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Preventive interventions for paternal perinatal depression: a scoping review protocol

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Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

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Abstract

Introduction: The objective of this scoping review is to map the literature describing preventive interventions for paternal perinatal depression. Depression is a common mental disorder experienced by fathers as well as mothers around childbirth. Perinatal depression has negative consequences for men, and suicide is the most serious adverse effect. Impaired father–child relationships can also result from perinatal depression, negatively impacting child health and development. In some cases, both parents suffer from depression simultaneously. Considering its severe effects, early prevention of perinatal depression is important. However, little is known about preventive interventions for paternal perinatal depression including in Asian populations.

Methods and analysis: This scoping review will consider studies of preventive interventions for perinatal depression in men with a pregnant wife or partner, and new fathers (less than 1 year postpartum). Preventive intervention includes any form of intervention intended to prevent perinatal depression. Primary prevention intended to promote mental health will also be included if depression is included as an outcome. Interventions for those with a formal diagnosis of depression will be excluded. MEDLINE (EBSCOhost), CINAHL (EBSCOhost), APA PsycINFO (EBSCOhost), Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database) will be searched for published studies, and Google Scholar and ProQuest Health and Medical Collection will be searched for gray literature. Screening and data extraction will be performed by two independent reviewers. Data will be extracted using a standardized data extraction tool and presented in diagrammatic or tabular form, accompanied by a narrative summary.

Ethics and dissemination: As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

Registration details: The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Strengths and limitations of this study

- This scoping review will identify all prevention measures for paternal perinatal depression, which is one of the leading causes of illness globally.

- The findings of this review will allow health care professionals to understand what is currently being done to prevent paternal perinatal depression and to promote mental health in various contexts.
- The JBI method for scoping reviews will be used for a systematic and comprehensive approach with at least two independent reviewers to conduct the record selection and data extraction.
- This review includes only English and Japanese studies.

INTRODUCTION

Childbirth is a major life event for parents, requiring psychosocial adjustment. In the period surrounding childbirth, depression is one of the major causes of disability not only for mothers, but also fathers. Previous meta-analyses reported that the prevalence of paternal perinatal depression (PPD) was between 8.0% and 10.4% from pregnancy to 12 months postpartum globally,[1-2] and between 8.2% and 13.2% in Japan.[3] These statistics are comparable to those of maternal depression. One meta-analysis found an overall prevalence of maternal depression of 14% within the first 12 months after childbirth, ranging from 5.0% to 26.3% depending on the time of measurement and the country in which the study was conducted.[4] In Japan, the prevalence of maternal depression is reported to be between 11.5% and 15.1% from pregnancy to 12 months postpartum.[5] These prevalence statistics indicate the importance of focusing on the father as well as the mother. Furthermore, the coronavirus disease 2019 pandemic has had an impact on perinatal mental health, increasing the prevalence of maternal depression.[6] Importantly, parents' depression was reported to be correlated with their partners' depression, indicating that both parents suffer from depression simultaneously in some cases.[2]

PPD has negative consequences for the entire family system. PPD negatively impacts infant, child and adolescent development,[7] impedes social and parenting skills in fathers themselves (including child maltreatment),[8] and leads to less support for mothers. The serious adverse effects of PPD include suicide. Men with PPD were reported to be approximately 20 times more likely to die from suicide than those without any mood disorder.[9]

A qualitative synthesis of parents' experiences of postpartum depression clarified the characteristics of this complication. Fathers with PPD were characterized by the feeling of being unable to control their own lives because of low resilience, and disappointment caused by unmet support needs.[10] Thus, PPD impedes social and parental functioning in fathers.

Identifying men at elevated risk of PPD is a topic of substantial research interest. Reported risk factors of PPD include a history of mental disorders, economic instability, anxiety in childrearing, stress, marital satisfaction, partner's depression, and a history of infertility treatment.[11-13] These risk factors could be used to assess susceptibility to depression in men, leading to early detection of PPD. Methods for screening perinatal depression, such as using a validated tool (e.g., the Edinburgh Postnatal Depression Scale, Whooley Questions), are currently considered common practice in some

countries.[14] However, the screening targets are typically limited to mothers, whereas fathers are not recognized despite an equivalent need for care.

Primary prevention for PPD is an important goal for improving mental health among men. Prevention is categorized by the following three definitions: primary prevention, secondary prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before health effects occur, and includes promotion of mental health.[16] Primary prevention is distinguished from secondary prevention and tertiary prevention, the former being defined as screening to identify diseases in the earliest stages, and the latter being defined as practices aiming to manage disease post diagnosis to slow disease progression. Regarding perinatal depression, several preventive interventions are currently provided for women at increased risk of depression. For example, counseling, cognitive behavioral therapy, and interpersonal psychotherapy are common preventions in some countries.[14, 17] Because access to these interventions is generally limited to high-risk women, more diverse primary preventions targeted at all men are needed. Improving healthcare by identifying all prevention measures for PPD, which is one of the leading causes of illness globally, could improve the mental health of men and wider society. This aim is in line with the United Nations' Sustainable Development Goals,[18] in which mental health is considered a global health need.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords. Perinatal depression has been the subject of several previous reviews, mostly focusing on women. Those reviews included: various treatments of depression including psychosocial, psychological and pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other interventions identified were: health system interventions (e.g., trained midwives' screening and management of maternal distress), physical activity interventions (e.g., group exercise), educational interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g., childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at no known risk and those identified as at-risk for developing maternal depression have been reviewed relatively extensively. However, there is limited evidence regarding PPD.

