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DIGITAL INTERVENTIONS FOR THE PREVENTION OF POSTPARTUM DEPRESSION AND ANXIETY: A SCOPING REVIEW

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ABSTRACT

Background: Postpartum depression (PPD) and anxiety are significant public health concerns that affect maternal well-being and child outcomes, with higher prevalence in low- and middle-income countries and among vulnerable groups such as adolescent mothers. Although conventional preventive interventions exist, barriers including stigma, limited access to services, and time constraints often reduce their uptake. Digital health interventions have emerged as promising, scalable alternatives to address these challenges. **Objective:** This scoping review aimed to map and synthesize existing evidence on digital interventions designed to prevent postpartum depression or anxiety. **Methods:** A scoping review was conducted following Arksey and O'Malley's framework and the PRISMA-ScR guidelines. Literature searches were performed in PubMed, CINAHL, and Scopus for studies published between 2020 and 2025. Eligible studies included randomized controlled trials or quasi-experimental designs involving pregnant or postpartum women who received digitally delivered preventive interventions. Methodological quality was appraised using the Joanna Briggs Institute (JBI) checklist. **Results:** Eight studies met the inclusion criteria, all using randomized controlled designs with sample sizes ranging from 96 to 192 participants. Digital interventions included mobile applications, web-based platforms, messaging or chatbot systems, and virtual reality–based programs. Overall, these interventions demonstrated reductions in depressive and anxiety symptoms, as well as improvements in maternal self-efficacy and engagement. **Conclusion:** Digital interventions show considerable potential for preventing postpartum depression and anxiety by offering accessible, flexible, and user-centered support. Future research should prioritize cultural adaptation, sustained engagement, and integration into routine maternal healthcare services.

Keywords: postpartum depression; postpartum anxiety; digital intervention; maternal mental health; scoping review.

INTRODUCTION

Postpartum depression (PPD) and anxiety represent significant public health issues that commonly affect women during the perinatal period. Perinatal depression, encompassing both prenatal and postpartum phases, is a prevalent and serious mood disorder estimated to affect approximately one in seven individuals during pregnancy or within the first year following childbirth (Carlson et al., 2025). Globally, around 10% of pregnant women and 13% of postpartum women experience mental health disorders, predominantly depression. These figures are notably higher in low- and middle-income countries, with prevalence rates reaching 15.6% during pregnancy and 19.8% after delivery. In severe instances, maternal mental health conditions may lead to suicidal ideation or behavior (WHO, 2025). In Indonesia, early marriage remains prevalent, with a substantial number of girls marrying before the age of 18 (UNICEF, 2020). This situation contributes to the high rate of adolescent pregnancies, and subsequently, to a greater risk of postpartum depression among young mothers. A recent study conducted in West Java revealed that 35.96% of adolescent mothers experienced PPD symptoms, and identified marital dissatisfaction, low family income, and primiparity as significant predictors of postpartum depression (Nurbaeti et al., 2023; Pebryatie et al., 2022). Despite these challenges, maternal mental health disorders are treatable, and evidence-based interventions can be effectively implemented by trained non-specialist healthcare providers. Beyond the immediate impact on maternal well-being, these conditions can also have enduring implications for child outcomes, family stability, and the broader healthcare system (Bua et al., 2024; Coles & Cage, 2022).

Although conventional interventions for PPD and anxiety such as counseling and pharmacotherapy exist, many women do not access them due to stigma, lack of mental health infrastructure, and time constraints. In response to these challenges, digital health technologies have emerged as innovative and scalable alternatives. Digital interventions—delivered via mobile applications, web platforms, chatbots, or virtual reality—offer accessible, cost-effective, and flexible tools that can support maternal mental health during the perinatal period (Zhao et al., 2021; Zhou et al., 2022). Therefore, this scoping review aims to explore and map the current evidence on digital interventions designed to prevent postpartum depression or anxiety. This review will identify the types, platforms, components, target populations, and reported outcomes of these interventions, with the ultimate goal of informing clinical practice, future research, and the development of accessible maternal mental health support systems

METHOD

Design

This research uses a literature review with a scoping review design. Scoping review is a systematic method of research carried out to explore and summarize existing evidence in the scientific literature related to a particular topic (Arksey & O'Malley, 2005). The main aim of a scoping review is to provide a comprehensive understanding of the scope of a research topic by identifying and compiling a wide range of relevant literature. The present scoping review follows a five-stage methodological framework that includes (1) identifying research questions and (2) relevant studies, (3) selecting studies based on inclusion criteria, (4) mapping and interpreting data, and (5) summarizing and reporting results. Additionally, we adapted the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement accordingly (Figure 1) (Moher et al., 2009).

