Journal of Maternal and Child Health (2022), 07(04): 419-431
Masters Program in Public Health, Universitas Sebelas Maret

Meta-Analysis

Meta-Analysis the Effect of Prenatal Yoga to Lower Anxiety and Stress in Intrapartum Women

Adetya Wulandari[1)], Hanung Prasetya[2)], Bhisma Murti[1)]

[1)]Master's Program in Public Health, Universitas Sebelas Maret
[2)]Study Program in Acupuncture, Health Polytechnics, Ministry of Health, Surakarta

ABSTRACT

Background: Pregnant women are very susceptible to complications or high risk during pregnancy, especially before delivery, causing anxiety and stress. Prenatal yoga is known to relax breathing which can relax muscles and reduce anxiety. The purpose of this study was to analyze the effect of prenatal yoga on pregnant women on anxiety and stress in the face of labor.
Subjects and Method: This study was a meta-analysis with the following PICO, population: pregnant women. Intervention: prenatal yoga. Comparison: not doing prenatal yoga. Result: reduced stress and anxiety. Keywords to search for articles "Prenatal Yoga" OR "Pregnancy yoga" AND "Anxiety" AND "Stress" AND "randomized controlled trial". The articles included are full-text English and a randomized controlled trial study design from 2009-2021. Article selection is done by using PRISMA flow diagram. Articles were analyzed using the Review Manager 5.3 application.
Results: A total of 12 RCT studies from the Asian, American and European continents were selected for systematic review and meta-analysis. Based on 9 articles stated that pregnant women who do prenatal yoga can reduce anxiety about childbirth by 0.86 times compared to not doing prenatal yoga (SMD = -0.86; 95% CI -1.50 to -0.21; p= 0.010) and 5 articles state that pregnant women those who do prenatal yoga can reduce stress during childbirth by 1.23 times compared to those who do not do prenatal yoga (SMD= -1.23; 95% CI= -1.59 to -0.87; p< 0.001).
Conclusion: Prenatal yoga can reduce anxiety and stress in pregnant women in the face of childbirth.

Keywords: anxiety, stress, pregnancy, prenatal yoga

Correspondence:
Adetya Wulandari. Master's Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Mobile: 081274814357. Email: Adetya1507@gmail.com.

Cite this as:
Wulandari A, Prasetya H, Murti B (2022). Meta-Analysis the Effect of Prenatal Yoga to Lower Anxiety and Stress in Intrapartum Women. J Matern Child Health. 07(04): 419-431. https://doi.org/10.26911/thejmch.2022.07.04.06.

BACKGROUND

Women will be very proud if they can enjoy the process of pregnancy happily, and in good physical and mental health. However, women are also prone to complications or high risk during pregnancy. This can cause anxiety and even cause them to experience depression thereby lowering their mental and physical well-being (Danti et al., 2020).

WHO identifies that depression is the main cause of disability in the world. Pregnant and postpartum women are especially vulnerable to mental health decline as a result of increased stress and lack of social support. In 2017, depression affected about 13% and anxiety affected up to 39% of pregnant and postpartum women; however, it is generally accepted that both conditions are underdiagnosed and undertreated during the perinatal period. This condition has an

immediate and lasting detrimental impact on both mother and child (Davenport et al., 2018).

Several studies report that 50% of pregnant women in Indonesia experience depression and mental health disorders. 2% in the world have experienced mental disorders caused by anxiety and depression. Even though it looks small, it is actually a large number and this is a big problem, especially for midwives who are trying to reduce the number of pregnant women with morbidity and mortality. However, in reality, many pregnant women do not know how to deal with mental disorders (Danti et al., 2020). From the research produced by Faujiah et al. (2020) showed a relationship between preterm birth and the stress experienced. The resulting stress increases sexual risk behavior, reduces the use of prenatal care to detect infection, and decreases adherence to medication, thereby contributing to infection-associated preterm labor.

Exercise during pregnancy can increase stamina, make sleep better, improve mood, and reduce anxiety. This is because exercise can release endorphins from the brain. One type of exercise that can be applied to reduce anxiety and improve sleep quality is prenatal yoga (Aflahiyah et al., 2020).

Prenatal yoga is a body movement accompanied by breathing relaxation that can flex muscles and reduce anxiety for pregnant women in an effort to prepare for childbirth. Prenatal yoga is a combination of antenatal yoga movements with pregnancy exercises consisting of positions (mudras), breathing movements (pranayama), relaxation, and meditation that are able to provide pregnant women with smooth delivery (Amalia, 2021).

Physical activity can reduce stress and improve health. Yoga is generally used as a stress management therapy that involves humans as a whole. Yoga is more often chosen as a therapy for anxiety or depression than pharmacological therapy or conventional treatment because it has no side effects and has more benefits (Ningrum et al., 2019).

Emotional response is anxiety that is not accompanied by a specific object to be communicated directly interpersonally with subjective experience. In a physiological way, the body's response to anxiety is the activeation of the autonomic nervous system (parasympathetic and sympathetic). In the parasympathetic nervous system this will cause the body's response while the sympathetic nervous system can activate processes in the body. When the cortex in the brain detects a stimulus, then the stimulus will be sent through the sympathetic nerves to the adrenal glands which will be able to release epinephrine or adrenals so that the resulting effects such as deeper breathing, increased pulse rate, and increased blood pressure (Amalia, 2021).