Our search identified only one systematic review that examined interventions for PPD. The review was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review, mental health outcomes included depression, anxiety, stress, and general measures of psychological functioning. An important difference between these two reviews is that Goldstein et al. examined interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States) with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused interventions, couple-focused interventions, and family-focused interventions. Father-focused interventions included: childbirth educational sessions, providing hands-on techniques such as massages, paternal skin-to-skin contact, and lifestyle education training (e.g., sexual dysfunction, sleep hygiene). Couple-focused interventions included: enhancement of the co-parenting relationship, a program focusing on the new parents' relationship (e.g., encourage help seeking), normalizing relationship difficulties during the transition to parenthood, and antenatal psychosocial classes dealing with issues related to becoming first time parents. Family-focused interventions included: educational group sessions to improve infant outcomes, an educational-behavioral program for parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm infants, and a psychoeducational mobile-health application for new parents. These interventions were primarily psychoeducational and targeted general population, indicating that these are considered as primary prevention to improve the mental health of men and wider society. A limitation of Goldstein et al.'s review was the inclusion of only randomized controlled trials written in English. This warrants the need for the present review because a more exhaustive search including studies with various designs written in a language other than English (e.g., Japanese) could potentially result in more diverse types of intervention for preventing PPD.

In the current report, we chose to conduct a scoping review rather than a systematic review for two reasons: 1) several systematic reviews have been conducted to identify interventions for treatment, assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2) the only systematic review that examined interventions for preventing PPD failed to include studies with various designs published in languages other than English. By focusing on preventive interventions targeting men, and including various study types, the current review will identify the types of available evidence for preventive interventions of PPD.

The objective of this scoping review is to map the literature describing preventive interventions for PPD. This review will clarify the content and characteristics of those interventions. The findings of this review will allow health care professionals to understand what is currently being done for preventing PPD and health promotion of mental health in various contexts. This review will be useful for providing an overview of the studies of this issue that have been conducted to date, and an assessment of their findings regarding the prevention of PPD.

Review question

What preventive interventions are used for PPD?

METHODS AND ANALYSIS

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews,[28] and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for scoping reviews (PRISMA-ScR).[29] The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Inclusion criteria

Participants

Participants will include men whose wife or partner is pregnant and new (less than 1 year postpartum) fathers, including those at no known risk and those identified as at-risk for developing PPD. Examples of those at-risk for developing PPD include: individuals with a history of mental disorders, marital dissatisfaction, unplanned pregnancy, stressful life events, unemployment, and economic instability. Those with a formal diagnosis of depression will be excluded.

Concept

The concept of interest is preventive intervention, which includes any form of intervention intended to prevent PPD. Primary prevention intended to promote mental health will also be included as long as depression is included as an outcome. Providers of interventions may include but are not limited to healthcare professionals (e.g., nurses, midwives, physicians, psychologists, nutritionists, childbirth

educators) or lay people (e.g., trained research staff, people from the community). Interventions could be delivered via face-to-face, group-based, internet-based, community-based, print-based or combined methods. The timing of interventions includes pregnancy and postpartum. Treatments for existing depression (e.g., pharmacological treatment) will be excluded.

Context

This review will consider studies of preventive interventions delivered in any setting. The settings will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and geographic locations will be included.

Types of sources

This scoping review will consider both experimental and quasi-experimental study designs, including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports, and descriptive cross-sectional studies for inclusion. Qualitative studies that include the content of preventive interventions of PPD will be considered. Studies focusing on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research, and feminist research will also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will be excluded.

Search strategy

The search strategy will aim to locate both published and unpublished studies. The literature search will be conducted by the review team in consultation with a librarian. A three-step search strategy will be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy *(see Appendix 1*). The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The databases to be searched include MEDLINE

(EBSCOhost), CINAHL (EBSCOhost), APA PsycINFO (EBSCOhost), the Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database). Sources of unpublished studies and gray literature to be searched include Google Scholar and ProQuest Health and Medical Collection. The reference list of all included sources of evidence will be screened for additional studies. Because of a lack of funding for translation, only studies published in English and Japanese will be included. The starting search date will be 2011, under the assumption that any interventions retrieved within the last 10 years could potentially be applied in the present clinical context.

Study/source of evidence selection

Following the search, all identified citations will be collated and uploaded into EndNote Basic (Clarivate Analytics, PA, USA) and duplicates removed. Following a pilot test, titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant sources will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia).[30] The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, and with an additional reviewer when necessary. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.[29]

Data extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using a data extraction tool developed by the reviewers (Appendix 2). A pilot test will be conducted for the first five reports to ensure that all reviewers know how to use the tool and will use it consistently. The extracted data will include specific details about citations (i.e., title, author[s], year of publication, journal), study information (i.e., study design, country, purpose, participants, methods), intervention (i.e., content, delivery mode, intensity, timing, provider, theoretical basis such as social learning theory), outcome (e.g., self-reported depressive symptoms), and findings relevant to the review question. A draft extraction form is provided (see Appendix 2). The draft data

extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, and with an additional reviewer when necessary. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Data analysis and presentation

The analysis will focus on interventions. All reports will be read several times and assigned intervention type names according to a data extraction tool (Appendix 2). Data will be categorized according to the type, delivery mode, duration, and provider of intervention. The findings of this scoping review will be presented in diagrammatic or tabular form and will be summarized in a manner that aligns with the review question.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this scoping review.

