

Yoga Therapy for Pregnant Women to Overcome Stress in Premature Labor

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ABSTRACT

Globally, prematurity stands as one of the leading causes of death in children under the age of five, making premature childbirth a significant concern worldwide, including in Indonesia. One of the key contributors to preterm labor is maternal stress, which triggers the activation of the hypothalamic-pituitary-adrenal (HPA) axis in both the mother and the fetus. As a preventive measure, complementary therapies such as yoga have been explored for their potential to alleviate stress and reduce the risk of premature labor. This article aims to examine the impact of yoga therapy on stress management in pregnant women, specifically in relation to preventing preterm births. The data for this study were gathered from electronic databases including Google Scholar, PubMed, and Science Direct, focusing on original research articles that explored the use of yoga therapy to manage stress in the context of premature labor. The search identified a total of 600 initial studies, with an additional 100 articles included later. After applying inclusion and exclusion criteria, 630 studies were excluded, and 70 articles were reviewed in full, resulting in 11 publications being utilized as references. The findings suggest a significant effect of yoga therapy in reducing the incidence of premature labor, highlighting its potential as a beneficial intervention for stress management in pregnant women.

Keywords : *Premature, Stress, Yoga Pregnancy*

INTRODUCTION

Premature labor is a very serious condition. Babies born prematurely have a high risk of morbidity and mortality due to the imperfect function of the baby's organs (Wahyuni, 2022). Preterm labor is a baby born before 37 weeks of gestational age. Globally, prematurity is one of the causes of death in children under the age of 5 (WHO, 2024). The impact that can be had on babies with premature birth is neurocognitive deficits, lung dysfunction, and visual impairment (Surya & Pudyastuti, 2019)

Premature childbirth is a problem in the world, including Indonesia (Sriyana Herman & Hermanto Tri Joewono, 2020). WHO appreciated 13.4 million babies born prematurely in 2020. Approximately 900,000 babies died in 2019 due to complications of premature birth (WHO, 2024). In Indonesia, the infant mortality rate (AKB) in 2020 occurred almost 90% in the last 50 years (Central Statistics Agency, 2020). Where premature birth accounts for 36% of the overall

cause of neonatal death (Sungkar et al., 2017). The prevalence of premature births in Indonesia averages 7 - 14% and is still high in several districts in Indonesia, reaching 16%. This prevalence rate when compared to several developing countries is 5-9% and 12-13% in the USA (Ministry of Health, 2022).

Experts have grouped the causes of preterm labor in general, one of which is due to the influence of stress that results in HPA activation in the mother and fetus (Sriyana Herman & Hermanto Tri Joewono, 2020). Stress is something experienced by everyone, but if the stress conditions felt are excessive, it will harm the physical and mental condition of a person (Lumban Gaol, 2016). Women during their pregnancy show different feelings about the stress they feel during their understanding which will later have an impact on the condition of their pregnancy and also the development of the fetus (Ribeiro et al., 2023). It is reported that between 15 and 23% of pregnant women report the anxiety symptoms they feel (Petch et al., 2019). The prevalence of major depressive disorder determined by diagnostic criteria during pregnancy is 12.7% where as many as 3% of women report experiencing depressive symptoms during pregnancy. Anxiety is known to be more common during pregnancy with a high comorbidity rate of around 60%. In addition, women's perspectives and their interpretation of various events and environmental conditions during pregnancy turn out to have a detrimental contribution to pregnant women (Tanpradit & Kaewkiattikun, 2020a).

One of the therapies that can be given to overcome depression felt by pregnant women is to provide complementary therapy, namely yoga for pregnant women. Yoga is a combination of posture, breath and meditation used for the health of the body (Lin et al., 2022). Yoga for pregnant women is one of the therapies that has begun to be widely developed to help mothers overcome complaints that mothers feel during their pregnancy (Yunita Laila Astuti et al., 2022). Yoga is also performed as a stress management therapy that involves the limbs of the human body as a whole and is usually chosen as a therapy to overcome anxiety or depression compared to the administration of pharmacological therapy because of the side effects that arise and have many benefits (Nabilla et al., 2022).

Several studies have found that by carrying out mind-body interventions carried out during pregnancy on the perception of stress, mood and condition of the mother and baby. The results were found to be evidence of advances in interventions from the mind and body during pregnancy, namely reduced stress and anxiety in the mother. With the reduction of stress that occurs in mothers, the incidence of premature labor can be reduced (Sharma & Branscum, 2015).