Search Strategy and Eligibility Criteria

A literature search will be conducted using PubMed, CINAHL, and Scopus. PubMed is chosen for its broad biomedical coverage, CINAHL for its focus on nursing, and Scopus for its interdisciplinary scope. The search will include studies from 2020 to the present.

Keywords from titles, abstracts, and index terms of initial articles will be analyzed to refine the search strategy. A second search using these terms will follow, and reference lists of selected studies will also be reviewed for additional sources. All references will be managed using Mendeley. The search will use keyword combinations: ("postpartum period") AND ("digital health" OR "digital technology")) AND ("depression postpartum" OR "anxiety"). The main research question is: What types of digital interventions have been shown to prevent postpartum depression or anxiety?

Inclusion and Exclusion Criteria

The inclusion criteria for this research are that articles are included if they meet the following criteria: (a) quantitative intervention research: quasi experiment or randomized controlled trial (b) pregnant or postpartum women; (c) aim to prevent postpartum depression or anxiety; (d) Only articles in English or Indonesian are included; (f) Publish in 2020-2025.

Quality Appraisal

The journals were evaluated using the Joanna Briggs Institute (JBI) critical appraisal method, with articles considered of good quality if they scored above 65% based on the assessment criteria and topic relevance. The JBI critical appraisal serves as a valuable tool for determining the quality, credibility, and appropriateness of published studies. Each criterion in the assessment is rated as "yes," "no," "unclear," or "not applicable." A "yes" response is awarded 1 point, while the other options receive 0 points. The total score

is then calculated to assess the article's overall suitability. Articles are deemed eligible if they achieve a score exceeding 75%, aligning with both topic relevance and the established evaluation criteria (Table 2).

Data Extraction and Analysis

Data extraction was conducted using a table that includes the author and year, country, study objective, sample size, method, type of intervention, and results to facilitate article analysis. A descriptive analysis approach was used based on this table. An additional table was also created to list detailed intervention steps, which was kept separate due to its length and used to help identify intervention types. The findings are then described and compared with previous studies, with interventions grouped by similarity (Table 1).

RESULTS

Based on the search results, 8 articles were found that met the inclusion and exclusion criteria. All of studies used A randomized controlled trial (table 1). Sample sizes ranged from 96 to 192 participants, pregnant women or postpartum women. The search results found that research was conducted in developed countries. The interventions identified by the researchers comprise web-based platforms, mobile applications, and virtual reality-based technologies. The results of the critical appraisal of 8 articles showed results above 65%.

Web-Based Interventions

A web-based intervention was implemented by Lawrence et al., (2024) through a platform named *PostpartumCare.ca*. The intervention components included educational materials, resources, support systems, and a mood/anxiety tracking feature. The platform also facilitated peer support by enabling postpartum mothers to share their experiences and emotions with one another regarding their transition into motherhood. The website was accessible for a duration of four weeks and was used freely without specific usage instructions. Study findings indicated a reduction in postpartum depression (EPDS) scores in the intervention group compared to the control group. Similarly, postpartum anxiety (PASS) scores were also significantly lower in the intervention group than in the control group.

Application Based Intervention

Based on the review findings, three articles utilized mobile applications to prevent postpartum depression and anxiety. The first article, conducted by (Chua et al., 2024), employed an application called *Parentbot – A Digital Healthcare Assistant*. The users of the application were pregnant women starting at 24 weeks of gestation until one month postpartum. The intervention components included the Education Center, Ask an Expert, Smile Center, Positivity Space, Gamification, and a Helpline. The study results indicated that the intervention group

had higher parenting self-efficacy compared to the control group at one-month postpartum, and mothers also reported lower state anxiety at three-months postpartum (mean difference = -2.21, 95% CI: -4.18 to -0.24, p = 0.03; Cohen's standardized effect size = -0.22).