ETHICS AND DISSEMINATION

The primary investigator will be responsible for any decisions about amending the protocol. As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

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Authors' contributions

HI, EM, KM, KK, FT, AK, MS, SA, and MK contributed to the conception and design of the scoping review protocol. HI made major contributions to the design of the original review protocol. All authors read and approved the final manuscript.

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Competing interests statement

The authors declare that they have no competing interests.

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Appendix 1: Search strategy

MEDLINE (EBSCO) search terms

Search conducted in MEDLINE (EBSCO) on May 4, 2022 resulting in 425 retrievals

AB (father OR parent* OR pregnant OR partner OR spouse) OR TI (father OR parent* OR pregnant OR partner OR spouse) OR MJ (parents OR spouses)

AND

AB (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention) OR TI (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention) OR MJ (preventive health services OR preventive psychiatry OR public health nursing OR health promotion OR community mental health services)

AND

AB (depression OR perinatal depression OR postnatal depression OR postpartum depression OR depress*) OR TI (depression OR perinatal depression OR postnatal depression OR postpartum depression OR depress*) OR MJ (depression, postpartum)

AND limited to English

AND limited to publication after 2011

Ichushi-Web search terms

Search conducted in Ichushi-Web on May 4, 2022 resulting in 1472 retrievals

AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha) OR TI (chichioya OR chichi OR ninshin OR pahtonah OR haigusha) OR MJ (chichi OR ryoushin OR ninshin OR haigusha)

AND

AB (yobou OR kango OR kea) OR TI (yobou OR kango OR kea) OR MJ (yobouteki-hokeniryou-sahbisu OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR koushu-eisei OR kenkou-zoushin OR seishin-kango OR seishin-hoken)

AND

AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ (utsubyou)

AND limited to publication after 2011

Appendix 2: Data extraction instrument

Citation	Title	
	Author(s)	
	Year of publication	
	Journal	
Study information	Study design	
	Country	
	Purpose	
	Participant	
	Methods	
Intervention	Content	
	Delivery mode	
	Intensity	
	Timing	
	Provider	
	Theoretical basis	
Outcome		
Reviewer's comment		

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Page2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Page4-7
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Page7
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Page7
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Page7-8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Page8-9
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Page8-9, Appendix 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Page9
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Page10
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Page9-10, Appendix 2
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	No plan of critical appraisal

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Page10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	NA
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	NA
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	NA
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	NA
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	NA
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	NA
Limitations	20	Discuss the limitations of the scoping review process.	NA
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	NA
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Page11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

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Primary Subject Heading:	Nursing
Secondary Subject Heading:	Mental health, Nursing
Keywords:	MENTAL HEALTH, PREVENTIVE MEDICINE, Depression & mood disorders < PSYCHIATRY, PUBLIC HEALTH

Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

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Abstract

Introduction: The objective of this scoping review is to map the literature describing preventive interventions for paternal perinatal depression. Depression is a common mental disorder experienced by fathers as well as mothers around childbirth. Perinatal depression has negative consequences for men, and suicide is the most serious adverse effect. Impaired father–child relationships can also result from perinatal depression, negatively impacting child health and development. In some cases, both parents suffer from depression simultaneously. Considering its severe effects, early prevention of perinatal depression is important. However, little is known about preventive interventions for paternal perinatal depression including in Asian populations.

Methods and analysis: This scoping review will consider studies of preventive interventions for perinatal depression in men with a pregnant wife or partner, and new fathers (less than 1 year postpartum). Preventive intervention includes any form of intervention intended to prevent perinatal depression. Primary prevention intended to promote mental health will also be included if depression is included as an outcome. Interventions for those with a formal diagnosis of depression will be excluded. MEDLINE (EBSCOhost), CINAHL (EBSCOhost), APA PsycINFO (EBSCOhost), Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database) will be searched for published studies, and Google Scholar and ProQuest Health and Medical Collection will be searched for gray literature. Screening and data extraction will be performed by two independent reviewers. Data will be extracted using a standardized data extraction tool and presented in diagrammatic or tabular form, accompanied by a narrative summary.

Ethics and dissemination: As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

Registration details: The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Strengths and limitations of this study

- A strength of this scoping review is to identify all prevention interventions for paternal perinatal depression, which is one of the causes of illness globally.

- Another strength of this review is to allow health care professionals to understand what is currently being done to prevent paternal perinatal depression and to promote mental health in various contexts.
- The third strength is usage of the JBI method for scoping reviews, which will be used for a systematic and comprehensive approach with at least two independent reviewers to conduct the record selection and data extraction.
- A limitation of this review is to includes only English and Japanese studies.

