

Evidence-based interventions to improve the psychological well-being of pregnant mothers: a scoping review

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Abstract. – **OBJECTIVE:** Supporting the psychological well-being of pregnant mothers is critical. The purpose of this study was to map the intervention to improve the psychological well-being of pregnant mothers.

MATERIALS AND METHODS: This research method uses a scoping review with five stages, i.e., problem identification, identification of relevant studies, study selection, data mapping, compiling, summarizing, and reporting results. A systematic search strategy was applied to check for relevant papers dated 2011 until 2021, based on Pubmed, Scopus, Web of Science, Cochrane, Science Direct, Google Scholar, and Grey Literature. PRISMA flowchart was used to select and summarize the studies, and the PCC framework was used for the search strategy. Criteria for inclusion were studies with pure experimental or quasi-experimental designs, focusing on improving women's psychological well-being or mental health, utilizing psychological well-being measures, and written in English with full-text availability.

RESULTS: From 32 articles, 56.24% used randomized control trials (RCT), 28.12% used quasi-experimental, 9.38% used experimental, and 3.13% used a clustered randomized trial and case study methods. 50% of the articles used developed countries, while the remaining 50% used developing countries. 12.50% of the articles used online or web-based for intervention, physical activities, and antenatal education, 9.38% used Cognitive Behavior Therapy (CBT), 21.85% used psychoeducation, 6.25% used mindfulness, Interpersonal Therapy (IPT), training-based, and 3.13% used psychodrama, relaxation, counseling, and happiness therapy. Intervention facilitators were engaged in 25% of the articles, no information regarding facilitators in another 25% of the articles, 21.85% engaged

midwives, 12.50% engaged psychologists and physiotherapists, 6.25% engaged health workers, the researchers did 15.63%, and community workers and lectures did the remaining 3.13%.

CONCLUSIONS: Further empirical research to improve the psychological well-being of pregnant mothers needs to be done with a psychoeducational approach considering such communications, the role of the facilitator in intervention, and the research media used.

Key Words:

Intervention, Mental health, Pregnant mothers, Psychological well-being.

Introduction

The mental health of pregnant women has become a trending issue during the 2019 novel coronavirus (COVID-19) pandemic. Several studies¹⁻⁵ have shown an increasing trend of anxiety and depression in pregnancy during the COVID-19 pandemic. For example, the prevalence of anxiety among pregnant women in Nepal during the COVID-19 pandemic was around 39.1%, and the highest anxiety experienced by mothers during the third trimester was around 44.6%¹. Research² in Canada reported a 25.7% increase in the prevalence of stress in pregnant women compared to before the pandemic. Some studies³⁻⁵ conducted in several regions of Indonesia, i.e., Madura, Malang, Jakarta, Depok, Bogor, Tangerang, and Bekasi, showed that 31.4% of pregnant women experienced severe anxiety, and 12.9% experienced severe anxiety.

Pregnant women's psychological aspect is a concern because one of the impacts of the COVID-19 pandemic is the increase in mental health disorders. These disorders can be in the form of stress, anxiety, excessive worry, and other mild psychological disorders caused by pregnancy problems and the development of the COVID-19 pandemic.

Mental health has three components, i.e., emotional well-being, psychological well-being, and social well-being⁶⁻⁸. Emotional well-being consists of happiness, life interest, and satisfaction. While psychological well-being refreshes more on individual responsibility in life, having good relationships, and fulfillment in life. Social well-being includes the positive functions of individuals who can contribute to the community environment⁹. Psychological well-being has become a concern of researchers in recent years. This is due to the hypothesis that good psychological well-being is associated with good physical health, lower chronic disease, and risk of death. It is also associated with lower health costs if we do health promotion in psychological well-being^{10,11}.