The second article, conducted by (Bozkurt & Cesur, 2023) examined the use of a *mobile application called Ebe Evimde (My Home Midwife). Through this application, postpartum mothers were able to engage in scheduled video calls, receive educational support, access 24/7 midwife assistance, and benefit from continuous data monitoring. The findings revealed a decrease in the mean postpartum-specific anxiety score (PSAS) in the intervention group. The intervention was implemented from the second day postpartum until the 42nd day postpartum.*

The third article, conducted by (Osman et al., 2025), utilized an application called Smart Mama App, with a 12-week intervention period starting from the first day postpartum. The components of this intervention included physical, psychological, and informational support, along with daily reminders and various interactive features. The study results showed that symptoms of postpartum depression decreased more significantly in the intervention group compared to the control group.

Messaging Platform-Based Chat-Based Platforms

Three articles discussed *interventions* delivered through chat-based platforms. The first article, *Digital Intervention for Tokophobia via WhatsApp*, conducted by Abdelaziz et al., (2025), implemented an Internet-based Cognitive Behavioral Therapy (ICBT) program aimed at reducing fear of childbirth (tokophobia) and enhancing self-efficacy among pregnant women. The six-week program included modules on cognitive restructuring, exposure therapy, psychoeducation, relaxation techniques, and labor preparation. The study findings showed that the Fear of Childbirth (measured by the CAQ) significantly decreased in the intervention group ($p < 0.001$), while no significant change was observed in the control *group*. Additionally, self-efficacy (measured by the CBSEI) increased from 227.0 ± 58.4 to 265.3 ± 48.0 in the intervention group, indicating the potential to prevent postpartum depression and anxiety.

The second article, conducted by Zhang et al., (2023), evaluated a digital guided self-help mindfulness training delivered via *WeChat*. The intervention lasted six weeks and included weekly video lessons (10–20 minutes), daily audio exercises, homework assignments, and daily reminders. The results demonstrated a significant reduction in symptoms of postpartum depression ($p < .001$) and anxiety ($p < .001$) in the intervention group.

The third article utilized the *Woebot* chatbot application to reduce postpartum depression and anxiety (Suharwardy et al., 2023). The

intervention included psychoeducational lessons, mood tracking, mood visualization through graphs, and tools based on cognitive behavioral therapy (CBT) and interpersonal psychotherapy (IPT) for mood regulation. Findings revealed that mean scores on the Edinburgh Postnatal Depression Scale (EPDS) and Generalized Anxiety Disorder-7 (GAD-7) at six weeks were similar between the intervention and control groups and remained close to baseline.

Virtual Reality-Based Intervention

One study employed a virtual reality–based intervention consisting of mindfulness and yoga training for postpartum women over a period of eight weeks (Liu et al., 2025). The training progressed from beginner to advanced levels and was delivered through immersive virtual environments. The findings indicated that depression scores decreased by 3.49 points from T1 to T3 in the VR group ($p < 0.001$).

DISCUSSION

This scoping review identified a diverse range of digital interventions aimed at preventing postpartum depression (PPD) and anxiety, delivered through various technological platforms including mobile applications, web-based systems, messaging platforms, and virtual reality. The reviewed studies highlight the increasing role of digital health in addressing maternal mental health challenges, particularly in the perinatal and postpartum periods.

Mobile applications were the most commonly used intervention platforms. For instance, *Parentbot*, a digital healthcare assistant, was provided to mothers from 24 weeks of pregnancy to one month postpartum. This app incorporated multifaceted features—such as an education center, expert consultation, emotional support modules, and gamification—to enhance maternal self-efficacy and reduce anxiety (Chua et al., 2024a). This is further supported by a study conducted by (Seo et al., 2022), which utilized a mobile application for the self-management of postpartum depression. The study evaluated the effectiveness of the Happy Mother mobile application, developed based on cognitive behavioral therapy (CBT) principles, to assist with self-management of postpartum depressive symptoms. The intervention lasted for eight weeks, during which the experimental group used the application that featured educational content on depression, mood and sleep quality tracking, negative thought management, pleasant activity planning, and access to social support. The results demonstrated that the use of the application significantly improved health-promoting behaviors, with notable improvements in mood ($p = 0.005$) and sleep quality ($p = 0.001$).