INTRODUCTION

Childbirth is a major life event for parents, requiring psychosocial adjustment. In the period surrounding childbirth, depression is one of the causes of disability not only for mothers, but also fathers. Previous meta-analyses reported that the prevalence of paternal perinatal depression (PPD) was between 8.0% and 10.4% from pregnancy to 12 months postpartum globally,[1-2] and between 8.2% and 13.2% in Japan.[3] Regarding mothers, one meta-analysis found an overall prevalence of maternal depression of 14% within the first 12 months after childbirth, ranging from 5.0% to 26.3% depending on the time of measurement and the country in which the study was conducted.[4] In Japan, the prevalence of maternal depression is reported to be between 11.5% and 15.1% from pregnancy to 12 months postpartum.[5] These prevalence statistics indicate the importance of focusing on the father as well as the mother. Furthermore, the coronavirus disease 2019 pandemic has had an impact on perinatal mental health, increasing the prevalence of maternal depression.[6] Importantly, parents' depression was reported to be correlated with their partners' depression, indicating that both parents suffer from depression simultaneously in some cases.[2]

PPD has negative consequences for the entire family system. PPD negatively impacts infant, child and adolescent development,[7] impedes social and parenting skills in fathers themselves (including child maltreatment),[8] and leads to less support for mothers. The serious adverse effects of PPD include suicide. Men with PPD were reported to be approximately 20 times more likely to die from suicide than those without any mood disorder.[9]

A qualitative synthesis of parents' experiences of postpartum depression clarified the characteristics of this complication. Fathers with PPD were characterized by the feeling of being unable to control their own lives because of low resilience, and disappointment caused by unmet support needs.[10] Thus, PPD impedes social and parental functioning in fathers.

Identifying men at elevated risk of PPD is a topic of substantial research interest. Reported risk factors of PPD include a history of mental disorders, economic instability, lack of support, stress, lack of marital satisfaction, partner's depression, and a history of infertility treatment.[11] In a qualitative synthesis of fathers' mental health during the perinatal period, identified risk factors were related with the challenges to form the fatherhood identity, and it showed an importance of support in preparing for fatherhood.[12] These risk factors could be used to assess susceptibility to depression in men, leading to early detection of PPD. Methods for screening perinatal depression, such as using

a validated tool (e.g., the Edinburgh Postnatal Depression Scale, Whooley Questions), are currently considered common practice in some countries such as the UK and Japan.[13-14] However, the screening targets are typically limited to mothers, whereas fathers are not recognized despite an equivalent need for care.

Primary prevention for PPD is an important goal for improving mental health among men. Prevention is categorized by the following three definitions: primary prevention, secondary prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before health effects occur, and includes promotion of mental health.[16] Primary prevention is distinguished from secondary prevention and tertiary prevention, the former being defined as screening to identify diseases in the earliest stages, and the latter being defined as practices aiming to manage disease post diagnosis to slow disease progression. Regarding perinatal depression, several preventive interventions are currently provided for women at increased risk of depression. For example, counseling, cognitive behavioral therapy, ~~and~~ interpersonal psychotherapy, and group psychoeducation are common preventions in some countries.[14, 17] Because access to these interventions is generally limited to high-risk women, more diverse primary preventions targeted at all men are needed. Improving healthcare by identifying all prevention interventions for PPD, which is one of the leading causes of illness globally, could improve the mental health of men and wider society. This aim is in line with the United Nations' Sustainable Development Goals,[18] in which mental health is considered a global health need.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords. Perinatal depression has been the subject of several previous reviews, mostly focusing on women. Those reviews included: various treatments of depression including psychosocial, psychological and pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other interventions identified were: health system interventions (e.g., trained midwives' screening and management of maternal distress), physical activity interventions (e.g., group exercise), educational interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g., childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at

no known risk and those identified as at-risk for developing maternal depression have been reviewed relatively extensively. However, there is limited evidence regarding PPD.

Our search identified only one systematic review that examined interventions for PPD. The review was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review, mental health outcomes included depression, anxiety, stress, and general measures of psychological functioning. An important difference between these two reviews is that Goldstein et al. examined interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States) with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused interventions, couple-focused interventions, and family-focused interventions. Father-focused interventions referred to those exclusively taught to fathers and included: childbirth educational sessions, providing hands-on techniques such as men providing massages to their partner to reduce pain and improve the couple relationship, paternal skin-to-skin contact by placing newborns on men's bare chest for 30-minutes, and lifestyle education training (e.g., sexual dysfunction, sleep hygiene). Couple-focused interventions included: enhancement of the co-parenting relationship, a program focusing on the new parents' relationship (e.g., encourage help seeking), normalizing relationship difficulties during the transition to parenthood, and antenatal psychosocial classes dealing with issues related to becoming first time parents. Family-focused interventions included: educational group sessions to improve infant outcomes, an educational-behavioral program for parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm infants, and a psychoeducational mobile-health application for new parents. These interventions were primarily psychoeducational and targeted general population, indicating that these are considered as primary prevention to improve the mental health of men and wider society. A limitation of Goldstein et al.'s review was the inclusion of only randomized controlled trials written in English. This warrants the need for the present review because a more exhaustive search including studies with various designs written in a language other than English (e.g., Japanese) could potentially result in more diverse types of intervention for preventing PPD.

In the current report, we chose to conduct a scoping review rather than a systematic review for two reasons: 1) several systematic reviews have been conducted to identify interventions for treatment, assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2)

the only systematic review that examined interventions for preventing PPD failed to include studies with various designs published in languages other than English. By focusing on preventive interventions targeting men, and including various study types, the current review will identify the types of available evidence for preventive interventions of PPD.

