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EFFECTIVENESS OF PRENATAL YOGA ON PREGNANCY ANXIETY AND DEPRESSION: A SYSTEMATIC REVIEW

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ABSTRACT

Background: *Physiological and psychological changes during pregnancy process can cause discomfort to pregnant women. During pregnancy, pregnant women from developed and developing countries tend to have an increase in anxiety and symptoms of depression. If not properly managed, those situations can adversely affect maternal and infant health. This systematic review is to explore the effectiveness of yoga in order to reduce anxiety and depression in pregnant women.*

Methods: *This systematic review was based on Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA Protocol). Publication screening was carried out by filtering the 2009-2019 English and Indonesian articles from electronic data sources, namely PubMed, PsycINFO, Google Scholar and Science Direct. The keywords used in the literature searching were 'anxiety', 'depression in pregnancy', 'prenatal yoga', 'yoga in pregnancy', 'pregnancy', and 'complementary and alternative medicine in pregnancy'.*

Results: *The search identified 368 record, of which 8 articles were included in this study. Studies regarding to the effect of yoga in pregnant women has been shown to reduce anxiety scores, pregnancy depression, anger, sleep disorders, lower maternal cortisol hormones, improve maternal immunity and neonatal outcomes.*

Conclusion: *Yoga could be applied as a complementary therapy that was easy, low cost, and useful for reducing anxiety and depression in pregnant women.*

Keywords: *Anxiety, yoga in pregnancy, depression in pregnancy, prenatal yoga*

INTRODUCTION

Pregnancy is a continuous process from conception until the beginning of labor. Physiological and psychological changes occur during the pregnancy process [1]. These changes can cause discomfort to pregnant women such as dyspnea, insomnia, gingivitis, and epulis, frequent urination, pressure and perineal discomfort, back pain, constipation, varicose veins, fatigue, Braxton hicks contractions, leg cramps, oedema ankle, and mood changes and increased anxiety [2]. In developed countries such as Sweden, 10% pregnant women experienced anxiety, 20% experienced depression during pregnancy [3], 6-10% experienced fear of childbirth [4] and 12-16% experienced postpartum depression [5]. In Indonesia, almost 50% of pregnant women experienced depression symptoms [6].

Anxiety and depression during pregnancy could cause physical and psychological disorders, namely hypertension, preeclampsia, and Post Traumatic Stress Disorder (PTSD). Complications that occurred could increase the incidence of Caesarean Section, Low Birth Weight (LBW), premature delivery [7], cognitive, behavioral, and emotional problems in children [8] and had the opportunity to increase 3 times the fear of childbirth and 1.7 times increased the incidence of Caesarean Section [9]. Depression in pregnant women increased cortisol levels and serotonin levels and low dopamine levels could cause not

optimal pregnancy outcomes. If not properly treated, this situation can immediately lead to anxiety until the postpartum period [10].

The National Institutes of Health defines complementary and alternative therapies as a group of medical and health care, practice, and alternative or complementary therapies that can be used together with conventional treatments. Yoga is one of the complementary therapies included in the practice of mind and body that are very popularly used by adults [11]. More than a third of adults in the United States used some form of complementary therapy and body mind practices, including deep breathing, meditation and yoga exercises to improve health and well-being [12]. Yoga can unite mind and body and has been used to reduce stress and discomfort thousands of years ago [13], it is easy to do, low cost, and very beneficial for physical and psychological health [14]. The positive impacts of yoga were that it could reduce stress, improve quality of life, self-efficacy in labor, interpersonal relationships, autonomic nervous system function, provide comfort, reduce or decrease labor pain and shorten the duration of labor [15]. This study aims to analyze the effectiveness of yoga on anxiety and depression in pregnant women. Thus, we can apply cost-effective complementary therapies and find alternative choices to overcome the problems of anxiety and depression in pregnant women and prevent an increased incidence of Caesarean Section, Low Birth Weight (LBW), premature, cognitive, behavioral, and emotional problems in children.

METHODS

This systematic review used the PRISMA protocol (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols) [16].

Search strategy and Study Selection

The study materials were collected from PubMed, PsycINFO, Google Scholar and Science Direct data sources. Only articles that contain full text included in this study. Search terms in databases use keyword combinations “anxiety”, “depression in pregnancy”, “prenatal yoga”, “yoga in pregnancy”, “pregnancy”, “complementary and alternative medicine in pregnancy”. The literature selection after using the keywords resulted 368 publications from January 2009 to February 2019.