Psychological well-being is one of the components required by pregnant women. If pregnant women have good psychological well-being, it can support good pregnancy outcomes, minimize complications, and support positive behavior of pregnant women in prenatal care and preparation for childbirth¹². Literature on the psychological well-being of pregnant women in Canada has shown a consistent relationship between increasing good physical health and the psychological well-being of pregnant women and *vice versa*. Therefore, regular, low-intensity exercise can potentially be an effective, low-cost method to improve the psychological well-being of pregnant women¹³. Another study¹⁴ in Iran explained that pregnant women who have good psychological well-being would have self-image satisfaction through the dimension of self-acceptance ($r=0.40$; $p<0.001$) and personal growth ($r=0.27$; $p<0.001$). Research in Italy¹⁵ showed a significant negative correlation between the dimension of depression and psychological well-being ($r=-.43$; $p<0.001$), which explained why pregnant women who have good psychological well-being would have a reduced risk of depression. *Vice versa*, untreated maternal psychiatric conditions such as depression and anxiety during pregnancy can affect neonatal development¹⁶.

Therefore, efforts to support mental health through interventions to improve psychological well-being should be identified, especially interventions that can be integrated into midwifery

care for mothers during pregnancy. Therefore, this study aims to map the interventions carried out to improve psychological well-being that is appropriate for pregnant women.

Materials and Methods

This study uses a scoping review and grouping method with five stages, i.e., identification of research questions, identification of relevant research, selection of articles, data mapping, and compiling, summarizing, and reporting the result. In the first stage, the researcher identified the following research questions:

- (1) How do interventions improve psychological well-being?
- (2) How can community-based interventions improve the psychological well-being of pregnant women?

In the second stage, the researcher identifies the relevant research or studies to establish a framework based on population, concept, context, and source type. The population is set on women, adolescents, and pregnant women; the concept was prioritized on psychological well-being, mental health, psychological conditions, anxiety, stress, individual and community-based interventions, and education; the context was focused on developed and developing countries, and the types of research sources are published and unpublished manuscripts. Unpublished manuscripts consist of research in the form of a thesis or dissertation, grey literature from OpenGrey.eu, and the expert (adviser) recommendation.

Subsequently, inclusion and exclusion criteria were set. Inclusion criteria were defined as follows: (1) pure experimental or quasi-experimental design research, (2) focus on improving individual and women's psychological well-being or mental health, (3) research was conducted between 2011 and 2021, (4) using psychological well-being measure tools such as psychological well-being scale by Ryff, The Warwick-Edinburgh Mental Well-being Scale (WEMWBS), World Health Organization-5 (WHO-5), or Mental Health Continuum Short Form (MHC-SF) (5) article is written in English and can be downloaded in full text. Exclusion criteria were defined as follows: (1) the articles inappropriate with the Population, Concept, and Context (PCC) framework, and (2) duplication articles.

In the third stage, the researcher conducted an article selection. The article selection was made using the Preferred Reporting Items for

Systematic Reviews and Meta-Analyses (PRISMA) flowchart^{17,18} as follows:

In the fourth stage, researchers conducted data mapping by sorting and describing the selection result in tabular form. The table is grouped by author's name, publication year, intervention, intervention duration, study design, facilitators, country, number of participants, and results. Finally, in the fifth stage, the researcher compiles, and summarizes. Firstly, a descriptive numerical analysis included the number of articles, year of publication, and type of study. Secondly, strengths and weaknesses in the literature were identified through a thematic analysis of the studies included in the report. Thirdly, review the findings of the implications of future research, practice, and policies, which will be discussed in the results and discussion section¹⁷.

Search Strategy

The research team consulted an experienced research librarian to develop search terms for the scoping review. Seven databases were searched, i.e., Pubmed, Scopus, Web of Science, Cochrane, Science Direct, Google Scholar, and Grey Literature. Articles were published between January 2011 and September 2021. The search resulted in a total of 2,156 studies. Duplicates were identified using Rayaan, an online tool, and confirmed by a review team member, leaving 110 unique articles. Subsequently, the methods sections of the 78 articles were examined. Finally, one reviewer screened study abstracts for eligibility based on inclusion/exclusion criteria, and if undecided, the respective reviewer consulted the research team to reach a consensus. In the end, there were 32 articles included.

Data Extraction

The following were extracted from the references: year of study, type of intervention, duration, study design, facilitator, country, participants, and the result. The first author extracted and charted these data independently using a table approved and tested by the research team; a research assistant checked data validity and accuracy.

Results

This study identified 32 articles that conducted experimental studies or randomized controlled trials that used some interventions to improve psychological well-being in pregnant mothers, which are described as follows (Table I, [Supplementary Table I](#)).