The objective of this scoping review is to map the literature describing preventive interventions for PPD. This review will clarify the content and characteristics of those interventions. The findings of this review will allow health care professionals to understand what is currently being done for preventing PPD and health promotion of mental health in various contexts. This review will be useful for providing an overview of the studies of this issue that have been conducted to date, and an assessment of their findings regarding the prevention of PPD.

Review question

What preventive interventions are used for PPD?

METHODS AND ANALYSIS

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews,[28] and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for scoping reviews (PRISMA-ScR).[29] The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Inclusion criteria

Participants

Participants will include men whose wife or partner is pregnant and new (less than 1 year postpartum) fathers, including those at no known risk and those identified as at-risk for developing PPD. Examples of those at-risk for developing PPD include: individuals with a previous history of mental disorders not requiring current treatment, marital dissatisfaction, unplanned pregnancy, stressful life events, unemployment, and economic instability. Both biological and non-biological fathers will be included. Those with a current history of mental disorders such as formal diagnosis of depression will be excluded.

Concept

The concept of interest is preventive intervention, which includes any form of intervention intended to prevent PPD. Primary prevention intended to promote mental health will also be included as long as prevention of depression is included as an outcome. Providers of interventions may include but are not limited to healthcare professionals (e.g., nurses, midwives, physicians, psychologists, nutritionists, childbirth educators) or lay people (e.g., trained research staff, people from the community). Interventions could be delivered via face-to-face, group-based, internet-based, community-based, print-based or combined methods. The timing of interventions includes pregnancy and postpartum. Treatments for existing depression (e.g., pharmacological treatment) will be excluded.

Context

This review will consider studies of preventive interventions delivered in any setting. The settings will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and geographic locations will be included.

Types of sources

This scoping review will consider both experimental and quasi-experimental study designs, including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports, and descriptive cross-sectional studies for inclusion. Qualitative studies that include the content of preventive interventions of PPD will be considered. Studies focusing on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research, and feminist research will also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will be excluded.

Search strategy

The search strategy will aim to locate both published and unpublished studies. The literature search

will be conducted by the review team in consultation with a librarian. A three-step search strategy will be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy *(see Appendix 1*). The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The databases to be searched include MEDLINE (Ovid), CINAHL (EBSCOhost), APA PsycINFO (Ovid), the Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database). Sources of unpublished studies and gray literature to be searched include Google Scholar and ProQuest Health and Medical Collection. The reference list of all included sources of evidence will be screened for additional studies. Because of a lack of funding for translation, only studies published in English and Japanese will be included. The starting search date will be 2012, under the assumption that any interventions retrieved within the last 10 years could potentially be applied in the present clinical context.

Study/source of evidence selection

Following the search, all identified citations will be collated and uploaded into EndNote Basic (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will ~~then~~ be screened by two independent reviewers for assessment against the inclusion criteria for the review. A pilot screening test will be conducted before undertaking full study selection. Potentially relevant sources will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia).[30] The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, and with an additional reviewer when necessary. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.[29]

Data extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using a data extraction tool developed by the reviewers (Appendix 2). A pilot test will be conducted for the first five papers to ensure that all reviewers know how to use the tool and will use it consistently. The extracted data will include specific details about citations (i.e., title, author[s], year of publication, journal), study information (i.e., study design, country, purpose, participants, methods), intervention (i.e., content, delivery mode, intensity, timing, provider, theoretical basis such as social learning theory, whether the intervention has been used/tested before, level of prevention), outcome (e.g., self-reported depressive symptoms), and findings relevant to the review question. The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, and with an additional reviewer when necessary. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Data analysis and presentation

The analysis will focus on interventions. All reports will be read several times and assigned intervention type names based on the similarity in meaning of the content (Appendix 2). Data will be categorized according to the type, delivery mode, duration, and provider of intervention. The findings of this scoping review will be presented in diagrammatic or tabular form and will be summarized in a manner that aligns with the review question.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this scoping review.

ETHICS AND DISSEMINATION

The primary investigator will be responsible for any decisions about amending the protocol. As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

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Authors' contributions

HI, EM, KM, KK, FT, AK, MS, SA, and MK contributed to the conception and design of the scoping review protocol. HI made major contributions to the design of the original review protocol. All authors read and approved the final manuscript.

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Competing interests statement

The authors declare that they have no competing interests.

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Appendix 1: Search strategy

MEDLINE (Ovid) search terms

Search conducted in MEDLINE (Ovid) on November 22, 2022 resulting in 2046 retrievals

AB (father OR parent* OR pregnant OR partner OR spouse OR couple OR husband) OR TI (father OR parent* OR pregnant OR partner OR spouse OR couple OR husband) OR MJ (parents OR spouses)

AND

AB (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention OR trial) OR TI (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention OR trial) OR MJ (preventive health services OR preventive psychiatry OR public health nursing OR health promotion OR community mental health services OR controlled trial)

AND

AB (depression OR peri* depression OR post*-depression OR ante* depression OR depress*) OR TI (depression OR peri* depression OR post*-depression OR ante* depression OR depress*) OR MJ (depression OR postpartum)

AND limited to English

AND limited to publication after 2011

Ichushi-Web search terms

Search conducted in Ichushi-Web on November 22, 2022 resulting in 1721 retrievals

AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR TI (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR MJ (chichi OR ryoushin OR ninshin OR haigusha)

AND

AB (yobou OR kango OR kea OR rinsho-shiken) OR TI (yobou OR kango OR kea OR rinsho-shiken) OR MJ (yobouteki-hokeniryou-sahbisu OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR koushu-eisei OR kenkou-zoushin OR seishin-kango OR seishin-hoken OR rinsho-shiken)

AND

AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ (utsubyou)

AND limited to publication after 2011

Appendix 2: Data extraction instrument

Citation	Title	
	Author(s)	
	Year of publication	
	Journal	
Study information	Study design	
	Country	
	Purpose	
	Participants _Recruiting method _Response fraction	
	Methods	
Intervention	Content	
	Delivery mode	
	Intensity	
	Timing	
	Provider	
	Theoretical basis	
	Whether the intervention has	

	been used/tested before	
	Level of prevention	
Outcome		
Findings		
Reviewer's comment		

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Page2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Page4-7
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Page7
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Page7
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Page7-8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Page8-9
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Page8-9, Appendix 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Page9
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Page10
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Page9-10, Appendix 2
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	No plan of critical appraisal

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Page10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	NA
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	NA
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	NA
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	NA
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	NA
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	NA
Limitations	20	Discuss the limitations of the scoping review process.	NA
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	NA
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Page11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

BMJ Open

Preventive interventions for paternal perinatal depression: a scoping review protocol

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Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

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Abstract

Introduction: The objective of this scoping review is to map the literature describing preventive interventions for paternal perinatal depression. Depression is a common mental disorder experienced by fathers as well as mothers around childbirth. Perinatal depression has negative consequences for men, and suicide is the most serious adverse effect. Impaired father–child relationships can also result from perinatal depression, negatively impacting child health and development. Considering its severe effects, early prevention of perinatal depression is important. However, little is known about preventive interventions for paternal perinatal depression including Asian populations.

Methods and analysis: This scoping review will consider studies of preventive interventions for perinatal depression in men with a pregnant wife or partner, and new fathers (less than 1 year postpartum). Preventive intervention includes any form of intervention intended to prevent perinatal depression. Primary prevention intended to promote mental health will also be included if depression is included as an outcome. Interventions for those with a formal diagnosis of depression will be excluded. MEDLINE (EBSCOhost), CINAHL (EBSCOhost), APA PsycINFO (EBSCOhost), Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database) will be searched for published studies, and Google Scholar and ProQuest Health and Medical Collection will be searched for gray literature. Beginning in 2012, the search will include the last ten years of research. Screening and data extraction will be performed by two independent reviewers. Data will be extracted using a standardized data extraction tool and presented in diagrammatic or tabular form, accompanied by a narrative summary.

Ethics and dissemination: As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

Registration details: The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Strengths and limitations of this study

- A strength of this scoping review protocol is to include five databases and grey literature ~~is~~ to identify all relevant studies.

- Another strength is usage of the JBI method for scoping reviews, which will be used for a systematic and comprehensive approach with at least two independent reviewers to conduct the record selection and data extraction.
- A limitation of this review is to include only English and Japanese studies.

INTRODUCTION

Childbirth is a major life event for parents, requiring psychosocial adjustment. In the period surrounding childbirth, depression is one of the causes of disability not only for mothers, but also fathers. Previous meta-analyses reported that the prevalence of paternal perinatal depression (PPD) was between 8.0% and 10.4% from pregnancy to 12 months postpartum globally,[1-2] and between 8.2% and 13.2% in Japan.[3] Regarding mothers, one meta-analysis found an overall prevalence of maternal depression of 14% within the first 12 months after childbirth, ranging from 5.0% to 26.3% depending on the time of measurement and the country in which the study was conducted.[4] In Japan, the prevalence of maternal depression is reported to be between 11.5% and 15.1% from pregnancy to 12 months postpartum.[5] These prevalence statistics indicate the importance of focusing on the father as well as the mother. Furthermore, the coronavirus disease 2019 pandemic has had an impact on perinatal mental health, increasing the prevalence of maternal depression.[6] Importantly, parents' depression was reported to be correlated with their partners' depression, indicating that both parents suffer from depression simultaneously in some cases.[2]

PPD has negative consequences for the entire family system. PPD negatively impacts infant, child and adolescent development,[7] impedes social and parenting skills in fathers themselves (including child maltreatment),[8] and leads to less support for mothers. The serious adverse effects of PPD include suicide. Men with PPD were reported to be approximately 20 times more likely to die from suicide than those without any mood disorder.[9]

A qualitative synthesis of parents' experiences of postpartum depression clarified the characteristics of this complication. Fathers with PPD were characterized by the feeling of being unable to control their own lives because of low resilience, and disappointment caused by unmet support needs.[10] Thus, PPD impedes social and parental functioning in fathers.

Identifying men at elevated risk of PPD is a topic of substantial research interest. Reported risk factors of PPD include a history of mental disorders, economic instability, lack of support, stress, lack of marital satisfaction, partner's depression, and a history of infertility treatment.[11] In a qualitative synthesis of fathers' mental health during the perinatal period, identified risk factors were related with the challenges to form the fatherhood identity, and it showed an importance of support in preparing for fatherhood.[12] These risk factors could be used to assess susceptibility to depression in men, leading to early detection of PPD. Methods for screening perinatal depression, such as using

a validated tool (e.g., the Edinburgh Postnatal Depression Scale, Whooley Questions), are currently considered common practice in some countries such as the UK and Japan.[13-14] However, the screening targets are typically limited to mothers, whereas fathers are not recognized despite an equivalent need for care.

