disorders, diagnosis method, timing of the measurement, and prevalence. If the data extraction form requires revision, the final form will be presented in the manuscript, and the change reported as a variation from the protocol.

Data will be extracted from the selected studies independently by 2 reviewers. The 2 reviewers will resolve any disagreements between them through discussion or with a third reviewer. Authors of papers will be contacted once to request missing or additional data, where required.

DATA SYNTHESIS

Findings from the included studies will be managed using JBI SUMARI.[27] Data will be reported descriptively. The characteristics of included studies and their findings will be reported in narrative format, and will include tables and figures to aid in data presentation, where appropriate. We so not believe a meta-analysis is appropriate as the data of interest in this study represent considerable diversity regarding the anxiety disorders targeted, timing of their assessment, assessment scales, cut-off points, and diagnostic methods for each disorder. Furthermore, in the meta-analysis of anxiety by Nguyen et al.,[11] the heterogeneity test on the data demonstrated statistical significance. The aim is to provide a rigorous synthesis of the results of studies investigating the presence of an anxiety disorder in mothers of premature babies in order to better understand these disorders in mothers after preterm birth. For these reasons, a meta-analysis will not be performed. Consequently, for each anxiety disorder, sample characteristics, timing of assessment, and

prevalence will be reported in narrative format. The recommendations of the Synthesis Without Meta-analysis (SWiM) guideline[30] will be used to report findings.

Author contributions

GN, SB, and ND contributed to the creation of the systematic review protocol. GN, a neonatal psychologist, and SB, an expert in clinical psychology, were particularly involved in the theoretical reflection (including, for instance, the relevance of the research questions and of the terms used to search databases). ND, a specialist in evidence synthesis, was involved in the development of the research methodology and the search strategies, and supervised the process.

References

1.   Paula Eduardo JAF de, Rezende MG de, Menezes PR, DelBen CM. Preterm birth as a risk factor for postpartum depression: a systematic review and meta-analysis. J Affect Disord 2019;259:392–403.

2.   Satnarine T, Ratna P, Sarker A, Ramesh AS, Tello CM, Jamil D, et al. The relationship between infant prematurity and parental anxiety: a systematic review. J Med Health Stud 2022;3:23–31.

3.   Butti N, Montirosso R, Borgatti R, Urgesi C. Maternal sensitivity is associated with configural processing of infant's cues in preterm and full-term mothers. Early Hum Dev 2018;125:35–45.

4.   Blanc J, Rességuier N, Loundou A, Boyer L, Auquier P, Tosello B, et al. Severe maternal morbidity in preterm cesarean delivery: a systematic review and meta-analysis. Eur J Obstet Gynecol Reprod Biol 2021;261:116–23.

5.   Tiruneh D, Assefa N, Mengiste B. Perinatal mortality and its determinants in Sub Saharan African countries: systematic review and meta-analysis. Matern Health Neonatol Perinatol 2021;7(1):1.

6.   Pisoni C, Spairani S, Fauci F, Ariaudo G, Tzialla C, Tinelli C, et al. Effect of maternal psychopathology on neurodevelopmental outcome and quality of the dyadic relationship in preterm infants: an explorative study. J Matern Fetal Neonatal Med 2020;33(1):103–12.

7.   Pisoni C, Spairani S, Manzoni F, Ariaudo G, Naboni C, Moncecchi M, et al. Depressive symptoms and maternal psychological distress during early infancy: a pilot study in preterm as compared with term mother–infant dyads. J Affect Disord 2019;257:470–6.

8.   Cherry AS, Mignogna MR, Vaz AR, Hetherington C, McCaffree A, Anderson MP, et al. The contribution of maternal psychological functioning to infant length of stay in the neonatal intensive care unit. Int J Womens Health 2016; 8:233–42.

9.   Gondwe KW, White-Traut R, Brandon D, Pan W, HolditchDavis D. The role of sociodemographic factors in maternal psychological distress and mother-preterm infant interactions. Res Nurs Health 2017;40(6):528–40.