According to research conducted by Arlym and Pangarsi (2019) Feelings characterized by a deep and ongoing sense of worry or fear are natural disturbances and part of anxiety. Yoga is an exercise that is intended for the mind and body that is able to give peace to the heart, as well as peace to our souls. Yoga is able to raise the mood during pregnancy so that the mother will be comfortable in her pregnancy and prepare for childbirth. Pregnant women who exercise with yoga or what can be called prenatal yoga are able to give pregnant women a sense of comfort because the quality of sleep will increase, not only that the immune system also increases, besides that, it can improve blood flow so that it can supply a lot of oxygen. With this, pregnant women can feel healthy physically so that they can finally feel healthy psychologically.

The relaxin hormone will be released by pregnant women who carry out prenatal yoga

so that their bodies feel comfortable which can finally give pregnant women peace of mind. Systematic review and meta-analysis are part of the research conducted. This meta-analysis is a way of summarizing and quantitatively synthesizing the most accurate estimates. Based on the above background, the purpose of this study was to analyze its effect on prenatal yoga by pregnant women on stress and anxiety in the face of labor with a meta-analysis.

SUBJECTS AND METHOD

1. Study Design

This research is a systematic research and meta-analysis. The articles used in this study were obtained from several databases, namely Google Scholar, Pubmed, and Science Direct between 2009 and 2021. The selection of articles was carried out using the PRISMA flow chart. The keywords to search for articles were as follows "Prenatal Yoga" OR "Pregnancy yoga" AND "Anxiety" AND "Stress" AND "randomized controlled trial".

2. Inclusion Criteria

The inclusion criteria in this research article are: full-text article with RCT design, research subjects are pregnant women who do prenatal yoga, research results are decreased anxiety and stress, and include the Mean-SD.

3. Exclusion Criteria

The exclusion criteria in this research article were: articles published in languages other than English, observational study design, articles before 2009.

4. Operational Definition of Variables

The search for articles was carried out by considering the eligibility criteria determined using the PICO model. Population: pregnant women. Intervention: prenatal yoga. Comparison: not doing prenatal yoga. Result: reduced stress and anxiety.

Anxiety is a warning reaction to someone experiencing danger from within and the person experiencing anxiety may lose control of the situation.

Stress is physically or psychologically experiencing pressure by giving assertiveness and pressure in writing or speaking.

Prenatal yoga is a pregnancy exercise movement that has a combination with antenatal yoga movements. Consists of breathing movements, meditation, positions, and relaxation that can help delivery and pregnancy in pregnant women smoothly.

5. Study Instruments

The study was guided by the PRISMA flow chart and quality assessment using Critical Appraisal for Randomized Controlled Trial.

6. Data analysis

The data in the study were analyzed using the Review Manager application (RevMan 5.3). Forest plots and funnel plots were used to determine the size of the relationship and heterogeneity of the data. The fixed effects model was used for homogeneous data, while the random effects model was used for cross-study heterogeneous data.

RESULTS

The article search process is carried out through several journal databases, including Google Scholar, Pubmed, and Science Direct. The review process for related articles can be seen in the PRISMA flowchart in figure 1. Research related to the effect of prenatal yoga on anxiety and stress consists of 12 articles from the initial search process yielding 857 articles, after the deletion process was published articles with 54 requirements for further full-text review. A total of 12 articles that met the quality assessment were included in the quantitative synthesis using a meta-analysis.

It can be seen in Figure 2 that the research articles come from three continents, namely Europe (UK), Asia (Indonesia, Iran and India) and America (Colorado and Florida).