Of 32 articles that were included, 56.24% used Randomized Control Trials (RCT), 28.12% used quasi-experimental, 9.38% used experimental, 3.13% used clustered randomized trials, and case study methods. 50% of the articles used developed countries, while the remaining 50% used developing countries. 12.50% of the articles used online or web-based for intervention, physical activities, and antenatal education, 9.38% used Cognitive Behavior Therapy (CBT), 21.85% used psychoeducation, 6.25% used mindfulness, Interpersonal Therapy (IPT), training-based, and 3.13% used psychodrama, relaxation, counseling, and happiness therapy. Intervention facilitators were engaged in 25% of the articles, no information regarding facilitator in another 25% of the

Table I. Characteristics of the articles.

Variable	Frequency	Percentage (%)
Method		
RCT	18	56.24
Quasi experiment	9	28.12
Experiment	3	9.38
Clustered randomized controlled trial	1	3.13
Case study	1	3.13
Country		
Developed country	16	50.00
Developing country	16	50.00
Intervention		
CBT	3	9.38
Psychoeducation	7	21.85
Antenatal education	4	12.50
Physical activities	4	12.50
Mindfulness	2	6.25
IPT	2	6.25
Happiness training	1	3.13
Psychodrama	1	3.13
Online based	4	12.50
Training based	2	6.25
Relaxation	1	3.13
Counseling	1	3.13
Facilitator		
Psychologist	4	12.50
Midwife	7	21.85
Health worker/group	2	6.25
Community worker	1	3.13
Physiotherapist	4	12.50
Researcher	5	15.63
Lecturer	1	3.13
No information	8	25.00
Duration		
≥6 weeks		
13	40.63	
<6 weeks	19	59.34

RCT: Randomized Control Trial; CBT: Cognitive Behaviour Therapy; IPT: Interpersonal Therapy.