10.   Goutaudier N, Lopez A, Séjourné N, Denis A, Chabrol H. Premature birth: subjective and psychological experiences in the first weeks following childbirth, a mixed-methods study. J Reprod Infant Psychol 2011;29:364–73.

11.   Nguyen CTT, Sandhi A, Lee GT, Nguyen LTK, Kuo S-Y. Prevalence of and factors associated with postnatal depression and anxiety among parents of preterm infants: a systematic review and meta-analysis. J Affect Disord 2023;322:235–48.

12.   Hoffman C, Dunn DM, Njoroge WFM. Impact of postpartum mental illness upon infant development. Curr Psychiatry Rep 2017;19(12):100.

13.   Dadi AF, Miller ER, Mwanri L. Postnatal depression and its association with adverse infant health outcomes in low and middle-income countries: a systematic review and meta-analysis. BMC Pregnancy Childbirth 2020;20(1):416.

14.   Lovejoy MC, Graczyk PA, O'Hare E, Neuman G. Maternal depression and parenting behavior: a meta-analytic review. Clin Psychol Rev 2000;20(5):561–92.

15.   Field T. Postnatal anxiety prevalence, predictors and effects on development: a narrative review. Infant Behav Dev 2018;51:24–32.

16.   Neri E, Agostini F, Salvatori P, Biasini A, Monti F. Mother preterm infant interactions at 3 months of corrected age: influence of maternal depression, anxiety and neonatal birth weight. Front Psychol 2015;6:1234.

17.   Bieleninik Ł, Lutkiewicz K, Cieślak M, Preis-Orlikowska J, Bidzan M. Associations of maternal-infant bonding with maternal mental health, infant's characteristics and socio-demographical variables in the early postpartum period: a cross-sectional study. Int J Environ Res Public Health 2021; 18(16):8517.

18.   Cook N, Ayers S, Horsch A. Maternal posttraumatic stress disorder during the perinatal period and child outcomes: a systematic review. J Affect Disord 2018;225:18–31.

19.   Vigod S, Villegas L, Dennis C-L, Ross L. Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants: a systematic review. BJOG Int J Obstet Gynaecol 2010;117(5):540–50.

20.   Gondwe KW, Holditch-Davis D. Posttraumatic stress symptoms in mothers of preterm infants. Int J Afr. Nurs Sci 2015; 3:8–17.

21.   Beck CT, Harrison L. Posttraumatic stress in mothers related to giving birth prematurely: a mixed research synthesis. J Am Psychiatr Nurses Assoc 2017;23(4):241–57.

22.   Goodman JH, Watson GR, Stubbs B. Anxiety disorders in postpartum women: a systematic review and meta-analysis. J Affect Disord 2016;203:292–331.

23.   American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5, 5th edn. American Psychiatric Association; 2013.

24.   American Psychiatric Association. DSM-IV-TR: Diagnostic and statistical manual of mental disorders, text revision, 4th edn. American Psychiatric Association; 2000.

25.   Zhong Q-Y, Gelaye B, Zaslavsky AM, Fann JR, Rondon MB, Sánchez SE, et al. Diagnostic validity of the Generalized Anxiety Disorder-7 (GAD-7) among pregnant women. PLoS ONE 2015;10(4):e0125096.

26.   Aromataris E, Fernandez R, Godfrey C, Holly C, Khalil H, Tungpunkom P. Chapter 10: Umbrella reviewsIn: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis [internet]. JBI; 2020. [cited 2022 Sep 29]. Available from: https://synthesismanual.jbi.global

27.   Munn Z, Aromataris E, Tufanaru C, Stern C, Porritt K, Farrow J, et al. The development of software to support multiple systematic review types: The Joanna Briggs Institute System for the Unified Management. Assessment and Review of Information (JBI SUMARI) JBI Evid Implement 2019;17 (1):36–43.

28.   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. Syst Rev 2021; 10(1):89.

29.   Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. JBI Evid Implement 2015;13(3): 147–53.

30.   Campbell M, McKenzie JE, Sowden A, Katikireddi SV, Brennan SE, Ellis S, et al. Synthesis without meta-analysis (SWiM) in systematic reviews: reporting guideline. BMJ 2020;368: l6890.