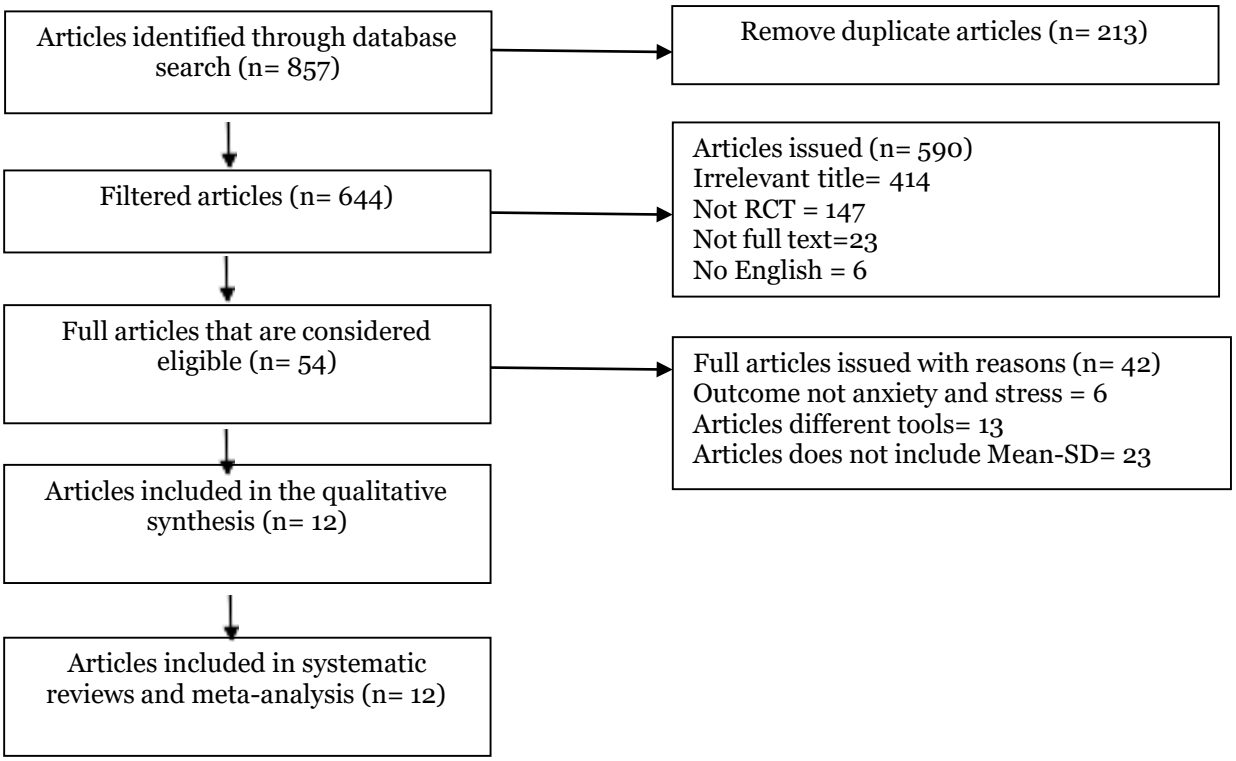

Figure 1. PRISMA flow diagram

Figure 2. Map of the study area Effect Prenatal Yoga for Anxiety and Stress in Pregnancy

Table 1. Description of the primary studies included in the meta-analysis of the effects of prenatal yoga on anxiety

Author (year)	Country	Study Design	Sample	Population	Intervention	Comparison	Outcome	Yoga		Control	
								Mean	SD	Mean	SD
Avin *et al.* (2018)	Iran	RCT	24 intervention, 29 controls	Pregnant women aged 18-40 years, gestational age 26-27 weeks	Doing prenatal yoga	Not doing prenatal yoga	Anxiety	24.4	8.75	37.6	8.44
Bapat *et al.* (2016)	India	RCT	20 intervention, 20 controls	Pregnant women aged 25-35 years, 20-28 weeks pregnant	Doing prenatal yoga for one month	Not doing prenatal yoga	Anxiety	43.20	5.66	42.70	7.69
Davis *et al.* (2015)	Colorado, AS Barat	RCT	20 intervention, 19 controls	Pregnant women aged 18-45 years, 28 weeks pregnant	Do prenatal yoga for 75 minutes/week	Not doing prenatal yoga, usual care	Anxiety	34.80	10.68	38.79	13.70
Field (a) *et al.* (2013)	Florida, AS	RCT	37 intervention, 38 controls	Pregnant women with a gestational age of 22-34 weeks	Doing yoga/tai chi for 20 minutes/week for 12 weeks	Not doing yoga/tai chi	Anxiety	46.10	7.90	44.30	11.40
Yulianti *et al.* (2018)	Indonesia	RCT	51 intervention, 51 controls	Pregnant mother	Doing yoga	Not doing yoga	Anxiety	13.22	3.16	23.86	3.55
Field (b) *et* al. (2013)	Florida, AS	RCT	40 intervention, 39 controls	Pregnant women at 22 weeks pregnant	Doing yoga for 20 minutes/week for 12 weeks	Not doing yoga but getting social support	Anxiety	47.3	12.7	47.2	7.4
Mohyadin et al. (2021)	Iran	RCT	42 intervention, 42 controls	Pregnant women with 26-37 weeks of pregnancy	Do prenatal yoga for 60 minutes every 2 weeks	Without doing prenatal yoga	Anxiety	40.19	12.53	49.36	10.36
Newham et al. (2014)	Inggris	RCT	29 intervention, 22 controls	Pregnant women in the second trimester to the third trimester	Doing yoga 8 times with a duration of 90 minutes	Without doing yoga, the usual care	Anxiety	27.0	7.0	34.0	6.5
Satyapriya et al. (2013)	India	RCT	51 interventions, 45 controls	Pregnant women with 20-36 weeks of pregnancy	Do yoga in 2 hours/ day (3 days/week) sessions for a month.	Not doing yoga	Anxiety	31.20	6.16	39.53	7.20

Table 2. Description of the primary studies included in the meta-analysis of the effects of prenatal yoga on stress

Author (year)	Country	Study Design	Sample	Population	Intervention	Comparison	Outcome	Yoga		Control	
								Mean	SD	Mean	SD
Bapat et al. (2016)	India	RCT	20 inter-ventios, 20 controls	Pregnant women aged 25-35 years, 20-28 weeks pregnant	Doing prenatal yoga for one month	Not doing prenatal yoga	Stress	17.80	3.22	22.00	3.19
Bhartia et al. (2019)	India	RCT	38 inter-ventios, 40 controls	Pregnant women with 18-20 weeks of pregnancy	Doing prenatal yoga for 50 minutes/week in 12 weeks	No prenatal yoga, only physical activity	Stress	15.82	3.02	20.88	2.49
Deshpande et al. (2013)	India	RCT	30 inter-ventios, 38 controls	Pregnant women aged 19-31 years	Doing prenatal yoga with an instructor	Not doing prenatal yoga	Stress	12.92	6.09	16.88	6.03
Satyapriya et al. (2009)	India	RCT	45 inter-ventios, 45 controls	Pregnant women with 18-20 weeks of pregnancy	Doing yoga 1 hour a day for 12 weeks	Not doing yoga	Stress	10.88	4.97	17.33	5.34
Satyapriya et al. (2013)	India	RCT	51 inter-ventios, 45 controls	Pregnant women with 20-36 weeks of pregnancy	Do yoga in 2 hours/day (3 days/week) sessions for one month.	Not doing yoga	Stress	49.75	5.99	58.96	8.81