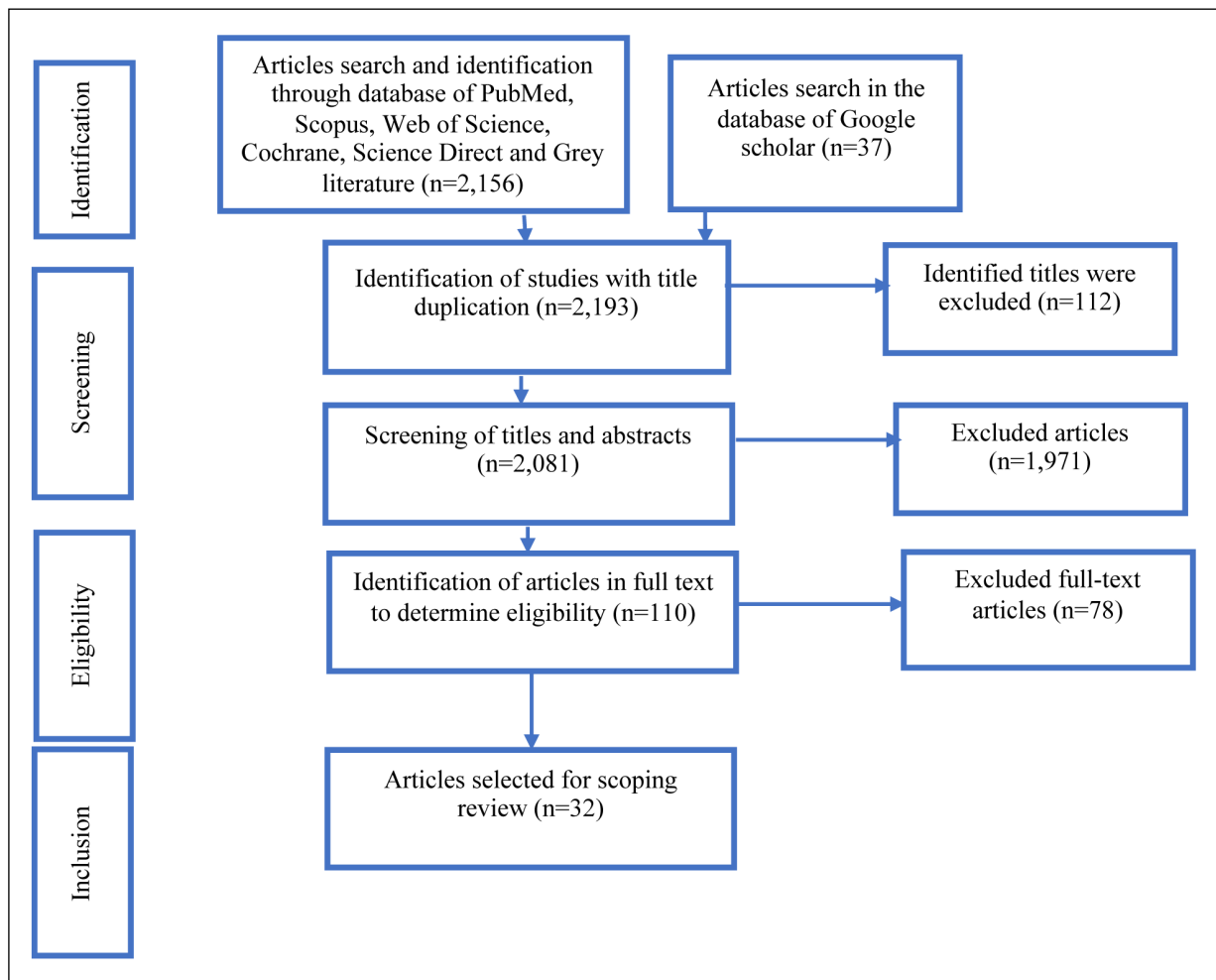


Figure 1. PRISMA flowchart.

articles, 21.85% engaged midwives, 12.50% engaged psychologists and physiotherapists, 6.25% engaged health workers, 15.63% were done by the researchers, and the remaining 3.13% were done by community workers and lecturers (Figure 1).

Four studies explain no differences between the intervention group and the control group in the psychological well-being of pregnant mothers. The intervention was exercised in groups with supervision, physical activities, and CBT. Based on question number two, “How can community-based interventions improve the psychological well-being of pregnant mothers?”, the interventions that improve the psychological well-being of pregnant mothers were IPT, CBT, self-help with web-based, psychoeducation, self-efficacy training-based, mindfulness, antenatal education, preparation childbirth training, happiness training, traditional physical activities, and relaxation, and hope therapy.

Discussion

This scoping review was conducted to obtain an update on the latest knowledge [specifically from the last 10 years (2011-2021)] regarding interventions to improve the psychological well-being of pregnant mothers. The result shows that 12.50% of the studies used online or web-based intervention. Online-based intervention through a website to improve psychological well-being has been developed since 2013. This intervention has the advantage of being accessible by mothers, and they can study by themselves at home and can access the materials and exercises without having to attend face-to-face classes or meet with facilitators. Online-based interventions may offer the most suitable and effective strategy for reaching large target groups. The web-based interventions have an attractive design and are equipped with a simple game that can stimulate engagement and

persuasive elements for the clients¹⁹. However, the disadvantages of this intervention are minimal monitoring, requiring extra effort from the mothers to be disciplined, and requiring assistive devices in the form of a computer or mobile phone that can be connected to the internet network. This intervention is very unlikely to be carried out in areas with minimal internet connection and on mothers without a computer or mobile phone.

The following intervention was CBT, which 9.38% of the studies used. This intervention has been widely carried out and has given positive results in reducing anxiety²⁰, and depression²¹ and changing negative thoughts or behaviors into positive reviews and behaviors²². This intervention can help pregnant mothers manage their problems and change their thinking processes and behaviours²³. A study²⁴ in Pakistan showed that CBT-based psychoeducation delivered by community workers was very effective in the areas that were poor and had minimal access to mental health services.

The articles review found that 12.50% of the studies used physical activities as the intervention, and regular physical exercise was associated with better physical and mental health. Some recent studies^{13,24} have found that physical activities during pregnancy can lower the risk of hypertensive complications, fewer symptoms of nausea, vomiting, low back pain, and fewer depressive symptoms. This intervention was significant to increase the physical health of pregnant mothers and improve psychological conditions, such as decreasing sadness, hopelessness, anxiety, and the incidence of antenatal depression. If pregnant mothers enjoy exercise, it positively affects their psychological state and reduces the risk of psychological distress in pregnant women²⁵. Studies²⁶ in Spain explain that the respondents with a high score on physical activities have high levels of intrinsic motivation, while those with high levels of intrinsic motivation also have high scores in psychological well-being.

