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Preventive interventions for paternal perinatal depression: a scoping review protocol

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Manuscripts

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5 1 Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

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19 Abstract

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

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

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

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

44 Strengths and limitations of this study

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

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

For peer review only

55 INTRODUCTION

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

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

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

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

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5 85 countries.[14] However, the screening targets are typically limited to mothers, whereas fathers are
6 86 not recognized despite an equivalent need for care.
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9 87 Primary prevention for PPD is an important goal for improving mental health among men.
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11 88 Prevention is categorized by the following three definitions: primary prevention, secondary
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13 89 prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before
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15 90 health effects occur, and includes promotion of mental health.[16] Primary prevention is
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17 91 distinguished from secondary prevention and tertiary prevention, the former being defined as
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19 92 screening to identify diseases in the earliest stages, and the latter being defined as practices aiming
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21 93 to manage disease post diagnosis to slow disease progression. Regarding perinatal depression,
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23 94 several preventive interventions are currently provided for women at increased risk of depression.
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25 95 For example, counseling, cognitive behavioral therapy, and interpersonal psychotherapy are
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27 96 common preventions in some countries.[14, 17] Because access to these interventions is generally
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29 97 limited to high-risk women, more diverse primary preventions targeted at all men are needed.
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31 98 Improving healthcare by identifying all prevention measures for PPD, which is one of the leading
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33 99 causes of illness globally, could improve the mental health of men and wider society. This aim is in
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35 100 line with the United Nations' Sustainable Development Goals,[18] in which mental health is
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37 101 considered a global health need.
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39 102 A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI
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41 103 Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords.
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43 104 Perinatal depression has been the subject of several previous reviews, mostly focusing on women.
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45 105 Those reviews included: various treatments of depression including psychosocial, psychological and
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47 106 pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological
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49 107 interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on
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51 108 specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other
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53 109 interventions identified were: health system interventions (e.g., trained midwives' screening and
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55 110 management of maternal distress), physical activity interventions (e.g., group exercise), educational
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57 111 interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g.,
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59 112 childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at
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113 no known risk and those identified as at-risk for developing maternal depression have been
114 reviewed relatively extensively. However, there is limited evidence regarding PPD.

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5 115 Our search identified only one systematic review that examined interventions for PPD. The review
6 116 was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic
7 117 review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review,
8 118 mental health outcomes included depression, anxiety, stress, and general measures of psychological
9 119 functioning. An important difference between these two reviews is that Goldstein et al. examined
10 120 interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies
11 121 conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States)
12 122 with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused
13 123 interventions, couple-focused interventions, and family-focused interventions. Father-focused
14 124 interventions included: childbirth educational sessions, providing hands-on techniques such as
15 125 massages, paternal skin-to-skin contact, and lifestyle education training (e.g., sexual dysfunction,
16 126 sleep hygiene). Couple-focused interventions included: enhancement of the co-parenting
17 127 relationship, a program focusing on the new parents' relationship (e.g., encourage help seeking),
18 128 normalizing relationship difficulties during the transition to parenthood, and antenatal psychosocial
19 129 classes dealing with issues related to becoming first time parents. Family-focused interventions
20 130 included: educational group sessions to improve infant outcomes, an educational-behavioral
21 131 program for parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm
22 132 infants, and a psychoeducational mobile-health application for new parents. These interventions
23 133 were primarily psychoeducational and targeted general population, indicating that these are
24 134 considered as primary prevention to improve the mental health of men and wider society. A
25 135 limitation of Goldstein et al.'s review was the inclusion of only randomized controlled trials written
26 136 in English. This warrants the need for the present review because a more exhaustive search including
27 137 studies with various designs written in a language other than English (e.g., Japanese) could
28 138 potentially result in more diverse types of intervention for preventing PPD.

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46 139 In the current report, we chose to conduct a scoping review rather than a systematic review for two
47 140 reasons: 1) several systematic reviews have been conducted to identify interventions for treatment,
48 141 assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2)
49 142 the only systematic review that examined interventions for preventing PPD failed to include studies
50 143 with various designs published in languages other than English. By focusing on preventive
51 144 interventions targeting men, and including various study types, the current review will identify the
52 145 types of available evidence for preventive interventions of PPD.
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5 146 The objective of this scoping review is to map the literature describing preventive interventions for
6 147 PPD. This review will clarify the content and characteristics of those interventions. The findings of
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8 148 this review will allow health care professionals to understand what is currently being done for
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10 149 preventing PPD and health promotion of mental health in various contexts. This review will be useful
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12 150 for providing an overview of the studies of this issue that have been conducted to date, and an
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14 151 assessment of their findings regarding the prevention of PPD.