Table 3. Results of Quality Assessment of RCT Studies The Effect of Prenatal Yoga on Anxiety and Stress

Author (Year)	Criteria												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Avin *et al.* (2018)	1	1	1	1	1	1	1	1	1	1	1	1	12
Bapat et al. (2016)	1	1	1	1	1	1	1	1	1	1	1	1	12
Bhartia et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Deshpande et al. (2013)	1	1	1	1	1	1	1	1	1	1	1	1	12
Mohyadin et al. (2021)	1	1	1	1	1	1	1	1	1	1	1	1	12
Satyapriya et al. (2009)	1	1	1	1	1	1	1	1	1	1	1	1	12
Satyapriya et al. (2013)	1	1	1	1	1	1	0	1	1	0	1	1	10
Yulianti et al. (2018)	1	1	1	1	1	1	0	1	1	0	1	1	10
Davis et al. (2015)	1	1	1	1	1	1	0	1	1	1	1	1	11
Field et al. (2013a)	1	1	1	1	1	1	1	1	1	1	1	1	12
Field et al. (2013b)	1	1	1	1	1	1	1	1	1	1	1	1	12
Newham et al. (2014)	1	1	1	1	1	1	1	1	1	1	1	1	12

Note: 1=yes , 0= no

Table 3, the researchers conducted an assessment of the quality of the study. There are 12 questions used in the Critical Appraisal Checklist for Randomized Controlled Trial as follows:

1) Does the experiment answer the clinical problem clearly?
2) Is the Randomized Controlled Trial research method suitable to answer the research question?
3) Were there enough subjects in the study to establish that the findings did not occur by chance?
4) Were subjects randomly allocated to the experimental and control groups? If not, could this be biased?
5) Were inclusion/exclusion criteria used?
6) Were the two groups comparable at the start of the study?
7) Were objective and unbiased outcome criteria used?
8) Are objective and validated measurement methods used in measuring the results? If not, were results assessed by someone who was not aware of the group assignment (ie was the assessment blinded)?
9) Is the effect size practically relevant?
10) How precise is the estimate of the effect? Is there a confidence interval?
11) Could there be confounding factors that have not been taken into account?
12) Are the results applicable to your research?

After assessing the quality of the study, the 12 articles were divided into 2 categories according to the independent variables included in the quantitative synthesis meta analysis using RevMan 5.3.

1. The Effect of Prenatal Yoga on Anxiety in Pregnant Women

a. Forest plot

Based on the forest plot (Figure 3), it shows that pregnant women who do prenatal yoga reduce anxiety about childbirth by 0.86 times compared to not doing prenatal yoga (SMD= -0.86; 95% CI -1.50 to -0.21; p = 0.010). The heterogeneity of the research data showed I^2= 93% so that the distribution of the data was declared heterogeneous (random effect model).

b. Funnel plot

The funnel plot in Figure 4 shows a publication bias characterized by an asymmetric distribution between the right and left plots. There are 5 plots on the right and 4 plots on the left (over estimate). The plot on the right of the graph appears to have a standard error (SE) between 0.20 to 0.40. The plot on the

left of the graph appears to have a standard error (SE) between 0.20 to 0.40.