Seeing this phenomenon, it is necessary to conduct a study on how the effect of providing yoga therapy to pregnant women to overcome stress in premature labor. With this study, it is hoped that we as health workers can provide maternal care to pregnant women to prevent premature labor and can reduce maternal and infant morbidity and mortality rates.

METHOD

Search Strategy

The literature review method was conducted using online databases such as Google Scholar, PubMed, and Science Direct. The search and selection of relevant literature followed three key stages. First, appropriate keywords were determined based on the topic of interest. The keywords used included: "Journal Effect of maternal depression during pregnancy on preterm birth," "Impact of stress with preterm birth," "Journal Effect Prenatal Yoga for maternal depression," "Yoga to overcome stress in pregnant women," and "Effects of stress on pregnant women with premature delivery." In the second stage, titles, abstracts, and keywords of the articles were carefully explored and selected according to predefined inclusion and exclusion criteria. Finally, in the third stage, a thorough reading of the articles that passed the second stage was performed to ensure that they were relevant and could be included in the literature review.

Exclusion Inclusion Criteria

The criteria for including literature in this writing are as follows: Original research articles from studies conducted between 2014 and 2024 that investigate the impact of stress during pregnancy on premature labor were considered. The subjects of these studies include pregnant women who experienced stress and subsequently had premature labor, pregnant women who practiced prenatal yoga to manage stress during pregnancy, and those who were provided with yoga interventions to prevent premature labor. Articles that offer a detailed explanation of the tendency of stress to contribute to premature labor in pregnant women were prioritized. In cases where a study was published multiple times across different online databases, only the most recent publication was selected for reference. The exclusion criteria for this review include conference abstracts and journals or articles with incomplete data.

RESULT AND DISCUSSION

Literature Search Flow

Based on the total library, 600 were identified and as many as 100 additional articles were identified. A total of 630 studies failed to meet the inclusion criteria and 70 articles were read in their entirety, so that as many as 11 publications were used as references.