Inclusion Criteria

The inclusion criteria for articles considered feasible to be systematically reviewed were as follows: (1) women with anxiety and depression, (2) intervention: yoga (3) outcome: decreased pregnancy anxiety and depression (4) study method: quantitative study with experimental design (5) studies written in English or Indonesian language.

Exclusion Criteria

Articles were excluded in accordance with exclusion criteria, namely : incomplete documents, irrelevant articles, did not explain the study methods, population, and sampling techniques, document duplication.

Data Extraction

The searching of articles was carried out from January 2019 to February 2019. The author carried out extraction of articles that had been obtained by noting in the screening form. The articles were screened and analyzed by the title, abstract, or full-text publication to identify studies that include relevance to serve as a reference.

RESULTS

There were 368 articles found with keywords in English and Indonesian. The literature search results identified 8 studies that met the inclusion criteria. The results of those studies showed that prenatal yoga could reduce anxiety, depression, and the negative effects experienced by pregnant women with anxiety and depression during pregnancy. Table 1 below present evidence for the effects of prenatal yoga on pregnancy anxiety and depression.

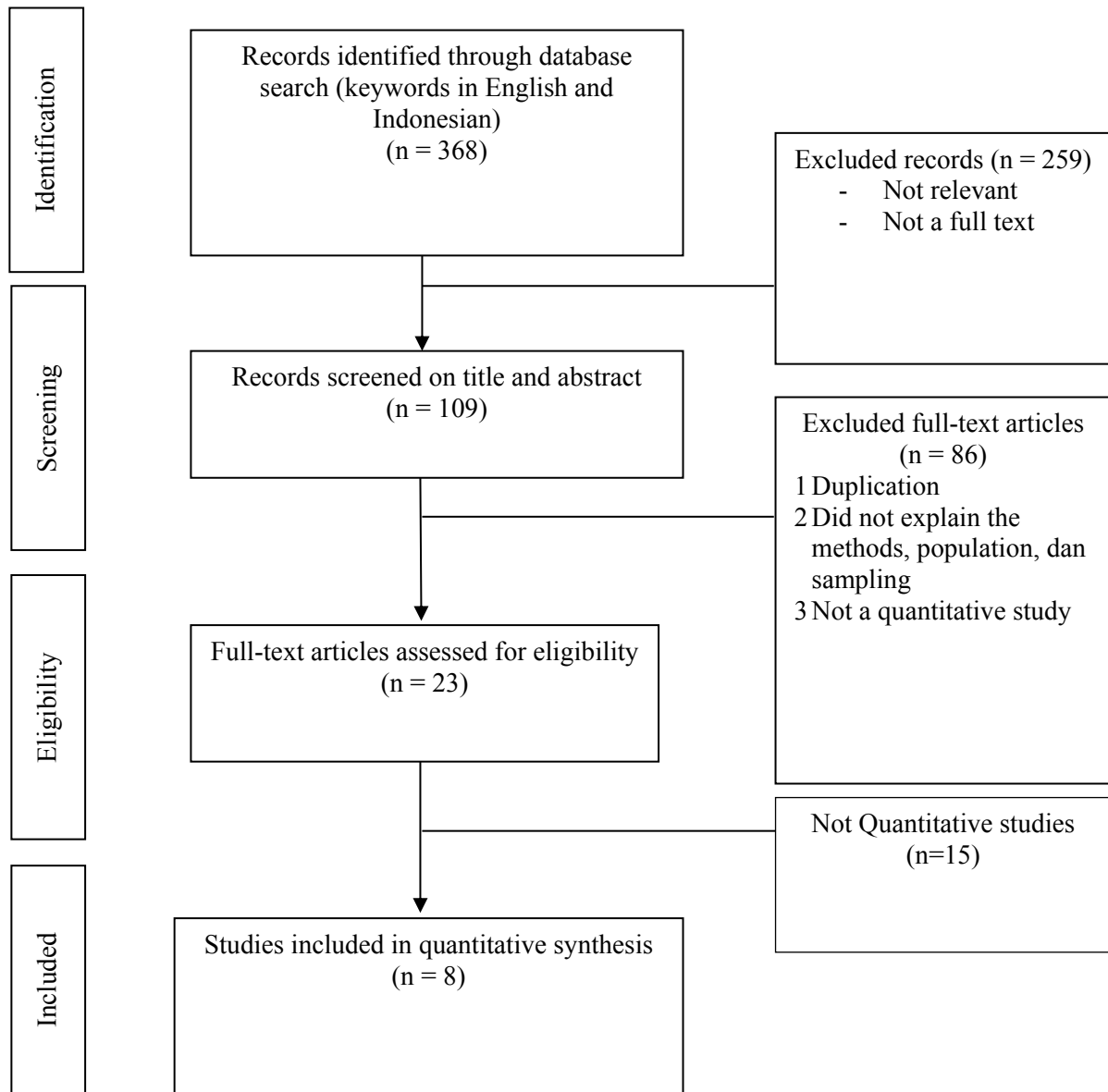


Figure 1. Preferred Reporting Items for Systematic Review and Meta-Analysis



Table 1 Evidence for the effects of prenatal yoga on pregnancy anxiety and depression

No.	Title	Author	Year	Methods	Sample	Intervention	Results
1.	Effects Of Antenatal Yoga On Maternal Anxiety And Depression: A Randomized Controlled Trial	James J. Newham, Ph.D., Anja Wittkowski, Clin. Psy. D. Janine Hurley, John D. Aplin, Ph.D., and Melissa Westwood, Ph.D [17].	2014	Randomized Controlled Trial (RCT)	As many as 59 primiparous pregnant women and low risk	In the intervention group 1.5 hours of yoga antenatal care were given for 8 weeks and the control group was given treatment-as-usual (TAU)	Antenatal yoga decreases anxiety levels and cortisol hormone levels after one session and this effect is consistent over time. Antenatal yoga is associated with a significant reduction in fear of childbirth, and has the potential to prevent an increase in symptoms of depression.