The next intervention to improve psychological well-being was psychoeducation (21.85%) by providing simple psychological-based health information and education to pregnant women, which aims to help pregnant women understand the physical and psychosocial aspects of the problems they face, as well as the steps that need to be taken when experiencing mental health problems²⁷. Psychoeducation topics which were covered in the reviewed articles were health in pregnancy, delivery and breathing exercises, how to decrease anxiety, how to increase mothers' self-efficacy,

how to control mothers' emotions, hypnobirthing, psycho prophylaxis, how to get a comfortable position, relaxation, strengthen the connection between mind and body, recognize and remove obstacles for mental progress and maturation, baby care, postpartum period, and breastfeeding preparation. In addition, psychoeducation can improve psychological well-being because of the integration of psychological and physical aspects to address their knowledge, attitude, and behavior. Psychoeducation can improve psychological well-being because they integrate cognitive improvement, behavior change, communication, and self-help training. Pregnant mothers who have good behavior tend to have good psychological well-being^{28,29}. Based on the literature review, this psychoeducational intervention can be carried out in a class of pregnant women that is developed in the community setting and it can be delivered by a midwife and integrated into midwifery care, both individually and in groups.

Based on the literature review, another 12.50% of the interventions used antenatal education. This education is very similar to psychoeducational interventions. However, it is not only focusing on the psychological aspects of pregnant women, but also it is in balance with health information from the physical aspect. Health education found in this scoping review consists of information about birth preparation, practical training in breathing, relaxation, massage techniques and special exercise, nutrition during pregnancy and the postpartum period, physiological and psychological changes during pregnancy and coping with these changes, the introduction of mechanisms of labor and birth in adequate detail, discussion of feelings about childbirth, discussion of strategies to deal with the fear of childbirth, coping techniques for labor pain (breathing and relaxation exercises, labor positions, massage, etc.). Antenatal education can improve pregnant mothers' psychological well-being thanks to the knowledge transferred to them, which can increase their confidence and preparation for childbirth. The facilitator who gives the education also takes an important role in leading the discussion in groups³⁰.

Another intervention used to improve psychological well-being was mindfulness (6.25%). Mindfulness refers to a process that cultivates a mental state of awareness and acceptance of present-moment experiences, including one's current sensations, thoughts, bodily states, and environment³¹. In addition to inducing states of relaxation, mindfulness emphasizes not getting caught up in emotional

reactions and has been shown to aid in affect regulation by moderating emotional reactivity and speeding up recovery from unpleasant emotional experiences^{32,33}. However, this intervention needs to be delivered by an expert (a psychologist) or someone trained to provide mindfulness techniques.

This review also found that 6.25% of the studies used IPT as the intervention. IPT is one of the most effective psychosocial interventions for antenatal and postnatal depression. IPT is based on interpersonal theories and the view that social disruptions increase individual risk of depression. It was designed to modify relationships or the experience of relationships by focusing on four main interpersonal issues, i.e., interpersonal disputes, interpersonal deficits, role transitions, and grief³⁴. The weakness of this intervention is that it requires training of facilitators and requires experts to implement IPT intervention. In the article, it is explained that IPT conveyed the consequences of poor and effective communications, discussed interpersonal problem areas of role transitions and disputes in childcare, applied interpersonal techniques in role-play, practiced specific communication and conflict management skills, such as effective listening, identification of common goals, and expressing concerns in an assertive manner and non-threatening ways³⁴⁻³⁶.

The remaining 3.13% of the studies used psychodrama, relaxation, training-based, counseling, and happiness therapy. This intervention aims to make education more engaging and enjoyable for pregnant women. Most interventions were delivered by a midwife (21.85%), although 25% of articles did not mention a facilitator. This is supported by the role of midwives in the community who serve maternal and child health care. The duration of most interventions was less than six weeks. This was associated with the process of preparing interventions based on the literature. Therefore, allocate appropriate time to engage pregnant mothers and develop collaborative relationship processes to improve health and psychological well-being is essential. It was also important to consider the broader time dimensions of interventions. Over time, for instance, pregnant mothers in collaborative processes can develop trust with each other and a sense of their roles, as well as learn together how to engage in productive dialogue when intervention is being carried out³⁷.