152 **Review question**

153 What preventive interventions are used for PPD?

154 **METHODS AND ANALYSIS**

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

159 **Inclusion criteria**

160 **Participants**

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

166 **Concept**

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

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5 171 educators) or lay people (e.g., trained research staff, people from the community). Interventions
6 172 could be delivered via face-to-face, group-based, internet-based, community-based, print-based or
7 173 combined methods. The timing of interventions includes pregnancy and postpartum. Treatments for
8 174 existing depression (e.g., pharmacological treatment) will be excluded.
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13 175 Context

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15 176 This review will consider studies of preventive interventions delivered in any setting. The settings
16 177 will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and
17 178 geographic locations will be included.
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22 179 Types of sources

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25 180 This scoping review will consider both experimental and quasi-experimental study designs, including
26 181 randomized controlled trials, non-randomized controlled trials, before and after studies and
27 182 interrupted time-series studies. In addition, analytical observational studies including prospective
28 183 and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be
29 184 considered for inclusion. This review will also consider descriptive observational study designs
30 185 including case series, individual case reports, and descriptive cross-sectional studies for inclusion.
31 186 Qualitative studies that include the content of preventive interventions of PPD will be considered.
32 187 Studies focusing on qualitative data including, but not limited to, designs such as phenomenology,
33 188 grounded theory, ethnography, qualitative description, action research, and feminist research will
34 189 also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will
35 190 be excluded.
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45 191 **Search strategy**

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47 192 The search strategy will aim to locate both published and unpublished studies. The literature search
48 193 will be conducted by the review team in consultation with a librarian. A three-step search strategy will
49 194 be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to
50 195 identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and
51 196 the index terms used to describe the articles were used to develop a full search strategy (*see Appendix*
52 197 *1*). The search strategy, including all identified keywords and index terms, will be adapted for each
53 198 included database and/or information source. The databases to be searched include MEDLINE
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199 (EBSCOhost), CINAHL (EBSCOhost), APA PsycINFO (EBSCOhost), the Cochrane Central Register of
200 Controlled Trials, and Ichushi-Web (Japan's medical literature database). Sources of unpublished
201 studies and gray literature to be searched include Google Scholar and ProQuest Health and Medical
202 Collection. The reference list of all included sources of evidence will be screened for additional studies.
203 Because of a lack of funding for translation, only studies published in English and Japanese will be
204 included. The starting search date will be 2011, under the assumption that any interventions retrieved
205 within the last 10 years could potentially be applied in the present clinical context.

206 **Study/source of evidence selection**

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

220 **Data extraction**

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

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5 229 extraction tool will be modified and revised as necessary during the process of extracting data from
6 230 each included evidence source. Modifications will be detailed in the scoping review. Any
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8 231 disagreements that arise between the reviewers will be resolved through discussion, and with an
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10 232 additional reviewer when necessary. If appropriate, authors of papers will be contacted to request
11 233 missing or additional data, where required.
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14 234 **Data analysis and presentation**

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17 235 The analysis will focus on interventions. All reports will be read several times and assigned
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19 236 intervention type names according to a data extraction tool (Appendix 2). Data will be categorized
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21 237 according to the type, delivery mode, duration, and provider of intervention. The findings of this
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23 238 scoping review will be presented in diagrammatic or tabular form and will be summarized in a
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25 239 manner that aligns with the review question.
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27 240 **Patient and public involvement**

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30 241 Patients or the public were not involved in the design, or conduct, or reporting, or dissemination
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32 242 plans of this scoping review.
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34 243 **ETHICS AND DISSEMINATION**

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37 244 The primary investigator will be responsible for any decisions about amending the protocol. As this
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39 245 study involves no human participants, approval from a human research ethics committee is not
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41 246 required. Findings of the scoping review will be disseminated through conference presentations and
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43 247 publication in a peer-reviewed journal.
44

45 248 **Acknowledgements**

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50
51 250 manuscript.
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53 251 **Authors' contributions**

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5 252 HI, EM, KM, KK, FT, AK, MS, SA, and MK contributed to the conception and design of the scoping
6 253 review protocol. HI made major contributions to the design of the original review protocol. All
7
8 254 authors read and approved the final manuscript.
9

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17
18 258 this review and will not have any role during its execution, analyses, interpretation of the data, or
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20 259 decision to submit results.
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22 260 **Competing interests statement**

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24
25 261 The authors declare that they have no competing interests.
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25 326 30. Munn Z, Aromataris E, Tufanaru C, et al. The development of software to support multiple
26 327 systematic review types: the Joanna Briggs Institute System for the Unified Management,
27 328 Assessment and Review of Information (JBI SUMARI). *Int J Evid Based Healthc* 2019;17(1):36–43.
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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

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5 Ichushi-Web search terms
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8 Search conducted in Ichushi-Web on May 4, 2022 resulting in 1472 retrievals
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11 AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha) OR TI (chichioya OR chichi OR ninshin
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14 OR pahtonah OR haigusha) OR MJ (chichi OR ryoushin OR ninshin OR haigusha)
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17 AND
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20 AB (yobou OR kango OR kea) OR TI (yobou OR kango OR kea) OR MJ (yobouteki-hokeniryousahbisu
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23 OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR koushu-eisei OR kenkou-zoushin OR
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26 seishin-kango OR seishin-hoken)
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29 AND
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32 AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ
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35 (utsubyou)
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38 AND limited to publication after 2011
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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 (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850.