2.	A Randomized Controlled Trial Of Yoga For Pregnant Women With Symptoms Of Depression And Anxiety	Kyle Davis, Sherryl H. Goodman, Jenn Leiferman, Mary Taylor, Sona Dimidjian [18].	2015	Randomized Controlled Trial (RCT)	A total of 46 women were pregnant with symptoms of depression and anxiety.	87% of participants assigned to yoga groups received yoga interventions for 8 weeks.	Prenatal yoga is found as an appropriate and acceptable intervention and is associated with a reduction in symptoms of anxiety and depression. However, prenatal yoga only significantly outperforms treatment-as-usual (TAU) on reducing negative impacts.
3	Potential for Prenatal Yoga to Serve as an Intervention to Treat Depression During Pregnancy	Cynthia L. Battle, PhD, Lisa A. Uebelacker, PhD, Susanna R. Magee, MD, MPH, Kaeli A. Sutton, BA, Ivan W.	2015	Quasi experiment	A total of 34 pregnant women with symptoms of depression.	Prenatal yoga was given twice a week for 10 weeks with a duration of 75 minutes per session for pregnant women with depression.	Prenatal yoga could reduce symptoms of depression in pregnant women.



No.	Title	Author	Year	Methods	Sample	Intervention	Results
		Miller, PhD [19].					
4.	A Pilot Randomized Controlled Trial Comparing Prenatal Yoga To Perinatal Health Education For Antenatal Depression	Lisa A. Uebelacker, Cynthia L. Battle, Kaeli A. Sutton, Susanna R. Magee, Ivan W. Miller [20].	2015	Randomized Controlled Trial (RCT)	A total of 20 pregnant women with symptoms of depression.	In the intervention group 75 minutes of prenatal yoga for 9 weeks and the control group was given the mom-baby wellness workshop (MBWW)	Prenatal yoga had a positive impact on physical and mental health and was an attractive alternative because it was widely accessible and acceptable for pregnant women.
5.	Effect Of Integrated Yoga On Anxiety, Depression & Well Being In Normal Pregnancy	M. Satyapriya, R. Nagarathna, V. Padmalatha, H.R. Nagendra [21].	2013	Randomized Controlled Trial (RCT)	96 women from 20 to 36 weeks of gestational with normal pregnancy.	Yoga groups (n=51) practiced integrated yoga 2 hours/day (3 days/week) for one month and control group (n=45) practiced standard antenatal exercises.	The practice of integrated yoga in the second and third trimesters is more effective than antenatal training in reducing anxiety, depression and improving the pregnancy experience.
6.	Yoga And Social Support Reduce Prenatal Depression, Anxiety And Cortisol	Tiffany Field, PhD, Miguel Diego, PhD, Jeannette Delgad, BS, Lissette Madinah, BS [22].	2013	Randomized Controlled Trial (RCT)	A total of 92 women with pre-depression 22 weeks gestation.	The experimental group followed yoga for 20 minutes (only physical poses) once per week for 12 weeks and the social support group (a leaderless discussion group) met on the same schedule.	At the end of the first and last session, yoga groups reported less depression, anxiety, anger, back and leg pain compared to social support groups.