Community-based interventions by such as IPT, CBT, psychoeducation, self-efficacy training-based, mindfulness, antena-

tal education, preparation childbirth training, happiness training, traditional physical activities and relaxation, and hope therapy have an impact on improving psychological well-being because encourage care between other members of the group, they can have interactions of togetherness which stimulate the same feeling, sometimes they can share their anxiety, worries, and obstacle during pregnancy, they can through learning process how to do the interventions together. Moreover, the session is equipped with a demonstration and role play so pregnant mothers have more comprehension of the interventions³⁸⁻⁴⁰.

Almost all interventions which give impact psychological well-being support psychological aspects in pregnant mothers such as self-efficacy, self-esteem, self-control, acceptance of pregnancy, training on reducing anxiety, managing stress, and knowing about sign symptoms of depression. Almost all promote positive psychology, boost their new maternal role, reduce fear, and increase their gratitude. Some of the studies give personal counseling if they find special needs in the respondent. Therefore, pregnant mothers' psychological well-being should address six dimensions: self-acceptance, positive relationships, autonomy, environmental mastery, purpose in life, and personal growth⁴¹.

Limitations

This study has limitations: there was no assessment of bias in the included studies. The analysis was broad rather than in-depth, and it did not address imprecision that can lead to Type I and Type II errors.

Conclusions

Further empirical research to improve the psychological well-being of pregnant mothers needs to be done with a psychoeducational approach by considering such communication aspects, the role of the facilitator in intervention, and the research media used. Delivering intervention by psychoeducation in a group antenatal class seems to be a promising option to improve the psychological well-being of pregnant mothers and can be integrated into midwifery care in a community setting. Health workers who provide health services during pregnancy need to consider the psychological well-being of the mother in a community setting to reach the prominent number

of pregnant mothers. Our result can be used as a guide for a systematic and structured intervention to improve the psychological well-being of pregnant mothers in community settings.

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Authors' Contributions

LMW conceptualized, designed, analyzed, and prepared the manuscript. RD, SP, YA, and KAD, as the counsel in the conducted study, developed the analytical framework of data and complemented the manuscript.

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Conflicts of Interest

The authors declare no potential conflicts of interest concerning this research, authorship, and/or publication.

Data Availability

Data and information used as study materials were from the original study conducted by the corresponding author.

Informed Consent and Ethics Approval

Not applicable.