Messaging platform–based interventions also demonstrated promising outcomes. A 6-week WhatsApp-delivered Internet-based Cognitive Behavioral Therapy (ICBT)

program targeting tokophobia (fear of childbirth) significantly reduced fear levels and improved maternal self-efficacy, potentially mitigating postpartum mental health risks. Similarly, a WeChat-based self-guided mindfulness program, which included weekly video lessons, daily audio practices, and reminders, was effective in reducing both depressive and anxiety symptoms ($p < .001$) (Zhang et al., 2023). This is supported by another study that examined a postpartum depression prevention intervention through the *Mothers and Babies 1-on-1* (MB 1-on-1) program, which was enhanced with text messages (SMS) serving as reminders for skill reinforcement, homework assignments, and self-monitoring (referred to as MB-TXT). The intervention was delivered to 28 pregnant women from diverse ethnic and socioeconomic backgrounds through a home visitation program. The findings indicated that the intervention was feasible, with 89% of participants responding to at least one self-monitoring message and rating the messages as useful and easy to understand. Participants actively engaged in responding to the messages, reflecting a high level of involvement (Barrera et al., 2021).

Web-based interventions such as *PostpartumCare.ca* provided freely accessible educational and emotional support tools over four weeks. The intervention led to a reduction in both PPD and postpartum anxiety scores compared to the control group, despite the absence of usage instructions—highlighting the potential of self-directed digital platforms when content is well-designed and intuitive (Lawrence et al., 2024b). This is further supported by another article that analyzes a web-based intervention for the prevention of postpartum depression through the *Mothers and Babies Online Course* (eMB), a digital adaptation of a face-to-face program based on cognitive behavioral therapy (CBT) consisting of eight lessons. The intervention was designed to expand access to maternal mental health education for perinatal women and healthcare providers, particularly those facing barriers to in-person services. The eMB includes seven core lessons and one concluding lesson, covering CBT components such as managing thoughts (cognitions), increasing pleasant activities, fostering positive social interactions, and incorporating guided relaxation and meditation. Participants were granted unlimited access to the entire content—including videos, texts, worksheets, and downloadable materials—which could be completed flexibly and in a non-sequential order. The lessons were rated as useful and easy to understand, particularly by perinatal participants who demonstrated higher levels of engagement compared to healthcare providers, especially in using the worksheets and downloadable materials. Although the effectiveness of the intervention in reducing depressive symptoms was not directly measured

in this study, the findings highlight its promising potential as a flexible and accessible web-based tool for postpartum depression prevention (Barrera et al., 2022).

These findings support prior evidence that digital mental health interventions can serve as accessible and cost-effective approaches for postpartum populations, especially where traditional mental health services are limited. Nevertheless, variability in outcomes underscores the importance of user engagement, cultural adaptation, and platform usability. More research is needed to establish long-term effects, cost-effectiveness, and integration into standard maternal care pathways, particularly in low-resource and adolescent populations where risk is highest.

Clinical Implications

The findings of this scoping review highlight the growing potential of digital interventions as effective strategies for preventing postpartum depression and anxiety. From a clinical perspective, digital platforms—such as mobile applications, web-based programs, and messaging systems—can be integrated into routine maternal health services to complement conventional care. These interventions offer flexible, scalable, and user-centered support that may reduce barriers related to stigma, time constraints, and limited access to mental health professionals, particularly among vulnerable populations.

Healthcare providers, including midwives, nurses, and primary care practitioners, can incorporate digital tools into antenatal and postnatal care as part of early screening, psychoeducation, and preventive mental health support. Interventions grounded in cognitive behavioral therapy, mindfulness, and self-efficacy enhancement appear especially beneficial. Furthermore, messaging-based and app-based interventions may strengthen continuous engagement, reinforce coping strategies, and promote self-monitoring between clinical visits. To maximize effectiveness, digital interventions should be culturally adapted, easy to use, and aligned with existing maternal healthcare pathways.

Study Limitations

Several limitations of this scoping review should be acknowledged. First, the review included a relatively small number of studies, all conducted in developed countries, which limits generalizability to low- and middle-income settings where the burden of postpartum mental health disorders may be higher. Second, heterogeneity in intervention types, durations, outcome measures, and follow-up periods limited direct comparison across studies. Third, most studies focused on short-term outcomes, providing limited evidence on the long-term sustainability and cost-effectiveness of digital interventions. Additionally, adolescents and high-risk populations were underrepresented in

the included studies. Future research should prioritize longitudinal designs, diverse populations, and implementation studies to support broader integration into maternal health systems.