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BMJ Open

Preventive interventions for paternal perinatal depression: a scoping review protocol

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-065126.R1
Article Type:	Protocol
Date Submitted by the Author:	23-Nov-2022
Complete List of Authors:	Iwata , Hiroko; University of Tsukuba, Faculty of Medicine Mori, Emi; Chiba University, Graduate School of Nursing Maehara, Kunie; Chiba University, Graduate School of Nursing Kimura, Kayoko; Chiba University, Graduate School of Nursing Toyama, Fusae; Chiba University, Graduate School of Nursing Kakehashi, Asana; Chiba University, Graduate School of Nursing Seki, Marika; Chiba University, Graduate School of Nursing Abe, Sayaka; Chiba University, Graduate School of Nursing Kosaka, Mai; Chiba University, Graduate School of Nursing
Primary Subject Heading:	Nursing
Secondary Subject Heading:	Mental health, Nursing
Keywords:	MENTAL HEALTH, PREVENTIVE MEDICINE, Depression & mood disorders < PSYCHIATRY, PUBLIC HEALTH

SCHOLARONE™
Manuscripts

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5 1 Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

6
7 2 Authors: Hiroko Iwata ¹, Emi Mori ², Kunie Maehara ², Kayoko Kimura ², Fusae Toyama ²,
8 3 Asana Kakehashi ², Marika Seki ², Sayaka Abe ², Mai Kosaka²

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19 7 Keywords: depression, fathers, perinatal care, preventive health services

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24 9 Word count: 2454 words (excluding title page, abstract, acknowledgements, contributions and
25 10 references)

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18 Abstract

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

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

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

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

43 Strengths and limitations of this study

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

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

For peer review only

55 INTRODUCTION

56 Childbirth is a major life event for parents, requiring psychosocial adjustment. In the period
57 surrounding childbirth, depression is one of the causes of disability not only for mothers, but also
58 fathers. Previous meta-analyses reported that the prevalence of paternal perinatal depression (PPD)
59 was between 8.0% and 10.4% from pregnancy to 12 months postpartum globally,[1-2] and between
60 8.2% and 13.2% in Japan.[3] Regarding mothers, one meta-analysis found an overall prevalence of
61 maternal depression of 14% within the first 12 months after childbirth, ranging from 5.0% to 26.3%
62 depending on the time of measurement and the country in which the study was conducted.[4] In
63 Japan, the prevalence of maternal depression is reported to be between 11.5% and 15.1% from
64 pregnancy to 12 months postpartum.[5] These prevalence statistics indicate the importance of
65 focusing on the father as well as the mother. Furthermore, the coronavirus disease 2019 pandemic
66 has had an impact on perinatal mental health, increasing the prevalence of maternal depression.[6]
67 Importantly, parents' depression was reported to be correlated with their partners' depression,
68 indicating that both parents suffer from depression simultaneously in some cases.[2]

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

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

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

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5 85 a validated tool (e.g., the Edinburgh Postnatal Depression Scale, Whooley Questions), are currently
6 86 considered common practice in some countries such as the UK and Japan.[13-14] However, the
7 87 screening targets are typically limited to mothers, whereas fathers are not recognized despite an
8 88 equivalent need for care.

11
12 89 Primary prevention for PPD is an important goal for improving mental health among men.
13 90 Prevention is categorized by the following three definitions: primary prevention, secondary
14 91 prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before
15 92 health effects occur, and includes promotion of mental health.[16] Primary prevention is
16 93 distinguished from secondary prevention and tertiary prevention, the former being defined as
17 94 screening to identify diseases in the earliest stages, and the latter being defined as practices aiming
18 95 to manage disease post diagnosis to slow disease progression. Regarding perinatal depression,
19 96 several preventive interventions are currently provided for women at increased risk of depression.
20 97 For example, counseling, cognitive behavioral therapy, and interpersonal psychotherapy, and group
21 98 psychoeducation are common preventions in some countries.[14, 17] Because access to these
22 99 interventions is generally limited to high-risk women, more diverse primary preventions targeted at
23 100 all men are needed. Improving healthcare by identifying all prevention interventions for PPD, which
24 101 is one of the leading causes of illness globally, could improve the mental health of men and wider
25 102 society. This aim is in line with the United Nations' Sustainable Development Goals,[18] in which
26 103 mental health is considered a global health need.