References

- 1) Safi-Keykaleh M, Aliakbari F, Safarpour H, Safari M, Tahernejad A, Sheikhbardsiri H, Sahebi A. Prevalence of postpartum depression in women amid the COVID-19 pandemic: A systematic review and meta-analysis. *Int J Gynaecol Obstet* 2022; 157: 240-247.
- 2) Davenport MH, Meyer S, Meah VL, Strynadka MC, Khurana R. Moms Are Not OK: COVID-19 and Maternal Mental Health. *Front Glob Womens Health* 2020; 1: 1.
- 3) Zainiyah Z, Susanti E. Anxiety in Pregnant Women During Coronavirus (COVID-19) Pandemic in East Java, Indonesia. *Majalah Kedokteran Bandung* 2020; 52: 149-153.
- 4) Nurriska RH, Nurdiantami Y, Makkiyah FA. Psychological outcomes of the COVID-19 pandemic among pregnant women in Indonesia: a cross-sectional study. *Osong Public Health Res Perspect* 2021; 12: 80-87.
- 5) Viandika N, Septiasari RM. Anxiety in Pregnant Women During Pandemic Covid-19. *JKJ* 2021; 9: 135-142.
- 6) Galderisi S, Heinz A, Kastrup M, Beezhold J, Sartorius N. Toward a new definition of mental health. *World Psychiatry* 2015; 14: 231-233.
- 7) Johal SK, Pooja M. Relationship between Mental Health and Psychological Well Being of Prospective Female Teachers. *IOSR-JRME* 2016; 6: 01-06.
- 8) Afsana SA. Study of Mental Health and Psychological Well-Being among Teachers and Lecturers. *IJIP* 2016; 3: 1-7.
- 9) Santana CLA. mhGAP Intervention guide for mental, neurological and substance use disorders in non-specialized health settings: version 2.0. *J Bras Psiquiatr* 2018; 67: 208-209.
- 10) Trudel-Fitzgerald C, Kubzansky LD, VanderWeele TJ. A review of psychological well-being and mortality risk: Are all dimensions of psychological well-being equal? *Measuring Well-Being: Interdisciplinary Perspectives from the Social Sciences and the Humanities*. Oxford University Press pp. 136-187.
- 11) Napoletano SG, Napoletano G. Peripartum psychiatric disorders. *Eur Rev Med Pharmacol Sci* 2022; 26: 3058-3060.
- 12) Rezaee R, Framarzi M. Predictors of mental health during pregnancy. *Iran J Nurs Midwifery Res* 2014; 19: S45-50.
- 13) Da Costa D, Rippen N, Dritsa M, Ring A. Self-reported leisure-time physical activity during pregnancy and relationship to psychological well-being. *J Psychosom Obstet Gynaecol* 2003; 24: 111-119.
- 14) Fahami F, Amini-Abchuyeh M, Aghaei A. The Relationship between Psychological Wellbeing and Body Image in Pregnant Women. *Iran J Nurs Midwifery Res* 2018; 23: 167-171.
- 15) Bassi M, Delle Fave A, Cetin I, Melchiorri E, Pozzo M, Vescovelli F, Ruini C. Psychological well-being and depression from pregnancy to postpartum among primiparous and multiparous women. *J Reprod Infant Psychol* 2017; 35: 183-195.
- 16) Napoletano S, Di Caro G, Napoletano G. Psychiatric risk factors in peripartum: the need for targeted approaches. *Eur Rev Med Pharmacol Sci* 2022; 26: 3058-3060.
- 17) Peters M, Godfrey CM, Mcinerney P, Soares, CB. Methodology for JBI Scoping Reviews. 2015. In book: *The Joanna Briggs Institute Reviewers' Manual 2015* (pp.1-24). Available at: <https://www.researchgate.net/publication/294736492>.