CONCLUSION

The findings from eight randomized controlled trials indicate that digital interventions delivered via web-based platforms, mobile applications, and virtual reality technologies are promising tools for the prevention of postpartum depression and anxiety. Conducted in developed countries with sample sizes ranging from 96 to 192 participants, these studies demonstrate that such interventions are feasible and potentially effective for both pregnant and postpartum women. The critical appraisal results, all exceeding 65%, suggest acceptable methodological quality across the studies. Overall, digital interventions represent an accessible, scalable, and engaging approach to address maternal mental health needs during the perinatal period.

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Author Contributions

Yayu Handayani Syaidar Putri was solely responsible for the conception and design of the study, literature search, study selection, data extraction, quality appraisal, data synthesis, and manuscript preparation. The author reviewed and approved the final version of the manuscript and is accountable for all aspects of the work.

Conflict of Interest

The author declares that there are no conflicts of interest related to this study.

Data Availability Statement

All data supporting the findings of this scoping review are derived from publicly available published literature. Detailed information on included studies is provided within the article and its supplementary materials.

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Table 1 Data Extraction

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
1.	(CHUA et al., 2024b)	Singapore	To evaluate the effectiveness of the Parentbot - a Digital healthcare Assistant in improving parenting self-efficacy (primary outcome), stress, depression, anxiety, social support, parent–child bonding, and parenting satisfaction (secondary outcomes) among parents across the perinatal period.	118 couples	RCT	**Parentbot – A Digital Healthcare Assistant** - Parents in the intervention group had full access to Parentbot from 24 weeks of pregnancy to one month postpartum. - Researchers provided standardized video-based, face-to-face training on how to use Parentbot. - Key features included: Education Center, Ask an Expert, Smile Center, Positivity Space, Gamification, and a Helpline.	The intervention group had higher parenting self-efficacy than control group at one-month postpartum (mean difference = 1.22, 95 % CI: 0.06 to 2.39, p = 0.04; Cohen standardized effect size = 0.14), and mothers had lower state anxiety at three-months postpartum (mean difference = -2.21, 95 % CI: -4.18 to -0.24, p = 0.03; Cohen standardized effect size = -0.22).
2.	(Suharwardy et al., 2023b)	Stanford	To assess the acceptability and preliminary efficacy of a mental health chatbot for mood management in a	192 women	RCT	Woebot (Chatbot) and Usual Care. - Psychoeducational Lessons; - Mood Tracking;	At 6 weeks, the chatbot group showed a greater reduction in Patient Health Questionnaire-9 (PHQ-9) scores compared to the usual care group (mean

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
			general postpartum population.			- Mood Graph of previously entered moods; - A text-based conversation in the application; - cognitive behavioral therapy and interpersonal psychotherapy tools for mood management. -	decrease = 1.32, SD = 3.4 vs. mean decrease = 0.13, SD = 3.01). Mean scores on the Edinburgh Postnatal Depression Scale (EPDS) and Generalized Anxiety Disorder-7 (GAD-7) at 6 weeks were similar between groups and remained close to baseline. Additionally, 80% of all participants expressed comfort using a mobile app for mood management.
3.	(Bozkurt & Cesur, 2023)	Turkey	To evaluate the effect of the *Ebe Evimde* (My Home Midwife) mobile application on mothers' self-efficacy and anxiety levels during the postpartum period	120 postpartum mothers	RCT	Ebe Evimde (My Home Midwife) Mobile Application - Duration is from 2nd to 42nd postpartum day - Users is mothers in the intervention group + midwives - **Three Scheduled Online Home Visits** Conducted via video calls at Day 2–5 postpartum, Day 13–17	The **mean postpartum-specific anxiety score (PSAS)** in the intervention group decreased from **147.18 ± 14.66** to **59.50 ± 12.64**. This reduction was statistically significant (**p < 0.001**). A strong negative correlation was found between pre- and post-test anxiety scores in the intervention group (**r = –**