No.	Title	Author	Year	Methods	Sample	Intervention	Results
7.	Yoga Reduces Prenatal Depression Symptoms	Jennifer Mitchell, Tiffany Field, Miguel Diego, Debra Bendell, Rae Newton, Martha Pelaez [23].	2012	Randomized Controlled Trial (RCT)	A total of 24 women were clinically depressed pregnant women.	Women in the yoga group participated in 20 minute sessions two times a week for a period of 12 weeks. The control group participated in parenting education sessions to control for the effects of attention and social support received by the women in the yoga group.	Yoga could effectively reduce symptoms of depression in pregnant women with the CES-D score (M = -9.58, SD = 11.06, t = -3.00; p=< 0.5) regarding depression and somatic symptoms compared to the control group (M = -1.00, SD = 4.85, t = -.72; p=< 0.05).
8.	Effect Of Prenatal Gentle Yoga Implementation On The Anxiety Before The Delivery Of Primigravida Third Trimester Pregnant Women At Bidan Kita Clinic, Klaten	Ritsma Zunira Aryani, Rohmi Handayani, Dewi Susilowati [2].	2018	Quasi experiment	A total of 32 women with symptoms of anxiety.	The experimental group followed Prenatal gentle yoga from the first time until three times.	Prenatal gentle yoga significantly decreased anxiety scores of pregnant women before labor with p value of 0.000 (p <0.05).

Literature search results identified 8 studies that met the inclusion criteria. Those articles used experimental study design: six articles were Randomized Controlled Trials (RCT) and others were Quasi-Experimental. All study participants were pregnant women aged 18-35 years. In the study, it was stated that the experimental group received yoga interventions for one month [21], 12 weeks [22, 23], 10 weeks [19], 9 weeks [20], and 8 weeks [17, 18]. There are differences in the duration of yoga interventions. The most effective yoga is done by women pregnant for 2 hours/day (3 days/week) for one month [21]. Yoga interventions are given by experts of yoga instructors [2, 17–23].

Each yoga session had a different theme to improve the welfare of pregnant women. Sessions 1-3 focused on the yoga posture to relieve aches and pains. Sessions 4-5 focused on the optimal position of the fetus, such as the position of the back, legs and strengthening exercises. Sessions 6-7 focused on movements to increase hip flexibility and breathing techniques during labor and session 8 focused on pelvic floor exercises [17].

All articles evaluated the effect of interventions on anxiety and depression using a structured questionnaire. The anxiety and depression of pregnant women can be measured by State Trait Anxiety Inventory (STAI) [17, 18, 21, 22], Wijma Delivery Expectancy Questionnaire (WDEQ) [17], Edinburgh Postnatal Depression (EPDS) [17–20, 22], Quick Inventory of Depressive Symptomatology (QIDS) [19, 20], Hospital Anxiety Depression Scale (HADS) [21], Profile of Mood States (POMS) [22], The Center for Epidemiological Studies Depression Scale (CES-D) [22, 23], and Anxiety Scale for Pregnancy (ASP) [2]. Most research uses STAI to assess anxiety and EPDS to assess depression.

All studies report positive effects of prenatal yoga. Prenatal yoga could reduce anxiety, depression, and reduce discomforts during pregnancy [21], feasible and could be accepted as an intervention [18], prenatal yoga had a positive impact on physical and mental health and was an attractive alternative because it was widely accessible and acceptable for pregnant women [20], and prenatal gentle yoga could be used as one of the non-pharmacological treatments to reduce anxiety before delivery [2].

DISCUSSION

Results from several literatures indicated that yoga was a non-pharmacological intervention that could be used for symptoms of anxiety and depression in pregnant women. Pregnancy is a period of physiological and psychological stress that is very influential on pregnant women. Anxiety and depression are two stress responses that may affect pregnancy. Pregnant women had different responses to stress depending on genetic factors, personality traits, experience, and social support [21].