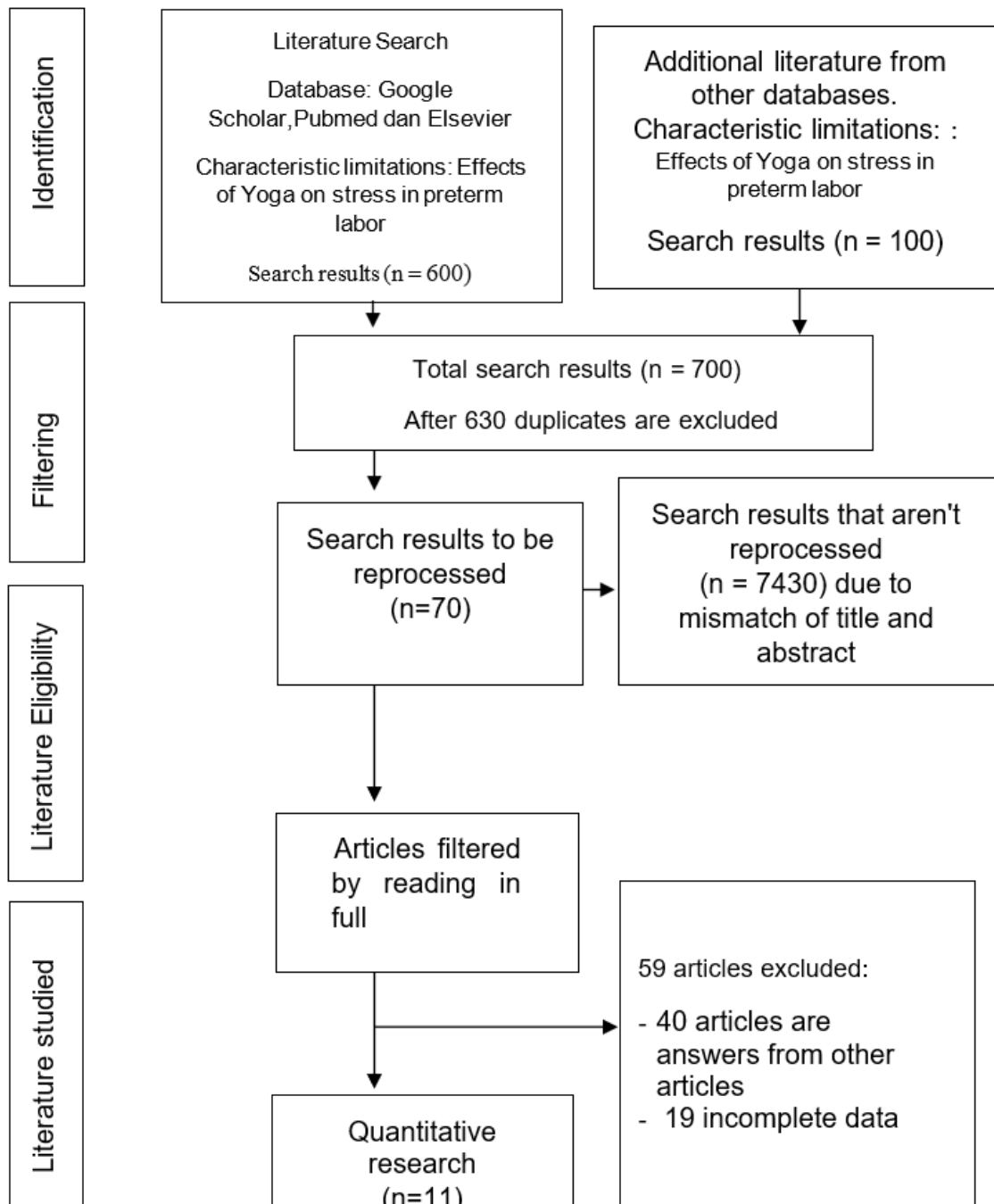


Figure 1 Literature Search Flow

Journal Review

No	Name Researcher	Journal	Journal Title	Research Objectives	Method	Subject	Research Results
1.	Julie berge on, et al	Maternal Stress During Pregnancy and Gestational Duration: A Cohort Study From The Danish National Birth Cohort	Journal Pediatric and Perinatal Epidemiology	To find out the relationship between maternal stress during pregnancy, life stress and emotional stress and the duration gestational period.	Cohort studies	A total of 80,991 Pregnant women born in 1996 – 2002 who have a level of life stress and the emotional distress collected at the age of pregnancy mother Pregnancy 31	Emotional distress and Life stress has been proven to be related to gestational age during birth, with pregnancy- related stress being the only trigger stress
2.	Tojok ar da GDE Agung Suar Dewa , DKK	High Maternal Cortisol Serum Levels as A Risk Factor for Preterm Labor	Europe Journal of Medical and Health Sciences	Assessing cortisol levels relationship Maternal serum at risk of premature birth	Case control	A total of 50 people Mother Pregnant which is divided into case groups and control groups	High serum cortisol levels can increase The risk of premature labor is 10 times higher compared to low cortisol serum

3.	Yayuk Puji Lestari, Ika Friscila	Prenata Yoga on the Mental Health Level of Pregnant Women	Media Information	Analyzing the differences in prenatal classes Yoga on Mental Health	Experiment with Tan Post test-Only Control approach design.	A total of 30 pregnant women were taken in total sampling. Sample It is divided into two groups, the treatment group and the control group.	There were differences in the mental health of pregnant women between control group (not attending prenatal yoga classes) and treatment groups attending prenatal classes yoga)
4	Kiki Reski, et al.	The effectiveness of gentle prenatal yoga On the recovery of depression level in pregnant women aged	SESPAS	Research aims to analyze the effectiveness of prenatal yoga on depression up to the hormone serotonin which is not normal in pregnant women <20 and >35 years old	Quasi experiment with an approach to group design non-equivalence control	A total of 24 pregnant women aged <20 and >35 years of age had no complication in pregnancy divided into 2 groups (control group & intervention group)	There was a difference in BDI-II scores between the intervention group and the control group after receiving a gentle prenatal treatment

5	Kitikh untapp araditt, duck	Tags Effect of Perceived Stress during Pregnancy on Preterm Birth	Interna- tional journal of Women 's Health	Study the effects of stress felt by mothers against premature birth	Case control	Taking 2 groups of postpartum mothers where 1 Mother's Group Post partum of premature birth and mother Postpartum Birth aterm.	The stress that mothers feeling during pregnancy is statistically greater at birth premature.
6	Momo Ko Kusak, et al.	Immediate stress reduction effects of yoga during pregnancy	Women and Birth 29	Verifying the effect of Live Yoga to the response stress during pregnancy	One group pre- post test design	Recruited 60 healthy primipara without complication of 20 weeks gestation.	Reducing effects were found direct stress (seen from decreased cortisol and amylase concentrati ons in saliva) after a yoga class during pregnancy