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
						postpartumand Day 30–42 postpartum - **Educationa Features** - **24/7 Midwive support** - **Data monitoring**	**0.878, p = 0.001**), indicating the effectiveness of the digital intervention in lowering postpartum anxiety levels. Self-efficacy scores significantly improved across multiple domains such as breastfeeding, baby care, and identifying postpartum warning signs (all **p < 0.001**).
4.	(Lawrence et al., 2024b)	Canada	To evaluate the effectiveness, usability, and user satisfaction of PostpartumCare.ca, a web-enabled psychoeducational resource for postpartum depression (PPD) and anxiety (PPA)	103 postpartum women in British Columbia	RCT	PostpartumCare.ca- Webbased Intervention group accessed *PostpartumCare.ca* for 4 weeks. Website included Education, Resources, Supports, and Mood/Anxiety Tracker sections. Participants used the website freely, without usage instructions.	**PPD (EPDS)** scores decreased from **13.88 ± 4.86 to 10.91 ± 4.59** in the intervention group (vs control: 14.54 ± 4.37 to 13.34 ± 5.44); **PPA (PASS)** scores dropped from **40.63 ± 13.81 to 32.57 ± 14.08** (vs control: 43.74 ± 15.78 to 41.08 ± 16.52); clinically significant PPD recovery was higher in the intervention group (**46.7%**) vs control (**21.2%**, χ^2 = 4.58, **p = 0.032**).

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
5.	(Abdelaziz et al., 2025)	Egypt	To evaluate the effectiveness of an Internet-based Cognitive Behavioral Therapy (ICBT) program in reducing fear of childbirth (tokophobia) and increasing self-efficacy among pregnant women	96 pregnant women	RCT	Digital intervention for tokophobia ⇨ 6-week ICBT program via WhatsApp including CBT modules: cognitive restructuring, exposure therapy, psychoeducation, relaxation, and labor preparation	**Fear of Childbirth** (CAQ): Decreased from **47.35 ± 3.35** to **33.03 ± 4.38** in the intervention group (**$p < 0.001$**); control group had no significant change. **Self-efficacy** (CBSEI): Increased from **227.0 ± 58.4** to **265.3 ± 48.0** in the intervention group (**$p < 0.001$**). Effect sizes: **$\eta^2 = 0.876$** for fear reduction, **$\eta^2 = 0.600$** for self-efficacy. Regression analysis showed significant group effect ($\beta = –0.902$ for CAQ, $\beta = 0.292$ for CBSEI).
6.	(Zhang et al., 2023a)	China	To evaluate the effectiveness of a digital guided self-help mindfulness-based intervention (GSH-MBI) in reducing maternal psychological distress and	160 pregnant women/12–20 weeks of gestation	RCT	Digital Guided Self-help Mindfulness Training During Pregnancy. Six-week digital mindfulness program via WeChat mini-program: weekly video lessons (10–20 min), daily audio exercises,	**Depression**: EPDS mean difference at T3 = –4.22 ($p < .001$), Cohen d = 0.84 **Anxiety**: GAD-7 mean difference at T3 = –2.62 ($p < .001$), Cohen d = 0.82

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
			improving infant neuropsychological development			homework, and reminder messages	**Pregnancy-related anxiety**: mean difference at T3 = –4.92 ($p < .001$), Cohen $d = 0.89$ Infant temperament at 6 weeks improved: **Quality of mood** ($\beta = 0.25$, $p = .002$),
7.	(Osman et al., 2025b)	Japan	To evaluate the effectiveness of the *Smart Mama* mobile application on postpartum depression, anxiety, and maternal-infant bonding at 12 weeks postpartum	148 postpartum women	RCT	Smart Mama App. 12-week use of *Smart Mama* app, including physical support (stretching, pelvic floor exercises), psychological support (relaxation, breathing), and informational support (text, video, photos) + daily push reminders and interactive features	**EPDS (Depression):** 9.03 ± 2.47 to 5.61 ± 3.3 (intervention), 9.01 ± 2.75 to 7.16 ± 3.1 (control), **p = 0.043.**
8.	(Liu et al., 2025)	China	To evaluate the effectiveness of a virtual reality (VR)–enhanced mindfulness and yoga intervention for	111 postpartum women	RCT	Virtual Reality–Enhanced Mindfulness and Yoga Intervention VR-enhanced 8-week program (3 sessions/week, 60 minutes each):	**EPDS (depression)**: reduced by 3.49 points from T1 to T3 in VR group ($p < 0.001$).