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31 104 A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI
32 105 Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords.
33 106 Perinatal depression has been the subject of several previous reviews, mostly focusing on women.
34 107 Those reviews included: various treatments of depression including psychosocial, psychological and
35 108 pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological
36 109 interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on
37 110 specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other
38 111 interventions identified were: health system interventions (e.g., trained midwives' screening and
39 112 management of maternal distress), physical activity interventions (e.g., group exercise), educational
40 113 interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g.,
41 114 childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at
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5 115 no known risk and those identified as at-risk for developing maternal depression have been
6 116 reviewed relatively extensively. However, there is limited evidence regarding PPD.
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9 117 Our search identified only one systematic review that examined interventions for PPD. The review
10 118 was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic
11 119 review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review,
12 120 mental health outcomes included depression, anxiety, stress, and general measures of psychological
13 121 functioning. An important difference between these two reviews is that Goldstein et al. examined
14 122 interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies
15 123 conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States)
16 124 with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused
17 125 interventions, couple-focused interventions, and family-focused interventions. Father-focused
18 126 interventions referred to those exclusively taught to fathers and included: childbirth educational
19 127 sessions, providing hands-on techniques such as men providing massages to their partner to reduce
20 128 pain and improve the couple relationship, paternal skin-to-skin contact by placing newborns on
21 129 men's bare chest for 30-minutes, and lifestyle education training (e.g., sexual dysfunction, sleep
22 130 hygiene). Couple-focused interventions included: enhancement of the co-parenting relationship, a
23 131 program focusing on the new parents' relationship (e.g., encourage help seeking), normalizing
24 132 relationship difficulties during the transition to parenthood, and antenatal psychosocial classes
25 133 dealing with issues related to becoming first time parents. Family-focused interventions included:
26 134 educational group sessions to improve infant outcomes, an educational-behavioral program for
27 135 parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm infants, and
28 136 a psychoeducational mobile-health application for new parents. These interventions were primarily
29 137 psychoeducational and targeted general population, indicating that these are considered as primary
30 138 prevention to improve the mental health of men and wider society. A limitation of Goldstein et al.'s
31 139 review was the inclusion of only randomized controlled trials written in English. This warrants the
32 140 need for the present review because a more exhaustive search including studies with various designs
33 141 written in a language other than English (e.g., Japanese) could potentially result in more diverse
34 142 types of intervention for preventing PPD.
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54 143 In the current report, we chose to conduct a scoping review rather than a systematic review for two
55 144 reasons: 1) several systematic reviews have been conducted to identify interventions for treatment,
56 145 assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2)
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5 146 the only systematic review that examined interventions for preventing PPD failed to include studies
6 147 with various designs published in languages other than English. By focusing on preventive
7 148 interventions targeting men, and including various study types, the current review will identify the
8 149 types of available evidence for preventive interventions of PPD.

11
12 150 The objective of this scoping review is to map the literature describing preventive interventions for
13 151 PPD. This review will clarify the content and characteristics of those interventions. The findings of
14 152 this review will allow health care professionals to understand what is currently being done for
15 153 preventing PPD and health promotion of mental health in various contexts. This review will be useful
16 154 for providing an overview of the studies of this issue that have been conducted to date, and an
17 155 assessment of their findings regarding the prevention of PPD.

23 24 156 **Review question**

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27 157 What preventive interventions are used for PPD?

28 29 30 158 **METHODS AND ANALYSIS**

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33 159 The proposed scoping review will be conducted in accordance with the JBI methodology for scoping
34 160 reviews,[28] and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension
35 161 for scoping reviews (PRISMA-ScR).[29] The protocol is registered with the Open Science Framework
36 162 (<https://osf.io/fk2qe/>).

37 38 39 40 41 163 **Inclusion criteria**

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45 164 Participants

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47 165 Participants will include men whose wife or partner is pregnant and new (less than 1 year
48 166 postpartum) fathers, including those at no known risk and those identified as at-risk for developing
49 167 PPD. Examples of those at-risk for developing PPD include: individuals with a previous history of
50 168 mental disorders not requiring current treatment, marital dissatisfaction, unplanned pregnancy,
51 169 stressful life events, unemployment, and economic instability. Both biological and non-biological
52 170 fathers will be included. Those with a current history of mental disorders such as formal diagnosis of
53 171 depression will be excluded.

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5 172 Concept

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7 173 The concept of interest is preventive intervention, which includes any form of intervention intended
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9 174 to prevent PPD. Primary prevention intended to promote mental health will also be included as long
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11 175 as prevention of depression is included as an outcome. Providers of interventions may include but
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13 176 are not limited to healthcare professionals (e.g., nurses, midwives, physicians, psychologists,
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15 177 nutritionists, childbirth educators) or lay people (e.g., trained research staff, people from the
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17 178 community). Interventions could be delivered via face-to-face, group-based, internet-based,
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19 179 community-based, print-based or combined methods. The timing of interventions includes
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21 180 pregnancy and postpartum. Treatments for existing depression (e.g., pharmacological treatment)
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23 181 will be excluded.

24 182 Context

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26 183 This review will consider studies of preventive interventions delivered in any setting. The settings
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28 184 will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and
29
30 185 geographic locations will be included.

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33 186 Types of sources

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36 187 This scoping review will consider both experimental and quasi-experimental study designs, including
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38 188 randomized controlled trials, non-randomized controlled trials, before and after studies and
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40 189 interrupted time-series studies. In addition, analytical observational studies including prospective
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42 190 and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be
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44 191 considered for inclusion. This review will also consider descriptive observational study designs
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46 192 including case series, individual case reports, and descriptive cross-sectional studies for inclusion.
47
48 193 Qualitative studies that include the content of preventive interventions of PPD will be considered.
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50 194 Studies focusing on qualitative data including, but not limited to, designs such as phenomenology,
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52 195 grounded theory, ethnography, qualitative description, action research, and feminist research will
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54 196 also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will
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56 197 be excluded.