Primary prevention for PPD is an important goal for improving mental health among men. Prevention is categorized by the following three definitions: primary prevention, secondary prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before health effects occur, and includes promotion of mental health.[16] Primary prevention is distinguished from secondary prevention and tertiary prevention, the former being defined as screening to identify diseases in the earliest stages, and the latter being defined as practices aiming to manage disease post diagnosis to slow disease progression. Regarding perinatal depression, several preventive interventions are currently provided for women at increased risk of depression. For example, counseling, cognitive behavioral therapy, interpersonal psychotherapy, and group psychoeducation are common preventions in some countries.[14, 17] Because access to these interventions is generally limited to high-risk women, more diverse primary preventions targeted at all men are needed. Improving healthcare by identifying all prevention interventions for PPD, which is one of the leading causes of illness globally, could improve the mental health of men and wider society. This aim is in line with the United Nations' Sustainable Development Goals,[18] in which mental health is considered a global health need.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords. Perinatal depression has been the subject of several previous reviews, mostly focusing on women. Those reviews included: various treatments of depression including psychosocial, psychological and pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other interventions identified were: health system interventions (e.g., trained midwives' screening and management of maternal distress), physical activity interventions (e.g., group exercise), educational interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g., childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at

no known risk and those identified as at-risk for developing maternal depression have been reviewed relatively extensively. However, there is limited evidence regarding PPD.

Our search identified only one systematic review that examined interventions for PPD. The review was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review, mental health outcomes included depression, anxiety, stress, and general measures of psychological functioning. An important difference between these two reviews is that Goldstein et al. examined interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States) with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused interventions, couple-focused interventions, and family-focused interventions. Father-focused interventions referred to those exclusively taught to fathers and included: childbirth educational sessions, providing hands-on techniques such as men providing massages to their partner to reduce pain and improve the couple relationship, paternal skin-to-skin contact by placing newborns on men's bare chest for 30-minutes, and lifestyle education training (e.g., sexual dysfunction, sleep hygiene). Couple-focused interventions included: enhancement of the co-parenting relationship, a program focusing on the new parents' relationship (e.g., encourage help seeking), normalizing relationship difficulties during the transition to parenthood, and antenatal psychosocial classes dealing with issues related to becoming first time parents. Family-focused interventions included: educational group sessions to improve infant outcomes, an educational-behavioral program for parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm infants, and a psychoeducational mobile-health application for new parents. These interventions were primarily psychoeducational and targeted general population, indicating that these are considered as primary prevention to improve the mental health of men and wider society. A limitation of Goldstein et al.'s review was the inclusion of only randomized controlled trials written in English. This warrants the need for the present review because a more exhaustive search including studies with various designs written in a language other than English (e.g., Japanese) could potentially result in more diverse types of intervention for preventing PPD.

In the current report, we chose to conduct a scoping review rather than a systematic review for two reasons: 1) several systematic reviews have been conducted to identify interventions for treatment, assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2)

the only systematic review that examined interventions for preventing PPD failed to include studies with various designs published in languages other than English. By focusing on preventive interventions targeting men, and including various study types, the current review will identify the types of available evidence for preventive interventions of PPD.

The objective of this scoping review is to map the literature describing preventive interventions for PPD. This review will clarify the content and characteristics of those interventions. The findings of this review will allow health care professionals to understand what is currently being done for preventing PPD and health promotion of mental health in various contexts. This review will be useful for providing an overview of the studies of this issue that have been conducted to date, and an assessment of their findings regarding the prevention of PPD.

Review question

What preventive interventions are used for PPD?

METHODS AND ANALYSIS

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews,[28] and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for scoping reviews (PRISMA-ScR).[29] The protocol is registered with the Open Science Framework (https://osf.io/fk2qe/).

Inclusion criteria

Participants

Participants will include men whose wife or partner is pregnant and new (less than 1 year postpartum) fathers, including those at no known risk and those identified as at-risk for developing PPD. Examples of those at-risk for developing PPD include: individuals with a previous history of mental disorders not requiring current treatment, marital dissatisfaction, unplanned pregnancy, stressful life events, unemployment, and economic instability. Both biological and non-biological fathers will be included. Those with a current history of mental disorders such as formal diagnosis of depression will be excluded.

Concept

The concept of interest is preventive intervention, which includes any form of intervention intended to prevent PPD. Primary prevention intended to promote mental health will also be included as long as prevention of depression is included as an outcome. Providers of interventions may include but are not limited to healthcare professionals (e.g., nurses, midwives, physicians, psychologists, nutritionists, childbirth educators) or lay people (e.g., trained research staff, people from the community). Interventions could be delivered via face-to-face, group-based, internet-based, community-based, print-based or combined methods. The timing of interventions includes pregnancy and postpartum. Treatments for existing depression (e.g., pharmacological treatment) will be excluded.

Context

This review will consider studies of preventive interventions delivered in any setting. The settings will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and geographic locations will be included.