No.	Author(s)/Year	Country	Purpose	Population/Sample Size	Method	Intervention	Results
			reducing postpartum depression and anxiety, and its impact on stress and cognitive control			mindfulness + yoga delivered via Oculus Quest 2 in immersive virtual environments (e.g., Bolivian Salt Flats, lunar surface); progression from beginner to advanced levels	

Table 2 JBI Aprasial Tools

Author, Published Year	JBI Critical Appraisal Tool	Study Design
(C et al., 2024)	84.6% (11/13)	RCT
(Suharwardy et al., 2023b)	76.9%(10/13)	RCT
(Bozkurt & Cesur, 2023)	76.9%(10/13)	RCT
(Lawrence et al., 2024b)	69.2% (11/13)	RCT
(Abdelaziz et al., 2025)	76.9% (10/13)	RCT
(Zhang et al., 2023a)	92.3% (12/13)	RCT
(Osman et al., 2025b)	76.9% (11/13)	RCT
(Liu et al., 2025)	84.6% (11/13)	RCT

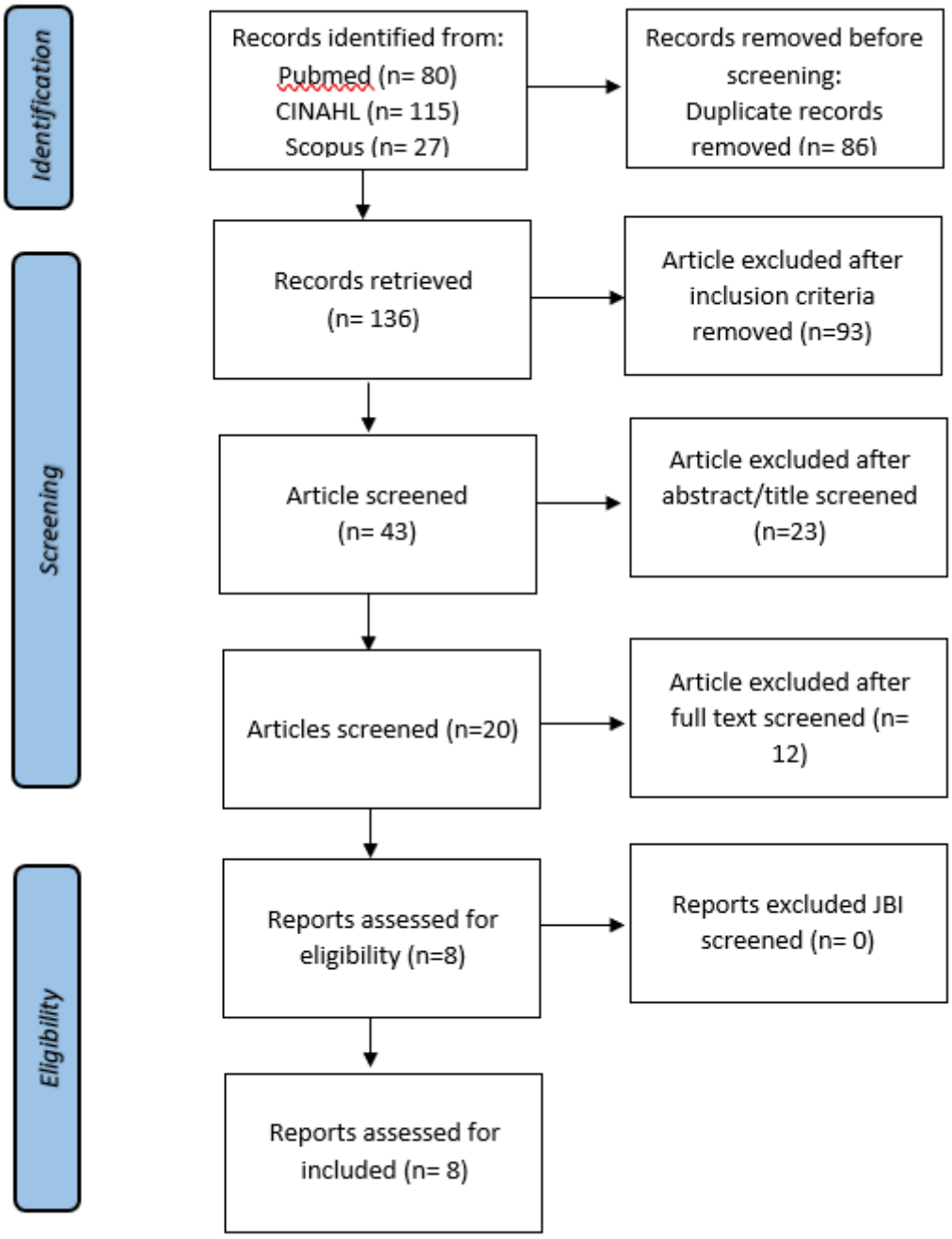

Figure 1 Prisma