7	Pao-Ju Chen, DKK	Effects of prenatal yoga on women's stress and immune function across pregnancy.	Complementary Therapies in Medicine	To know the effects of prenatal yoga	randomized control trial	A total of 94 healthy pregnant women with a gestational age of 16 weeks Respondents were divided into 2 groups namely the intervention group and group control	Prenatal yoga significantly reduces stress in pregnant women and increase their immunity
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8	Nikita Bharti, dkk	Effect of Antenatal Yoga On Maternal Stress and Clinical Outcomes in North Indian Women	Journal Indian Academy And Clinical Medicine	Observe Influence of therapy yoga against Maternal stress levels and nervous system otonom.	A Randomised Controlled Trial	Recruited Mother Pregnancy age 18– 20 weeks Which divided become control and intervention.	Found Decline stress yang signifikan after Yoga Therapy for 12 Sunday Using parameter Subjective (stress scale stress scale ich (variabilitas ariabilitas ats art).
9	Rukiye Hobek Akarsu, et al	The effect of pregnancy yoga on the pregnannt's psychosocial health and prenatal attachment	Indian Journal Of Tradition to the Knowledge	Identify Influence yoga in pregnancy against Psychosocial pregnancy .	A Randomized controlled experimental study	63 woman primipara 14- 26 weeks without chronic disease and experience yoga previously.	Prenatal Yoga is effective in the Increasing Psychosocial level And Attachment
10	Ana Garcia - White, et al	Can Stress biomarkers predict preterm birth in women with preterm labor?	Psycho-neuro-endocrinology	Study influence biomarker stres at time until Childbirth in Threatened Preterm Women Labor (TPL)	Case control	Mother 24-31week Treated At home sick with a diagnosis of Threatened Preterm Labor (TPL)	The high Kortisol may have an important role in birth prediction premature.

Premature labor is a very serious condition. Babies born prematurely have a high risk of morbidity and mortality due to the imperfect function of the baby's organs (Wahyuni, 2022). There are many theories about the cause of preterm labor, where 70% occur spontaneously, one of which is caused by stress. There are 4 pathways that affect delivery that are not mutually *exclusive* which will later lead to a common pathway, namely premature activation of maternal or fetal hypothalamus-pituitary-adrenal (HPA) axis due to stress, infection/inflammation, bleeding of decidua, and uterine distension (Sriyana Herman & Hermanto Tri Joewono, 2020).

Women during their pregnancy show different feelings about the stress they feel during their understanding which will later have an impact on the condition of their pregnancy and also the development of the fetus (Ribeiro et al., 2023). As explained in the journal (Julie Bergeron, 2022) Emotional stress and life stress have been shown to be related to gestational age at birth, with pregnancy-related stress being the only trigger. This study shows that stress experienced by pregnant women can have a negative impact on the length of pregnancy and increase the risk of premature labor. In this case, stress is caused by several factors, such as excessive worry related to pregnancy, about the health of the baby, childbirth, or major changes in life.

Research (Tjokorda, et al. 2020) also states that high serum cortisol levels can increase the risk of premature labor by 10 times in pregnant women compared to pregnant women with low serum cortisol levels. In the study, it was explained that one of the physiological mechanisms that occur when a person is stressed is the activation of the HPA (*Hypothalamic-pituitary-adrenal*) axis, which can increase the production of the hormone cortisol. Cortisol is the main stress hormone in the human body and plays a role in responding to a variety of stressful situations, including during pregnancy. The study found a link between high maternal serum cortisol levels and risk of premature labor, so it can be concluded that stress and activation of the HPA axis induced by stress may contribute to an increase in the hormone cortisol in the pregnant woman's body, which ultimately leads to the risk of premature labor.

Similar research related to the hormone cortisol was also discussed in the journal (Ana Garcia, 2017) explaining that high cortisol levels in the diagnosis of TPL may have an important role in predicting premature birth. The results showed that the time to delivery was significantly related to cortisol levels ($p=0.001$). This suggests that high cortisol levels in women with TPL (*Threatened Preterm Labor*) can accelerate labor. Therefore, it can be concluded that high cortisol at the time of TPL diagnosis can be used as a potential predictor to evaluate the risk of preterm labor in individuals.