Anxiety and depression during pregnancy could cause the risk of premature delivery and low birth weight baby (LBW) [24]. In addition, increasing anxiety in pregnant women could cause physical and psychological disorders, namely hypertension, preeclampsia, and posttraumatic stress disorder (PTSD). Complications that occurred could increase the incidence of caesarean section, Low Birth Weight (LBW), premature delivery [7], and cognitive, behavioral, and emotional problems in children [8]. Pregnant women who experienced anxiety can increase the response and activity of the hypothalamus-pituitary-adrenal (HPA) axis and sympathetic-adrenal-medullary system (SAM), thereby increasing the cortisol hormone levels [25, 26]. Increased hormone cortisol can interfere with placental growth and function [27], thus triggering complications in pregnant women [7]. Screening for anxiety and depression in pregnancy with standard diagnostic criteria has been widely used. If mood disorders during pregnancy is left untreated it is likely to progress to postpartum depression [24, 28].

Yoga is one of the complementary therapies included in the practice of mind and body that are very popularly used by adults [11]. Yoga can unite mind and body and has been used to reduce stress and discomfort thousands of years ago [13]. When doing a yoga movement, the hypothalamus will affect the autonomic nervous system by reducing the activity of the sympathetic nervous system and increasing the activity of the parasympathetic nervous system. Yoga inhibits the increase in the sympathetic nervous system so that hormones that cause body dysregulation may be reduced. The parasympathetic

nervous system that has opposite work functions to the sympathetic nervous system will slow down the work of the organs in the body. The parasympathetic nervous system signals the adrenal medulla, affects the release of catecholamines, namely epinephrine (adrenaline) and norepinephrine (noradrenaline) into the bloodstream. Thus, there is a decrease in heart rate, breath rhythm, blood pressure, muscle tension, metabolic rate, and production of hormones that cause anxiety or stress. Yoga also affects the hypothalamus to suppress the secretion of corticotrophin-releasing hormone (CRH) which will affect the anterior lobe pituitary gland to suppress adrenocorticotrophic hormone (ACTH) so that adrenal and cortisol hormone production decrease and instruct the anterior lobe pituitary gland to release endorphins [29].

Yoga could reduce anxiety, depression in women during pregnancy, and depression during the postpartum period [2, 17–23]. Yoga breathing is a form of meditation, prepares the mind and body for deeper meditation. Breathing in yoga movements can activate the parasympathetic nervous system and induce changes in the state of consciousness. Yoga exercises provide an understanding of the impact of yoga movements on self-improvement and self-regulation systems that might improve longevity, health, and quality of life. Regular yoga exercises can increase the activity of the parasympathetic nervous system, especially in regulating breathing. Information received by the brain through breathing is a top priority in the yoga movement. Yoga movements were performed with slow rhythms and controlled breath provide information to the brain so that it had a positive impact on perception, cognition, emotional regulation, and behavior through stimulation of the vagal nerve as the main pathway in the parasympathetic nervous system [30].

Yoga intervention was preferred by pregnant women and it was felt free from the potential teratogenic effects of pharmacotherapy therapies such as SSRI antidepressants [31]. With the increasing popularity of yoga for mothers throughout the world, the cost of yoga classes is also cheaper, making it accessible to mothers. Those who cannot attend yoga classes can take part in online yoga tutorials. In addition, taking prenatal yoga classes could provide social opportunities, information, and support for pregnant women so as to improve emotional and social well-being [32].

CONCLUSIONS

Yoga was one of the complementary therapies that could reduce anxiety and depression in pregnancy. Based on scientific evidence, yoga could lower cortisol levels, minimize premature birth, prevent Low Birth Weight (LBW), improve the quality of sleep for pregnant women, improve maternal and fetal relationships, reduce fear of childbirth, reduce back pain, and improve maternal health. Health practitioners can use yoga to provide care for pregnant women who experience anxiety and depression in pregnancy. Trained and certified health practitioners are expected to provide optimal benefits of yoga for mothers. Further studies are needed on other complementary therapies that can be combined with yoga so as to increase scientific evidence that can support the well-being of mothers and babies.

CONFLICT OF INTERESTS

There is no conflict of interest in this study. The author is fully responsible for the content of this research article.

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