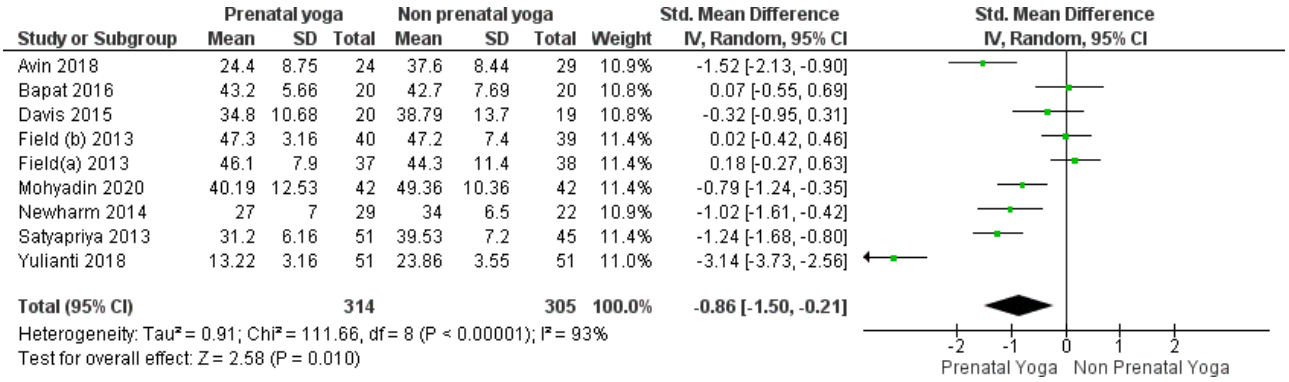

Figure 3. Forest Plot Effect of Prenatal Yoga on Anxiety facing childbirth

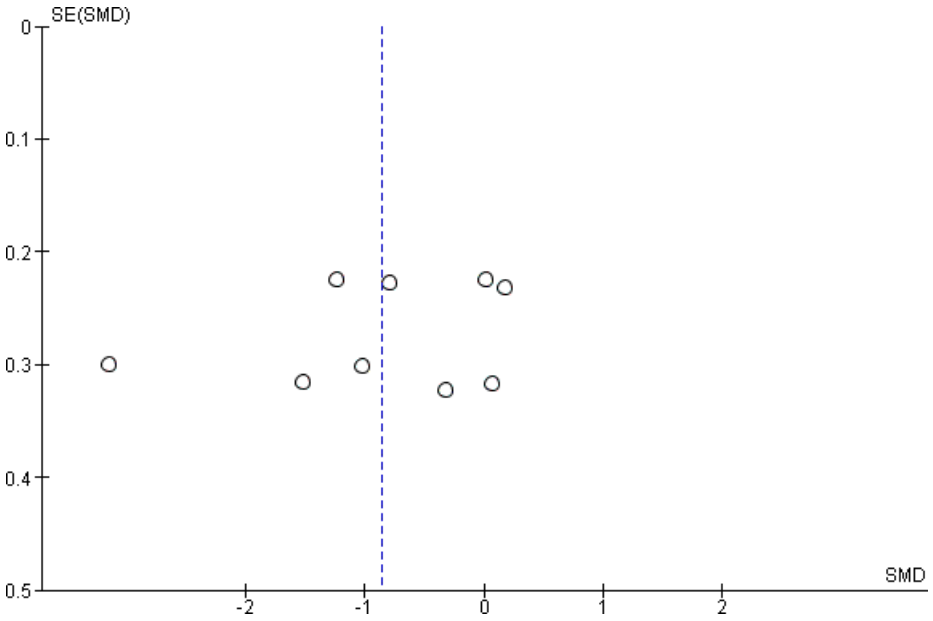

Figure 4. Funnel Plot Effect of Prenatal Yoga on Anxiety facing childbirth

2. The Effect of Prenatal Yoga on Stress in Pregnant Women

a. Forest plot

Based on the forest plot (Figure 5), it was shown that pregnant women who did prenatal yoga reduced stress during pregnancy towards the delivery process by 1.23 times compared to those who did not do prenatal yoga (SMD= -1.23; 95% CI -1.59 to -0.87; p< 0.001). The heterogeneity of the research data shows I^2= 60% so that the distribution of the data is declared heterogeneous (random effect model).

b. Funnel plot

The funnel plot in Figure 6 shows a publication bias characterized by an asymmetric distribution between the right and left plots. There is 1 plot on the right, 2 plots on the left, and 2 plots touching the vertical line. The plot on the right of the graph appears to have a standard error (SE) between 0.20 to 0.30. The plot on the left of the graph appears to have a standard error (SE) between 0.20 to 0.40.