The Effect of Prenatal Yoga on Pregnant Women's Stress

Based on some of the studies above, it is proven that there is a relationship between stress in pregnant women and preterm pregnancy. However, in this case, the occurrence of preterm pregnancy can be prevented, especially if it is caused by stress factors, namely by reducing stressors by using complementary

therapy. Complementary therapies that can be practiced, namely with prenatal yoga, yoga is referred to as a stress management therapy that involves the limbs of the human body as a whole and is usually chosen as a therapy to overcome anxiety or depression compared to the administration of pharmacological therapy because it has side effects and many benefits (Nabilla et al., 2022). Yoga classes for pregnant women are a modification of basic yoga that has been adjusted to the condition of pregnancy. The movements made in pregnancy yoga are at a slower tempo and have adjusted to the condition of the pregnant woman. The benefits of the influence of prenatal yoga on the emotional well-being of pregnant women are: (Mardliyana et al., 2022)

This review explores the effect of giving yoga therapy to pregnant women on stress in mothers with preterm labor. From the 11 studies we raised, we found that there is a mechanism that arises from the provision of complementary therapy of pregnancy yoga on reducing stress in pregnant women. With the decrease in stress in pregnant women, this will also affect the condition of their pregnancy so that the incidence of premature labor can be prevented. Regardless of the degree of bias of each study, preterm labor was significantly caused by the mother's feelings of anxiety and stress. The premature condition that occurs is a condition that occurs spontaneously without any medical indication.

Based on the psychological condition of the study, it can be said that measuring the level of depression of the mother at the beginning of pregnancy until before delivery needs to be done to prevent severe depression conditions that will be experienced by the mother. Severe depression in the mother can be fatal to the mother's pregnancy process and also the growth and development of the fetus in the womb. In several reviews of maternal stress, to prevent and overcome depression that occurs in mothers which are feared to have a negative impact on their babies, it is necessary to have an approach from all aspects so that a comfortable and safe pregnancy can be felt by mothers during their pregnancy.

It is hoped that this review can increase the understanding of the understanding of stress in premature labor and complementary therapeutic measures that midwives can still give to mothers. It is hoped that with the provision of appropriate therapy, maternal and fetal morbidity and mortality rates can be reduced.

CONCLUSSION

The conclusion that we can draw from this review literature is that there is an influence between the administration of yoga on the incidence of premature labor. The evidence of this study supports the positive benefits of yoga for pregnant women against stress and anxiety that occurs in pregnant women so that it can prevent premature labor. The recommendations above can be used as a reference for health workers in providing complementary therapy to pregnant women to prevent premature childbirth. The advice that we can give is related to service providers, namely health workers who are able to provide preventive services in the form of complementary therapy to pregnant women. This complementary therapy is expected to be able to

prevent the occurrence of complications that It may occur in pregnant women during the pregnancy process, one of which is to prevent premature delivery.

BIBLIOGRAPHY

Book

- Central Statistics Agency. (2020). Official News of Statistics. Central Statistics Agency.
- Glover, V. (2019). Stress and pregnancy (prenatal and perinatal) PREGNANCY (PRENATAL AND PERINATAL).
- Sriyana Herman, & Hermanto Tri Joewono. (2020). Reference Book for Premature Childbirth (WA Anasari, Ed.). Avicenna Kendari Foundation.
- Surya, R., & Pudyastuti, S. (2019). Preterm Delivery. In CDK Supplement Edition-1 (Vol. 46).