Types of sources

This scoping review will consider both experimental and quasi-experimental study designs, including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports, and descriptive cross-sectional studies for inclusion. Qualitative studies that include the content of preventive interventions of PPD will be considered. Studies focusing on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research, and feminist research will also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will be excluded.

Search strategy

The search strategy will aim to locate both published and unpublished studies. The literature search

will be conducted by the review team in consultation with a librarian. A three-step search strategy will be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy *(see Appendix 1*). The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The databases to be searched include MEDLINE (Ovid), CINAHL (EBSCOhost), APA PsycINFO (Ovid), the Cochrane Central Register of Controlled Trials, and Ichushi-Web (Japan's medical literature database). Sources of unpublished studies and gray literature to be searched include Google Scholar and ProQuest Health and Medical Collection. The reference list of all included sources of evidence will be screened for additional studies. Because of a lack of funding for translation, only studies published in English and Japanese will be included. The starting search date will be 2012, under the assumption that any interventions retrieved within the last 10 years could potentially be applied in the present clinical context.

Study/source of evidence selection

Following the search, all identified citations will be collated and uploaded into EndNote Basic (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will be screened by two independent reviewers for assessment against the inclusion criteria for the review. A pilot screening test of 2-3 articles will be conducted before undertaking full study selection. Potentially relevant sources will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia).[30] The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, and with an additional reviewer when necessary. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.[29]

Data extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using a data extraction tool developed by the reviewers (Appendix 2). A pilot test will be conducted for the first five papers to ensure that all reviewers know how to use the tool and will use it consistently. The extracted data will include specific details about citations (i.e., title, author[s], year of publication, journal), study information (i.e., study design, country, purpose, participants, methods), intervention (i.e., content, delivery mode, intensity, timing, provider, theoretical basis such as social learning theory, whether the intervention has been used/tested before, level of prevention), outcome (e.g., self-reported depressive symptoms), and findings relevant to the review question. The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, and with an additional reviewer when necessary. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Data analysis and presentation

The analysis will focus on interventions. All reports will be read several times and assigned intervention type names, such as antenatal education classes or counseling, based on the similarity in meaning of the content (Appendix 2). Data will be categorized according to the type, delivery mode, duration, and provider of intervention. The findings of this scoping review will be presented in diagrammatic or tabular form and will be summarized in a manner that aligns with the review question.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this scoping review.

ETHICS AND DISSEMINATION

The primary investigator will be responsible for any decisions about amending the protocol. As this study involves no human participants, approval from a human research ethics committee is not required. Findings of the scoping review will be disseminated through conference presentations and publication in a peer-reviewed journal.

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Authors' contributions

HI, EM, KM, KK, FT, AK, MS, SA, and MK contributed to the conception and design of the scoping review protocol. HI made major contributions to the design of the original review protocol. All authors read and approved the final manuscript.

Funding statement

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Competing interests statement

The authors declare that they have no competing interests.

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Appendix 1: Search strategy

MEDLINE (Ovid) search terms

Search conducted in MEDLINE (Ovid) on November 22, 2022 resulting in 2046 retrievals

AB (father OR parent* OR pregnant OR partner OR spouse OR couple OR husband) OR TI (father OR parent* OR pregnant OR partner OR spouse OR couple OR husband) OR MJ (parents OR spouses)

AND

AB (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention OR trial) OR TI (preventive intervention OR preventive nursing OR preventive care OR nursing care OR nursing intervention OR trial) OR MJ (preventive health services OR preventive psychiatry OR public health nursing OR health promotion OR community mental health services OR controlled trial)

AND

AB (depression OR peri* depression OR post*-depression OR ante* depression OR depress*) OR TI (depression OR peri* depression OR post*-depression OR ante* depression OR depress*) OR MJ (depression OR postpartum)

AND limited to English

AND limited to publication after 2011

Ichushi-Web search terms

Search conducted in Ichushi-Web on November 22, 2022 resulting in 1721 retrievals

AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR TI (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR MJ (chichi OR ryoushin OR ninshin OR haigusha)

AND

AB (yobou OR kango OR kea OR rinsho-shiken) OR TI (yobou OR kango OR kea OR rinsho-shiken) OR MJ (yobouteki-hokeniryou-sahbisu OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR koushu-eisei OR kenkou-zoushin OR seishin-kango OR seishin-hoken OR rinsho-shiken)

AND

AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ (utsubyou)

AND limited to publication after 2011

Appendix 2: Data extraction instrument

Citation	Title	
	Author(s)	
	Year of publication	
	Journal	
Study information	Study design	
	Country	
	Purpose	
	Participants _Recruiting method _Response fraction	
	Methods	
Intervention	Content	
	Delivery mode	
	Intensity	
	Timing	
	Provider	
	Theoretical basis	
	Whether the intervention has	

	been used/tested before	
	Level of prevention	
Outcome		
Findings		
Reviewer's comment		

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	Page1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	Page2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	Page4-7
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Page7
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Page7
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	Page7-8
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	Page8-9
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Page8-9, Appendix 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	Page9
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	Page10
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Page9-10, Appendix 2
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	No plan of critical appraisal

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	Page10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	NA
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	NA
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	NA
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	NA
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	NA
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	NA
Limitations	20	Discuss the limitations of the scoping review process.	NA
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	NA
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Page11

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.