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58 198 **Search strategy**

59 199 The search strategy will aim to locate both published and unpublished studies. The literature search
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5 200 will be conducted by the review team in consultation with a librarian. A three-step search strategy will
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7 201 be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to
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9 202 identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and
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11 203 the index terms used to describe the articles were used to develop a full search strategy (*see Appendix*
12
13 204 *1*). The search strategy, including all identified keywords and index terms, will be adapted for each
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15 205 included database and/or information source. The databases to be searched include MEDLINE (Ovid),
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17 206 CINAHL (EBSCOhost), APA PsycINFO (Ovid), the Cochrane Central Register of Controlled Trials, and
18
19 207 Ichushi-Web (Japan's medical literature database). Sources of unpublished studies and gray literature
20
21 208 to be searched include Google Scholar and ProQuest Health and Medical Collection. The reference list
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23 209 of all included sources of evidence will be screened for additional studies. Because of a lack of funding
24
25 210 for translation, only studies published in English and Japanese will be included. The starting search
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27 211 date will be 2012, under the assumption that any interventions retrieved within the last 10 years could
28
29 212 potentially be applied in the present clinical context.

213 **Study/source of evidence selection**

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31 214 Following the search, all identified citations will be collated and uploaded into EndNote Basic
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33 215 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will then be screened by
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35 216 two independent reviewers for assessment against the inclusion criteria for the review. A pilot
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37 217 screening test will be conducted before undertaking full study selection. Potentially relevant sources
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39 218 will be retrieved in full and their citation details imported into the JBI System for the Unified
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41 219 Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia).[30] The
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43 220 full text of selected citations will be assessed in detail against the inclusion criteria by two
44
45 221 independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet
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47 222 the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that
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49 223 arise between the reviewers at each stage of the selection process will be resolved through
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51 224 discussion, and with an additional reviewer when necessary. The results of the search and the study
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53 225 inclusion process will be reported in full in the final scoping review and presented in a Preferred
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55 226 Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-
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57 227 ScR) flow diagram.[29]

228 **Data extraction**

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5 229 Data will be extracted from papers included in the scoping review by two independent reviewers
6 230 using a data extraction tool developed by the reviewers (Appendix 2). A pilot test will be conducted
7 231 for the first five papers to ensure that all reviewers know how to use the tool and will use it
8 232 consistently. The extracted data will include specific details about citations (i.e., title, author[s], year
9 233 of publication, journal), study information (i.e., study design, country, purpose, participants,
10 234 methods), intervention (i.e., content, delivery mode, intensity, timing, provider, theoretical basis
11 235 such as social learning theory, whether the intervention has been used/tested before, level of
12 236 prevention), outcome (e.g., self-reported depressive symptoms), and findings relevant to the review
13 237 question. The draft data extraction tool will be modified and revised as necessary during the process
14 238 of extracting data from each included evidence source. Modifications will be detailed in the scoping
15 239 review. Any disagreements that arise between the reviewers will be resolved through discussion,
16 240 and with an additional reviewer when necessary. If appropriate, authors of papers will be contacted
17 241 to request missing or additional data, where required.

242 **Data analysis and presentation**

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

248 **Patient and public involvement**

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

251 **ETHICS AND DISSEMINATION**

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

256 **Acknowledgements**

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258 manuscript.

259 **Authors' contributions**

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

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266 this review and will not have any role during its execution, analyses, interpretation of the data, or
267 decision to submit results.

268 **Competing interests statement**

269 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

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5 Ichushi-Web search terms
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8 Search conducted in Ichushi-Web on November 22, 2022 resulting in 1721 retrievals
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11 AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR TI (chichioya OR
12 chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR MJ (chichi OR ryoushin OR ninshin
13 OR haigusha)
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22 AB (yobou OR kango OR kea OR rinsho-shiken) OR TI (yobou OR kango OR kea OR rinsho-shiken) OR
23 MJ (yobouteki-hokeniryousahbisu OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR
24 koushu-eisei OR kenkou-zoushin OR seishin-kango OR seishin-hoken OR rinsho-shiken)
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33 AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ
34 (utsubyou)
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39 AND limited to publication after 2011
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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	

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	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 (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: [10.7326/M18-0850](https://doi.org/10.7326/M18-0850).



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BMJ Open

Preventive interventions for paternal perinatal depression: a scoping review protocol

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2022-065126.R2
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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

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5 1 Title: Preventive interventions for paternal perinatal depression: a scoping review protocol

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7 2 Authors: Hiroko Iwata ¹, Emi Mori ², Kunie Maehara ², Kayoko Kimura ², Fusae Toyama ²,
8 3 Asana Kakehashi ², Marika Seki ², Sayaka Abe ², Mai Kosaka²

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19 7 Keywords: depression, fathers, perinatal care, preventive health services

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24 9 Word count: 2462 words (excluding title page, abstract, acknowledgements, contributions and
25 10 references)