Journal

- Bakri, K. R. R., Usman, A. N., Syamsuddin, S., Idris, I., & Limoa, E. (2021). The effectiveness of gentle prenatal yoga on the recovery of depression level in pregnant women aged. *Gaceta Sanitaria*, 35, S310-S313. <https://doi.org/10.1016/j.gaceta.2021.10.042>
- García-Blanco, A., Diago, V., Serrano De La Cruz, V., Hervás, D., Cháfer-Pericás, C., & Vento, M. (2017). Can stress biomarkers predict preterm birth in women with threatened preterm labor? *Psychoneuroendocrinology*, 83, 19-24. <https://doi.org/10.1016/j.psyneuen.2017.05.021>
- 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). <https://doi.org/10.1186/s12888-015-0393-1>
- Journal of Alternative and Complementary Medicine*, 21(4), 208-216. <https://doi.org/10.1089/acm.2014.0033>
- Kawanishi, Y., Saijo, Y., Yoshioka, E., Nakagi, Y., Yoshida, T., Miyamoto, T., Sengoku, K., Ito, Y., Miyashita, C., Araki, A., & Kishi, R. (2016). The association between prenatal yoga and the administration of ritodrine hydrochloride during pregnancy: An adjunct study of the Japan environment and children's study. *PLoS ONE*, 11(6). <https://doi.org/10.1371/journal.pone.0158155>
- Keperawatan Profesional, J., & Ayu Retno Kusumasari, H. (2023). THE EFFECTIVENESS OF Prenatal Yoga As Complementary Therapy On Birth Outcomes.
- Lin, I. H., Huang, C. Y., Chou, S. H., & Shih, C. L. (2022). Efficacy of Prenatal Yoga in the Treatment of Depression and Anxiety during Pregnancy: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, 19(9). <https://doi.org/10.3390/ijerph19095368>
- Lumban Gaol, N. T. (2016). Stress Theory: Stimulus, Response, and Transactional. *Psychology Bulletin*, 24(1), 1. <https://doi.org/10.22146/bpsi.11224>
- Mardliyana, N. E., Im, A. ', Nadhiroh, M., & Puspita, I. M. (2022). Prenatal Yoga Classes as an Effort to Reduce Discomfort in Pregnant Women.

- Nabilla, T., Dwiyanti, E., Public Health Studies, P., Health Sciences and Natural Sciences, S., Airlangga, U., Occupational Health and Safety, D., & Public Health, F. (2022). The Effectiveness Of Yoga In Overcoming Anxiety In Pregnant Women And.
- Petch, S., DeMaio, A., & Daly, S. (2019). Prediction of recurrent preterm delivery in asymptomatic women- an anxiety reducing measure? *European Journal of Obstetrics and Gynecology and Reproductive Biology*: X, 4. <https://doi.org/10.1016/j.eurox.2019.100064>
- Ribeiro, C. S. Z., Gondim, E. C., Scorzafave, L. G. D. S., Gomes-Sponholz, F. A., dos Santos, D. D., & de Mello, D. F. (2023). Parental stress during pregnancy and maternity. *Revista Da Escola de Enfermagem*, 57. <https://doi.org/10.1590/1980-220X-REEUSP-2022-0351en>
- Sharma, M., & Branscum, P. (2015). Yoga Interventions in Pregnancy: A Qualitative Review.
- Sungkar, A., Fattah, A. N. A., Surya, R., Santoso, B. I., & Zalud, I. (2017). High preterm birth at cipto mangunkusumo hospital as a national referral hospital in Indonesia. *Medical Journal of Indonesia*, 26(3), 198–203. <https://doi.org/10.13181/mji.v26i3.1454>
- Tanpradit, K., & Kaewkiattikun, K. (2020a). The effect of perceived stress during pregnancy on preterm birth. *International Journal of Women's Health*, 12, 287–293. <https://doi.org/10.2147/IJWH.S239138>
- Tanpradit, K., & Kaewkiattikun, K. (2020b). The effect of perceived stress during pregnancy on preterm birth. *International Journal of Women's Health*, 12, 287–293. <https://doi.org/10.2147/IJWH.S239138>
- Yunita Laila Astuti, Husnul Khatimah, & Vini Yuliani. (2022). Prenatal Yoga Improves Physical and Psychological Fitness in Pregnant Women: Literature Review. *INSOLOGY: Journal of Science and Technology*, 1(3), 280–290. <https://doi.org/10.55123/insologi.v1i3.576>

Website

- Available at: <https://www.who.int/news-room/fact-sheets/detail/preterm-birth> [Accessed 16 Maret 2024].
- Available at: https://yankes.kemkes.go.id/view_artikel/1647/kelahiran-bayi-prematur [Accessed 16 Maret 2024].
- Available at: https://yankes.kemkes.go.id/view_artikel/603/perawatan-bayi-prematur [Accessed 16 Maret 2024].
- DEPRESI POSTPARTUM: SYSTEMATIC REVIEW Effectiveness Yoga for Anxiety during Prenatal and Postpartum Depression: Systematic Review. <http://cmhp.lenterakaji.org/index.php/cmhp>
- Ministry of Health, 2022. Premature Birth of Babies. [Online]
- Rima Irwinda, Ali Sungkar, & Noroyon Wibowo. (2019). Panduan Persalinan Preterm. www.pogi.or.id
- Wahyuni, N. S., 2022. Premature Baby Care. [Online]
- WHO, 2024. Preterm birth. [Online]