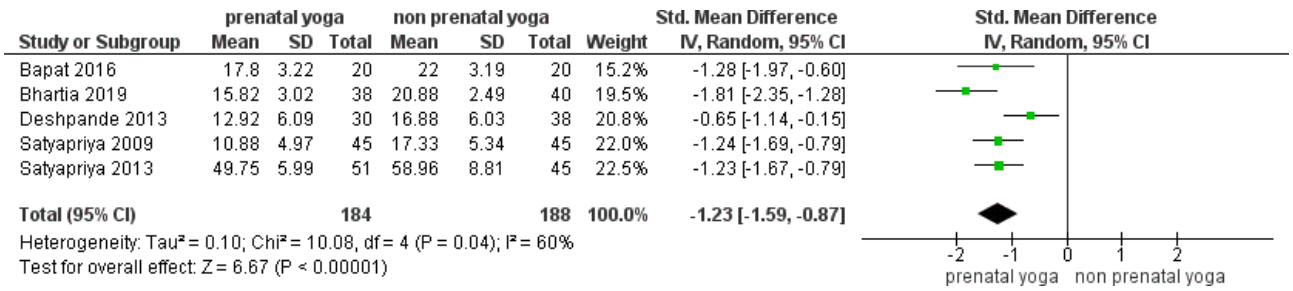

Figure 5. Forest Plot Effect of Prenatal Yoga on Stress in Pregnant Women

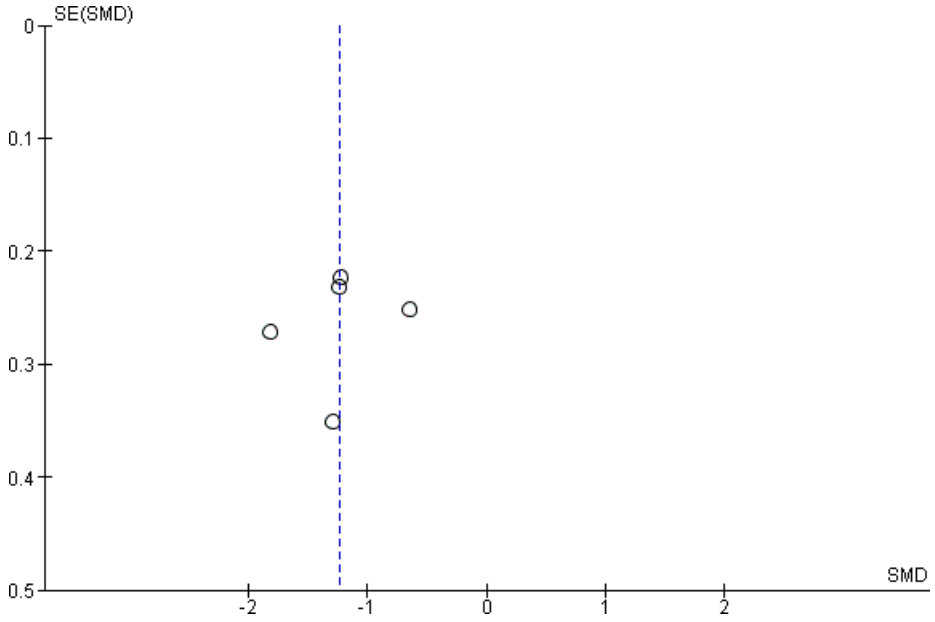

Figure 6. Funnel Plot Effect of Prenatal Yoga on Stress in Pregnant Women

DISCUSSION

Pregnancy is a period of crisis that ends with the birth of a baby. This process lasts about 40 weeks, affecting physiological, psychological, and biological changes in the mother caused by hormone levels during pregnancy. This is experienced by primigravida and multigravida pregnant women. During pregnancy, women are very susceptible to psychological disorders such as anxiety. Pregnancy anxiety is a negative emotional state that involves anxiety about the health and condition of the fetus, the delivery process that will be passed, and the problem of readiness to become a mother which is often associated with adverse effects on the mother and fetus which in turn has an impact on the growth and development of the child. About 30.9% of mothers experience anxiety in each trimester of pregnancy. Meanwhile, 6.9% of them experienced anxiety during their pregnancy (Astuti and Hadisaputro, 2019; Sulastri et al., 2021).

Depression is a leading cause of mental disability and a significant contributor to illness worldwide. Globally, the prevalence of depression and depressive symptoms has increased in recent decades. Depression is one of the most common disorders affecting women during pregnancy (Bakri et al., 2021; Coll et al., 2017). Anxiety and depression result from dysfunction in the cortical and limbic regions, which regulate mood, learning, focus, and working memory. They are associated with coping mechanisms in each individual and enhancement of the

neurobiological system. Yoga provides benefits in building a healthy balance between all aspects of the body and mind, increases the bond between mother and fetus, creates a relaxed condition, and gives a positive aura to the body (Sulastri et al., 2021).

Yoga therapy improves many aspects of health, especially stress-related illnesses. Studies have shown that prenatal maternal stress increases the risk of spontaneous abortion, preterm delivery, fetal malformations, and growth restriction. The different components of Yoga work in different ways. Prenatal yoga works on the level of the physical body and for pregnant women it increases physical strength, increases flexibility and endurance (Bhartia et al., 2019).

1. The Effect of Prenatal Yoga on Anxiety in Pregnant Women

A total of 9 research articles randomized control trial as a source of meta-analysis of the effect of prenatal yoga on anxiety in pregnant women. This study showed that pregnant women who did prenatal yoga reduced anxiety during pregnancy by 0.86 times compared to those who did not do prenatal yoga (SMD= -0.86; 95% CI -1.50 to -0.21; p= 0.010). The heterogeneity of the research data shows I^2= 93% so that the distribution of the data is said to be heterogeneous (random effect model).

Anxiety in pregnancy can cause psychiatric disorders, decreased fetal quality, preeclampsia, spontaneous abortion, premature birth, low birth weight (LBW), postpartum depression, increased risk of heart rhythm disorders, and developmental delays and even personality disorders into adulthood (Gong et al. al., 2015; Kusaka et al., 2016).

Yoga is referred to as a set of physical exercises and a selection of controlled breathing exercises and relaxation exercises. Physical exercise and yoga breathing increase flexibility and muscle strength, as well as vaginalization relaxation and meditation in yoga, stabilize the autonomic nervous system, control emotions, and improve the health of the person (Newham et al., 2014). The practice of yoga improves the health of the body and mind as well as increases the ability and vitality of the mind body which is constantly increasing. Yoga improve the strength of the back and abdominal muscles as well as the pelvic floor and facilitate labor and delivery. Most of the yoga movements can be adapted to the needs of pregnant women, as well as flexibility and muscle lengthening as well as listening to the body's needs and reducing stress with physical relaxation exercises and breathing control and relaxation, which calms their minds (Avin et al. , 2018; Sun et al., 2010).

The results of Avin et al. (2018) showed that prenatal yoga during pregnancy led to a significant reduction in the mean anxiety scores of women in the yoga group. Davis et al. (2015) stated that participants in the yoga group were shown to have significantly decreased negative effects over time compared to participants in the control group.

2. The Effect of Prenatal Yoga on Stress in Pregnant Women

A total of 5 research articles randomized control trial as a source of meta-analysis of the effect of prenatal yoga on depression in pregnant women. This study showed that pregnant women who did prenatal yoga reduced stress during pregnancy to delivery by 1.23 times compared to those who did not do prenatal yoga (SMD= -1.23; 95% CI -1.59 to -0.87; p<0.001). The heterogeneity of the research data shows I2 = 60% so that the distribution of the data is declared heterogeneous (random effect model).