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18 Abstract

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

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

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

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

44 Strengths and limitations of this study

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

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

For peer review only

53 INTRODUCTION

54 Childbirth is a major life event for parents, requiring psychosocial adjustment. In the period
55 surrounding childbirth, depression is one of the causes of disability not only for mothers, but also
56 fathers. Previous meta-analyses reported that the prevalence of paternal perinatal depression (PPD)
57 was between 8.0% and 10.4% from pregnancy to 12 months postpartum globally,[1-2] and between
58 8.2% and 13.2% in Japan.[3] Regarding mothers, one meta-analysis found an overall prevalence of
59 maternal depression of 14% within the first 12 months after childbirth, ranging from 5.0% to 26.3%
60 depending on the time of measurement and the country in which the study was conducted.[4] In
61 Japan, the prevalence of maternal depression is reported to be between 11.5% and 15.1% from
62 pregnancy to 12 months postpartum.[5] These prevalence statistics indicate the importance of
63 focusing on the father as well as the mother. Furthermore, the coronavirus disease 2019 pandemic
64 has had an impact on perinatal mental health, increasing the prevalence of maternal depression.[6]
65 Importantly, parents' depression was reported to be correlated with their partners' depression,
66 indicating that both parents suffer from depression simultaneously in some cases.[2]

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

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

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

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5 83 a validated tool (e.g., the Edinburgh Postnatal Depression Scale, Whooley Questions), are currently
6 84 considered common practice in some countries such as the UK and Japan.[13-14] However, the
7 85 screening targets are typically limited to mothers, whereas fathers are not recognized despite an
8 86 equivalent need for care.

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12 87 Primary prevention for PPD is an important goal for improving mental health among men.
13 88 Prevention is categorized by the following three definitions: primary prevention, secondary
14 89 prevention, and tertiary prevention.[15] Primary prevention is defined as interventions before
15 90 health effects occur, and includes promotion of mental health.[16] Primary prevention is
16 91 distinguished from secondary prevention and tertiary prevention, the former being defined as
17 92 screening to identify diseases in the earliest stages, and the latter being defined as practices aiming
18 93 to manage disease post diagnosis to slow disease progression. Regarding perinatal depression,
19 94 several preventive interventions are currently provided for women at increased risk of depression.
20 95 For example, counseling, cognitive behavioral therapy, interpersonal psychotherapy, and group
21 96 psychoeducation are common preventions in some countries.[14, 17] Because access to these
22 97 interventions is generally limited to high-risk women, more diverse primary preventions targeted at
23 98 all men are needed. Improving healthcare by identifying all prevention interventions for PPD, which
24 99 is one of the leading causes of illness globally, could improve the mental health of men and wider
25 100 society. This aim is in line with the United Nations' Sustainable Development Goals,[18] in which
26 101 mental health is considered a global health need.

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39 102 A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and the JBI
40 103 Evidence Synthesis was conducted with "depression" and "perinatal OR postpartum" as keywords.
41 104 Perinatal depression has been the subject of several previous reviews, mostly focusing on women.
42 105 Those reviews included: various treatments of depression including psychosocial, psychological and
43 106 pharmacological interventions (antidepressant treatment[19] and psychosocial and psychological
44 107 interventions[17]), antenatal psychosocial assessment,[20] hypnosis,[21] and prevention focused on
45 108 specific methods such as estrogens,[22] dietary supplements,[23] and peer support.[24] Other
46 109 interventions identified were: health system interventions (e.g., trained midwives' screening and
47 110 management of maternal distress), physical activity interventions (e.g., group exercise), educational
48 111 interventions (e.g., prenatal educational session), and several behavior-based interventions (e.g.,
49 112 childbirth experience debriefing).[25] Thus, treatment, assessment, and prevention among those at
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5 113 no known risk and those identified as at-risk for developing maternal depression have been
6 114 reviewed relatively extensively. However, there is limited evidence regarding PPD.
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9 115 Our search identified only one systematic review that examined interventions for PPD. The review
10 116 was conducted by Goldstein et al. in 2019,[26] as an update of Rominov et al.'s previous systematic
11 117 review on interventions targeting paternal perinatal mental health.[27] In Rominov et al.'s review,
12 118 mental health outcomes included depression, anxiety, stress, and general measures of psychological
13 119 functioning. An important difference between these two reviews is that Goldstein et al. examined
14 120 interventions exclusively for PPD. Goldstein et al.'s review identified interventions from 14 studies
15 121 conducted in seven countries (Australia, China, England, France, Iran, Singapore, the United States)
16 122 with sample sizes ranging from 32 to 556.[26] Interventions were categorized into father-focused
17 123 interventions, couple-focused interventions, and family-focused interventions. Father-focused
18 124 interventions referred to those exclusively taught to fathers and included: childbirth educational
19 125 sessions, providing hands-on techniques such as men providing massages to their partner to reduce
20 126 pain and improve the couple relationship, paternal skin-to-skin contact by placing newborns on
21 127 men's bare chest for 30-minutes, and lifestyle education training (e.g., sexual dysfunction, sleep
22 128 hygiene). Couple-focused interventions included: enhancement of the co-parenting relationship, a
23 129 program focusing on the new parents' relationship (e.g., encourage help seeking), normalizing
24 130 relationship difficulties during the transition to parenthood, and antenatal psychosocial classes
25 131 dealing with issues related to becoming first time parents. Family-focused interventions included:
26 132 educational group sessions to improve infant outcomes, an educational-behavioral program for
27 133 parents of infants in the Neonatal Intensive Care Unit, a program for parents of preterm infants, and
28 134 a psychoeducational mobile-health application for new parents. These interventions were primarily
29 135 psychoeducational and targeted general population, indicating that these are considered as primary
30 136 prevention to improve the mental health of men and wider society. A limitation of Goldstein et al.'s
31 137 review was the inclusion of only randomized controlled trials written in English. This warrants the
32 138 need for the present review because a more exhaustive search including studies with various designs
33 139 written in a language other than English (e.g., Japanese) could potentially result in more diverse
34 140 types of intervention for preventing PPD.
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54 141 In the current report, we chose to conduct a scoping review rather than a systematic review for two
55 142 reasons: 1) several systematic reviews have been conducted to identify interventions for treatment,
56 143 assessment, and prevention of perinatal depression, but these have mostly targeted women; and 2)
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5 144 the only systematic review that examined interventions for preventing PPD failed to include studies
6 145 with various designs published in languages other than English. By focusing on preventive
7 146 interventions targeting men, and including various study types, the current review will identify the
8 147 types of available evidence for preventive interventions of PPD.