- 18) Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MDJ, Horsley T, Weeks L, Hempel S, Akl EA, Chang C, McGowan J, Stewart L, Hartling L, Aldcroft A, Wilson MG, Garritty C, Lewin S, Godfrey CM, Macdonald MT, Langlois EV, Soares-Weiser K, Moriarty J, Clifford T, Tunçalp Ö, Straus SE. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018; 169: 467-473.
- 19) Bolier L, Haverman M, Kramer J, Westerhof GJ, Riper H, Walburg JA, Boon B, Bohlmeijer E. An Internet-based intervention to promote mental fitness for mildly depressed adults: randomized controlled trial. *J Med Internet Res* 2013; 15: e200.
- 20) Lopez-Gomez I, Chaves C, Hervas G, Vazquez C. Comparing the acceptability of a positive psychology intervention versus a cognitive behavioural therapy for clinical depression. *Clin Psychol Psychother* 2017; 24: 1029-1039.
- 21) Green LS, Oades LG, Grant AM. Cognitive-behavioral, solution-focused life coaching: Enhancing goal striving, well-being, and hope. *J Posit Psychol* 2006; 1: 142-149.
- 22) Atif N, Nazir H, Zafar S, Chaudhri R, Atiq M, Mullan LC, Rowther AA, Malik A, Surkan PJ, Rahman A. Development of a Psychological Intervention to Address Anxiety During Pregnancy in a Low-Income Country. *Front Psychiatry* 2019; 10: 927.
- 23) Bittner A, Peukert J, Zimmermann C, Junge-Hoffmeister J, Parker LS, Stöbel-Richter Y, Weidner K. Early intervention in pregnant women with elevated anxiety and depressive symptoms: efficacy of a cognitive-behavioral group program. *J Perinat Neonatal Nurs* 2014; 28: 185-195.
- 24) Evenson KR, Barakat R, Brown WJ, Dargent-Molina P, Haruna M, Mikkelsen EM, Mottola MF, Owe KM, Rousham EK, Yeo S. Guidelines for Physical Activity during Pregnancy: Comparisons From Around the World. *Am J Lifestyle Med* 2014; 8: 102-121.
- 25) Nasution LA, Darmawati I. Psychological effects of exercise for pregnant women: a systematic review. *Eurasia J Biosci* 2020; 14. Available at: <https://www.researchgate.net/publication/348728910>.
- 26) Granero-Jiménez J, López-Rodríguez MM, Dobarrío-Sanz I, Cortés-Rodríguez AE. Influence of Physical Exercise on Psychological Well-Being of Young Adults: A Quantitative Study. *Int J Environ Res Public Health* 2022; 19: 4282.
- 27) Park S, Kim J, Oh J, Ahn S. Effects of psychoeducation on the mental health and relationships of pregnant couples: A systemic review and meta-analysis. *Int J Nurs Stud* 2020; 104: 103439.
- 28) Steardo L, Caivano V, Sampogna G, Di Cerbo A, Fico G, Zinno F, Del Vecchio V, Giallonardo V, Torella M, Luciano M, Fiorillo A. Psychoeducational Intervention for Perinatal Depression: Study Protocol of a Randomized Controlled Trial. *Front Psychiatry* 2019; 10: 55.
- 29) Azogh M, Shakiba M, Navidian A. The Effect of Psychoeducation on Anxiety in Subsequent Pregnancy Following Stillbirth: A Quasi-Experimental Study. *J Family Reprod Health* 2018; 12: 42-50.
- 30) Serçekuş P, Başkale H. Effects of antenatal education on fear of childbirth, maternal self-efficacy and parental attachment. *Midwifery* 2016; 34: 166-172.
- 31) Zemestani M, Fazeli Nikoo Z. Effectiveness of mindfulness-based cognitive therapy for comorbid depression and anxiety in pregnancy: a randomized controlled trial. *Arch Womens Ment Health* 2020; 23: 207-214.
- 32) Patel A, Sharma PSVN, Kumar P. Application of Mindfulness-Based Psychological Interventions in Infertility. *J Hum Reprod Sci* 2020; 13: 3-21.
- 33) Josefsson T, Lindwall M, Broberg AG. The Effects of a Short-term Mindfulness Based Intervention on Self-reported Mindfulness, Decentering, Executive Attention, Psychological Health, and Coping Style: Examining Unique Mindfulness Effects and Mediators. *Mindfulness (N Y)* 2014; 5: 18-35.
- 34) Bright KS, Charrois EM, Mughal MK, Wajid A, McNeil D, Stuart S, Hayden KA, Kingston D. Interpersonal Psychotherapy to Reduce Psychological Distress in Perinatal Women: A Systematic Review. *Int J Environ Res Public Health* 2020; 17: 8421.
- 35) Leung SS, Lam TH. Group antenatal intervention to reduce perinatal stress and depressive symptoms related to intergenerational conflicts: a randomized controlled trial. *Int J Nurs Stud* 2012; 49: 1391-1402.
- 36) Zlotnick C, Johnson SL, Miller IW, Pearlstein T, Howard M. Postpartum depression in women receiving public assistance: pilot study of an interpersonal-therapy-oriented group intervention. *Am J Psychiatry* 2001; 158: 638-640.
- 37) Smith HJ, Portela AG, Marston C. Improving implementation of health promotion interventions for maternal and newborn health. *BMC Pregnancy Childbirth* 2017; 17: 280.
- 38) Rouhe H. Fear of childbirth Group intervention for treating fear of childbirth View project [Academic Dissertation]. Helsinki: Helsinki University Hospital Finlandia; 2015.
- 39) Fenwick J, Toohill J, Gamble J, Creedy DK, Buist A, Turkstra E, Sneddon A, Scuffham PA, Ryding EL. Effects of a midwife psycho-education intervention to reduce childbirth fear on women's birth outcomes and postpartum psychological wellbeing. *BMC Pregnancy Childbirth* 2015; 15: 284.
- 40) Inci F, Gokce Isbir G, Tanhan F. The Turkish version of perceived support and control in birth scale. *J Psychosom Obstet Gynaecol* 2015; 36: 103-113.
- 41) Miguel H, Vasconcelos-Raposo J, Brust R. Factors Associated with Positive Mental Health in a Portuguese Community Sample: A Look Through the Lens of Ryff's Psychological Well-Being Model. *Essential Notes in Psychiatry* 2012; 495-514.