Satyapriya et al. (2013) reported that high scores on perceived stress and anxiety were associated with increased HPA-Axis activity. Based on our results, we could hypothesize that the benefits of yoga would be

mediated through the reduction of abnormal sympathetic activity of the maternal adrenal-medullary system (SAM) and hypothalamic pituitary adreno-cortical axis (HPA axis). Better autonomic stability with decreased sympathetic excitability and increased parasympathetic tone has been demonstrated in normal adults after yoga. Also, investigators have demonstrated a reduction in perceived stress and better autonomic adaptability during normal pregnancy after integrated yoga exhibiting better ANS plasticity and its ability to rapidly restore a state of basal relaxation after a stress response.

Yoga reduces stress by interacting with the hypothalamus-pituitary-adrenal axis, the autonomic nervous system and the peripheral nervous system. Prenatal yoga has been shown to decrease sympathetic responses (systolic pressure, diastolic pressure, heart rate (Bhartia et al., 2019; Purdy, 2013; Ross and Thomas, 2010). Yoga - regulates the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, both of which have been shown to prevent the release of stress hormones such as cortisol and catecholamines. There is decreased release from the locus coeruleus, which is the main site in the brain for norepinephrine synthesis in response to stress and panic. This decreased release of norepinephrine helps the body to relax and calm down by decreasing respiratory rate, heart rate, and increased feelings of well-being. Decreased sympathetic output decreases the release of corticotropin-releasing factor, which results in decreased cortisol output and thus reduced stress (Bhartia et al., 2019; Naveen et al., 2016; Riley and Park, 2015) ; Thirthalli et al., 2013).

The study of Ganpat et al. (2013) showed that the prenatal yoga module can reduce stress levels during high-risk pregnancy complications. So, practicing prenatal yoga during a high-risk pregnancy is not only a cost-effective option but also a viable and safe option. Prenatal yoga can reduce anxiety and stress in the face of childbirth. The limitations of this study are the publication bias and the language only uses articles in English.

AUTHOR CONTRIBUTION

Adetya Wulandari is the main researcher who chooses topics, explores and collects data. Hanung Prasetya and Bhisma Murti played a role in analyzing data and reviewing research documents.

FINANCIAL AND SPONSORSHIP

This research is self-funded.

ACKNOWLEDGEMENT

We are grateful to the database providers PubMed, Google Scholar and Science Direct.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

REFERENCES

Aflahiyah S, Tamtono DG, Prasetya H (2020). Effectiveness of Prenatal yoga on sleep quality and reduction of anxiety during pregnancy: A meta-analysis. J Matern Child Health. 5(6): 629–640. doi: 10.26911/thejmch.-2020.05.06.03.

Amalia SN (2021). Prenatal Yoga Against Pregnancy Anxiety: Efforts To Reduce Pregnant Women's Anxiety Before Labor During The Covid-19 Pandemic: Literatur Review," International Seminar on Global Health Thursday. 28: 85–99.

Arlym LT, Pangarsi SD (2019). Pengaruh Prenatal Yoga Terhadap Kecemasan Bidan Jeanne Depok (The Effect of Prenatal Yoga on Anxiety Midwife Jeanne Depok). JMWH. 10(1).

Astuti IP, Hadisaputro S (2019). Effective-

ness of prenatal yoga on pregnancy anxiety and depression: a systematic review. Icash. 4: 509–517.

Avin A, Khojasteh F, Ansari H (2018). The effect of yoga on anxiety in pregnant women in their first pregnancy of Zahedan City in 2017. Spec. J. Med. Res. Health Sci. 3(4): 24–31.

Bakri KRR, Usman AN, Syamsuddin S, Idris I, Limoa E (2021). The effectiveness of gentle prenatal yoga on the recovery of depression level in pregnant women aged. Gac. Sanit. 35: S310–S313. doi: 10.1016/j.gaceta.2021.10.042.

Bapat RA, Kumari S, Nagendra HR (2016). The effect of one month yoga intervention on percieved stress and anxiety in pregnant women. JWHIC. 05(03): 3–5. doi: 10.4172/2325-9795.1000233.

Bhartia N, Jain S, Shankar N, Rajaram, Gupta M (2019). Effects of antenatal yoga on maternal stress and clinical outcomes in north indian women: A randomised controlled trial. J. Indian Acad. Clin. Med. 20(1): 10–14.

Coll CdeVN, da Silveira MF, Bassani DG, Netsi E, Wehrmeister FC, Barros FC, Stein A (2017). Antenatal depressive symptoms among pregnant women: Evidence from a Southern Brazilian population-based cohort study. J. Affect. Disord. 209: 140–146. doi: 10.-1016/j.jad.2016.11.031.

Danti RR, Nuzuliana R, Fitriana H (2020). Prenatal Yoga for Mental Health: A Systematic Literature Review. UPHEC: 272–280. doi: 10.2991/ahsr.k.200311.-052.

Davenport MH, McCurdy AP, Mottola MF, Skow RJ, Meah VL, Poitras VJ, Jaramillo Garcia A, et al. (2018). Impact of prenatal exercise on both prenatal and postnatal anxiety and depressive symptoms: a systematic review and meta-analysis. Br J Sports Med. 52(21):1376-1385. doi: 10.1136/bjsports-2018-099-697.

Davis K, Goodman SH, Leiferman J, Taylor M, Dimidjian S (2015). A randomized controlled trial of yoga for pregnant women with symptoms of depression and anxiety. Complement. Ther. Clin. Pract. 21(3): 166–172. doi: 10.1016-/j.ctcp.2015.06.005.