11
12 148 The objective of this scoping review is to map the literature describing preventive interventions for
13 149 PPD. This review will clarify the content and characteristics of those interventions. The findings of
14 150 this review will allow health care professionals to understand what is currently being done for
15 151 preventing PPD and health promotion of mental health in various contexts. This review will be useful
16 152 for providing an overview of the studies of this issue that have been conducted to date, and an
17 153 assessment of their findings regarding the prevention of PPD.

14 154 **Review question**

15 155 What preventive interventions are used for PPD?

16 156 **METHODS AND ANALYSIS**

17 157 The proposed scoping review will be conducted in accordance with the JBI methodology for scoping
18 158 reviews,[28] and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension
19 159 for scoping reviews (PRISMA-ScR).[29] The protocol is registered with the Open Science Framework
20 160 (<https://osf.io/fk2qe/>).

21 161 **Inclusion criteria**

22 162 **Participants**

23 163 Participants will include men whose wife or partner is pregnant and new (less than 1 year
24 164 postpartum) fathers, including those at no known risk and those identified as at-risk for developing
25 165 PPD. Examples of those at-risk for developing PPD include: individuals with a previous history of
26 166 mental disorders not requiring current treatment, marital dissatisfaction, unplanned pregnancy,
27 167 stressful life events, unemployment, and economic instability. Both biological and non-biological
28 168 fathers will be included. Those with a current history of mental disorders such as formal diagnosis of
29 169 depression will be excluded.

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5 170 Concept

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7 171 The concept of interest is preventive intervention, which includes any form of intervention intended
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9 172 to prevent PPD. Primary prevention intended to promote mental health will also be included as long
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11 173 as prevention of depression is included as an outcome. Providers of interventions may include but
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13 174 are not limited to healthcare professionals (e.g., nurses, midwives, physicians, psychologists,
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15 175 nutritionists, childbirth educators) or lay people (e.g., trained research staff, people from the
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17 176 community). Interventions could be delivered via face-to-face, group-based, internet-based,
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19 177 community-based, print-based or combined methods. The timing of interventions includes
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21 178 pregnancy and postpartum. Treatments for existing depression (e.g., pharmacological treatment)
22
23 179 will be excluded.

24 180 Context

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26 181 This review will consider studies of preventive interventions delivered in any setting. The settings
27
28 182 will include but are not limited to a hospital, community, or men's own homes. All ethnic groups and
29
30 183 geographic locations will be included.

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33 184 Types of sources

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36 185 This scoping review will consider both experimental and quasi-experimental study designs, including
37
38 186 randomized controlled trials, non-randomized controlled trials, before and after studies and
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40 187 interrupted time-series studies. In addition, analytical observational studies including prospective
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42 188 and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be
43
44 189 considered for inclusion. This review will also consider descriptive observational study designs
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46 190 including case series, individual case reports, and descriptive cross-sectional studies for inclusion.
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48 191 Qualitative studies that include the content of preventive interventions of PPD will be considered.
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50 192 Studies focusing on qualitative data including, but not limited to, designs such as phenomenology,
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52 193 grounded theory, ethnography, qualitative description, action research, and feminist research will
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54 194 also be considered. Conference abstracts, posters, editorials, commentaries, and opinion papers will
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56 195 be excluded.

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58 196 **Search strategy**

59 197 The search strategy will aim to locate both published and unpublished studies. The literature search
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5 198 will be conducted by the review team in consultation with a librarian. A three-step search strategy will
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7 199 be used in this review. First an initial limited search of MEDLINE (EBSCOhost) was undertaken to
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9 200 identify articles on the topic. The words contained in the titles and abstracts of relevant articles, and
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11 201 the index terms used to describe the articles were used to develop a full search strategy (*see Appendix*
12
13 202 *1*). The search strategy, including all identified keywords and index terms, will be adapted for each
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15 203 included database and/or information source. The databases to be searched include MEDLINE (Ovid),
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17 204 CINAHL (EBSCOhost), APA PsycINFO (Ovid), the Cochrane Central Register of Controlled Trials, and
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19 205 Ichushi-Web (Japan's medical literature database). Sources of unpublished studies and gray literature
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21 206 to be searched include Google Scholar and ProQuest Health and Medical Collection. The reference list
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23 207 of all included sources of evidence will be screened for additional studies. Because of a lack of funding
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25 208 for translation, only studies published in English and Japanese will be included. The starting search
26
27 209 date will be 2012, under the assumption that any interventions retrieved within the last 10 years could
28
29 210 potentially be applied in the present clinical context.