Faujiah IN, Murti B, Prasetya H (2020). Meta-Analysis of the Effect of Prenatal Stress on the Premature Birth. J Matern Child Health. 5(6): 601–613. doi: 10.26911/thejmch.2020.05.06.01.

Field AP, Gillett R (2010). How to do a meta-analysis. Br J Math Stat Psychol. 63(3): 665–694. doi: 10.1348/00071101-0X502733.

Field T, Diego M, Delgado J, Medina L (2013a). Tai chi/yoga reduces prenatal depression, anxiety and sleep disturbances. Complement. Ther. Clin. Pract. 19(1): 6–10. doi: /10.1016/j.ctcp.2012.-10.001.

Field T, Diego M, Delgado J, Medina L (2013b). Yoga and social support reduce prenatal depression, anxiety and cortisol. J Bodyw Mov Ther. 17(4): 397–403. doi: 10.1016/j.jbmt.2013.03-.010.

Ganpat T, Kurpad A, Maskar R, Nagendra H, Abbas R, Raghuram N, Anura K, et al. (2013). Yoga for high-risk pregnancy: A randomized controlled trial. Ann. Med. Health Sci. Res. 3(3): 341. doi: 10.4103-/2141-9248.117933.

Gong H, Ni C, Shen X, Wu T, Jiang C (2015). Yoga for prenatal depression: A systematic review and meta-analysis. BMC Psychiatry 15(1): 1–8. doi: 10.1186-/s12888-015-0393-1.

Kusaka M, Matsuzaki M, Shiraishi M, Haruna M (2016). Immediate stress reduction effects of yoga during pregnancy: One group pre–post test.

Women and Birth. 29(5): e82–e88. doi: 10.1016/j.wombi.2016.04.003.

Mohyadin E, Ghorashi Z, Molamomanaei Z (2021). The effect of practicing yoga during pregnancy on labor stages length, anxiety and pain: A randomized controlled trial. J Complement Integr Med. 18(2): 413–417. doi: 10.1515/jcim-2019-0291.

Naveen GH, Varambally S, Thirthalli J, Rao M, Christopher R, Gangadhar BN (2016). Serum cortisol and BDNF in patients with major depression—effect of yoga. Int Rev Psychiatry. 28(3): 273–278. doi: 10.1080/09540261.2016.1175419.

Newham JJ, Wittkowski A, Hurley J, Aplin JD, Westwood M (2014). Effects of antenatal yoga on maternal anxiety and depression: A randomized controlled trial. Depress Anxiety. 31(8): 631–640. doi: 10.1002/da.22268.

Ningrum SA, Budihastuti UR, Prasetya H (2019). Efficacy of Yoga Exercise to Reduce Anxiety in Pregnancy: A Meta-Analysis using Randomized Controlled Trials. J Matern Child Health. 4(2): 118–125. doi: 10.26911/thejmch.2019.04.02.07.

Purdy J (2013). Chronic physical illness: A psychophysiological approach for chronic physical illness. YJBM. 86(1): 15–28.

Riley KE, Park CL (2015). How does yoga reduce stress? A systematic review of mechanisms of change and guide to future inquiry. Health Psychol. Rev. 9(3): 379–396. doi: 10.1080/17437199.2014.981778.

Ross A, Thomas S (2010). The health benefits of yoga and exercise: A review of comparison studies. J Altern Complement Med. 16(1): 3–12. doi: 10.1089/acm.2009.0044.

Satyapriya M, Nagarathna R, Padmalatha V, Nagendra HR (2013). Effect of integrated yoga on anxiety, depression & well being in normal pregnancy. Complement. Ther. Clin. Pract. 19(4): 230–236. doi: 10.1016/j.ctcp.2013.06.003.

Satyapriya M, Nagendra HR, Nagarathna R, Padmalatha V (2009). Effect of integrated yoga on stress and heart rate variability in pregnant women. Int J Gynecol Obstet. 104(3): 218–222. doi: 10.1016/j.ijgo.2008.11.013.

Sulastri A, Syamsuddin S, Idris I, Limoa E (2021). The effectiveness of gentle prenatal yoga on the recovery of anxiety level in primigravid and multigravid pregnant women. Gac Sanit. 35: S245–S247. doi: 10.1016/j.gaceta.2021.10.072.

Sun YC, Hung YC, Chang Y, Kuo SC (2010). Effects of a prenatal yoga programme on the discomforts of pregnancy and maternal childbirth self-efficacy in Taiwan. Midwifery. 26(6): e31–e36. doi: 10.1016/j.midw.2009.01.005.

Thirthalli J, Naveen GH, Rao MG, Varambally S, Christopher R, Gangadhar BN (2013). Cortisol and antidepressant effects of yoga. Indian J. Psychiatry 55(7). doi: 10.4103/0019-5545.116315.

Uebelacker LA, Battle CL, Sutton KA, Magee SR, Miller IW (2016). A pilot randomized controlled trial comparing prenatal yoga to perinatal health education for antenatal depression. Arch. Women's Ment Health. 19(3): 543–547. doi: 10.1007/s00737-015-0571-7.

Yulianti I, Respati SH, Sudiyanto A (2018). The effect of prenatal yoga on anxiety and depression in Kudus, Central Java. J Matern Child Health. 3(2): 100-104: doi: 10.26911/thejmch.2018.03.02.02.