211 **Study/source of evidence selection**

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31 212 Following the search, all identified citations will be collated and uploaded into EndNote Basic
32
33 213 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will be screened by two
34
35 214 independent reviewers for assessment against the inclusion criteria for the review. A pilot screening
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37 215 test of 2-3 articles will be conducted before undertaking full study selection. Potentially relevant
38
39 216 sources will be retrieved in full and their citation details imported into the JBI System for the Unified
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41 217 Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia).[30] The
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43 218 full text of selected citations will be assessed in detail against the inclusion criteria by two
44
45 219 independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet
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47 220 the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that
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49 221 arise between the reviewers at each stage of the selection process will be resolved through
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51 222 discussion, and with an additional reviewer when necessary. The results of the search and the study
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53 223 inclusion process will be reported in full in the final scoping review and presented in a Preferred
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55 224 Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-
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57 225 ScR) flow diagram.[29]

226 **Data extraction**

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5 227 Data will be extracted from papers included in the scoping review by two independent reviewers
6 228 using a data extraction tool developed by the reviewers (Appendix 2). A pilot test will be conducted
7 229 for the first five papers to ensure that all reviewers know how to use the tool and will use it
8
9 230 consistently. The extracted data will include specific details about citations (i.e., title, author[s], year
10 231 of publication, journal), study information (i.e., study design, country, purpose, participants,
11 232 methods), intervention (i.e., content, delivery mode, intensity, timing, provider, theoretical basis
12 233 such as social learning theory, whether the intervention has been used/tested before, level of
13 234 prevention), outcome (e.g., self-reported depressive symptoms), and findings relevant to the review
14 235 question. The draft data extraction tool will be modified and revised as necessary during the process
15 236 of extracting data from each included evidence source. Modifications will be detailed in the scoping
16 237 review. Any disagreements that arise between the reviewers will be resolved through discussion,
17 238 and with an additional reviewer when necessary. If appropriate, authors of papers will be contacted
18 239 to request missing or additional data, where required.

28 240 **Data analysis and presentation**

29
30 241 The analysis will focus on interventions. All reports will be read several times and assigned
31 242 intervention type names, such as antenatal education classes or counseling, based on the similarity
32 243 in meaning of the content (Appendix 2). Data will be categorized according to the type, delivery
33 244 mode, duration, and provider of intervention. The findings of this scoping review will be presented in
34 245 diagrammatic or tabular form and will be summarized in a manner that aligns with the review
35 246 question.

41 247 **Patient and public involvement**

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45 248 Patients or the public were not involved in the design, or conduct, or reporting, or dissemination
46 249 plans of this scoping review.

49 250 **ETHICS AND DISSEMINATION**

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53 251 The primary investigator will be responsible for any decisions about amending the protocol. As this
54 252 study involves no human participants, approval from a human research ethics committee is not
55 253 required. Findings of the scoping review will be disseminated through conference presentations and
56 254 publication in a peer-reviewed journal.
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255 **Acknowledgements**

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257 manuscript.

258 **Authors' contributions**

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

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266 decision to submit results.

267 **Competing interests statement**

268 The authors declare that they have no competing interests.

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300 [clinical-management-and-service-guidance-35109869806789](http://www.nice.org.uk/guidance/cg192/resources/antenatal-and-postnatal-mental-health-clinical-management-and-service-guidance-35109869806789) (accessed 18 November 2022)
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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

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5 Ichushi-Web search terms
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8 Search conducted in Ichushi-Web on November 22, 2022 resulting in 1721 retrievals
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11 AB (chichioya OR chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR TI (chichioya OR
12 chichi OR ninshin OR pahtonah OR haigusha OR fuhfu OR otto) OR MJ (chichi OR ryoushin OR ninshin
13 OR haigusha)
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19 AND
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22 AB (yobou OR kango OR kea OR rinsho-shiken) OR TI (yobou OR kango OR kea OR rinsho-shiken) OR
23 MJ (yobouteki-hokeniryousahbisu OR hokeneiseichishiki/taido/jissenn OR kenkou-kyouiku OR
24 koushu-eisei OR kenkou-zoushin OR seishin-kango OR seishin-hoken OR rinsho-shiken)
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30 AND
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33 AB (utsu OR shusanki-utsu OR sango-utsu) OR TI (utsu OR shusanki-utsu OR sango-utsu) OR MJ
34 (utsubyou)
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39 AND limited to publication after 2011
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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	

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	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 (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: [10.7326/M18-0850](https://doi.org/10.7326/M18-0850).



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