

Yoga Therapy for Pregnant Women to Overcome Stress in Premature Labor

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ABSTRACT

Globally, prematurity is one of the leading causes of death in children under the age of 5. Premature childbirth is a problem in the world, including Indonesia. The occurrence of preterm labor in general is due to the influence of stress that results in HPA activation in the mother and fetus. The provision of complementary therapy to pregnant women is one of the alternatives that health workers can provide to pregnant women to prevent premature labor. This article wants to raise how the effect of giving yoga therapy to pregnant women to overcome stress in premature labor. Data were collected using electronic databases through Google Scholar, Pubmed and Science Direct related to the original article that researched the provision of yoga therapy to overcome stress in premature labor that met the inclusion and exclusion requirements. 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. There is an effect between the administration of yoga on the incidence of premature labor.

Keywords : *Yoga Pregnancy, Stress, Premature*

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).

Research on the effects of yoga therapy in reducing stress in pregnant women at risk of premature labor is essential to reduce maternal and infant morbidity and mortality rates. Stress during pregnancy is a major factor that can increase the likelihood of premature labor. Yoga, as a holistic therapy combining physical movements, breathing techniques, and meditation, has the potential to lower stress levels and improve pregnancy outcomes. This study will employ a randomized controlled trial (RCT) design to compare pregnant women receiving yoga therapy with those receiving standard prenatal care without yoga. It is expected that the results will show a significant reduction in stress levels in the

yoga group, which could lead to a decreased risk of premature labor and improved maternal and infant health. Therefore, yoga therapy could be integrated into prenatal care services as a non-invasive, cost-effective intervention to reduce stress and prevent premature labor.

METHODOLOGY

The literature review was carried out using online databases such as Google Scholar, PubMed, and ScienceDirect, following a systematic approach. The process began with determining relevant keywords based on the topic, including terms such as "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." After identifying the keywords, titles, abstracts, and keywords of the articles were examined to ensure they met the inclusion and exclusion criteria. The next step involved reading the selected articles thoroughly or partially to confirm their relevance to the review. The inclusion criteria consisted of original research articles published between 2014 and 2024, focusing on the effects of stress during pregnancy on premature labor, involving pregnant women experiencing stress or undergoing prenatal yoga. Only articles providing detailed explanations of the relationship between stress and premature labor were included. In cases where studies were published in multiple databases, the most recent version was chosen. Articles such as conference abstracts or those with incomplete data were excluded from the review.

RESULT AND DISCUSSION

Literature Search Flow

Based on the comprehensive literature search, a total of 600 articles were initially identified, supplemented by an additional 100 articles discovered through further exploration of relevant databases. This extensive search aimed to capture a wide array of studies related to the impact of complementary therapies, particularly yoga, on the incidence of premature labor. After applying the established inclusion criteria, it was determined that 630 studies did not meet the required standards, prompting a thorough evaluation of 70 articles that were read in their entirety. Ultimately, 11 publications were selected as primary references for this review, providing robust evidence and valuable insights into the relationship between yoga, maternal stress management, and the prevention of premature labor. This rigorous selection process underscores the importance of critical evaluation in literature reviews, ensuring that the findings are both relevant and reliable. By synthesizing high-quality evidence from these selected publications, the review aims to enhance understanding of how complementary therapies can improve prenatal care, thereby contributing to better maternal and infant health outcomes. Furthermore, the conclusions drawn will serve as a foundation for future research and practical recommendations for healthcare providers, emphasizing the potential of integrating complementary therapies

like yoga into standard prenatal practices for more comprehensive maternity care.

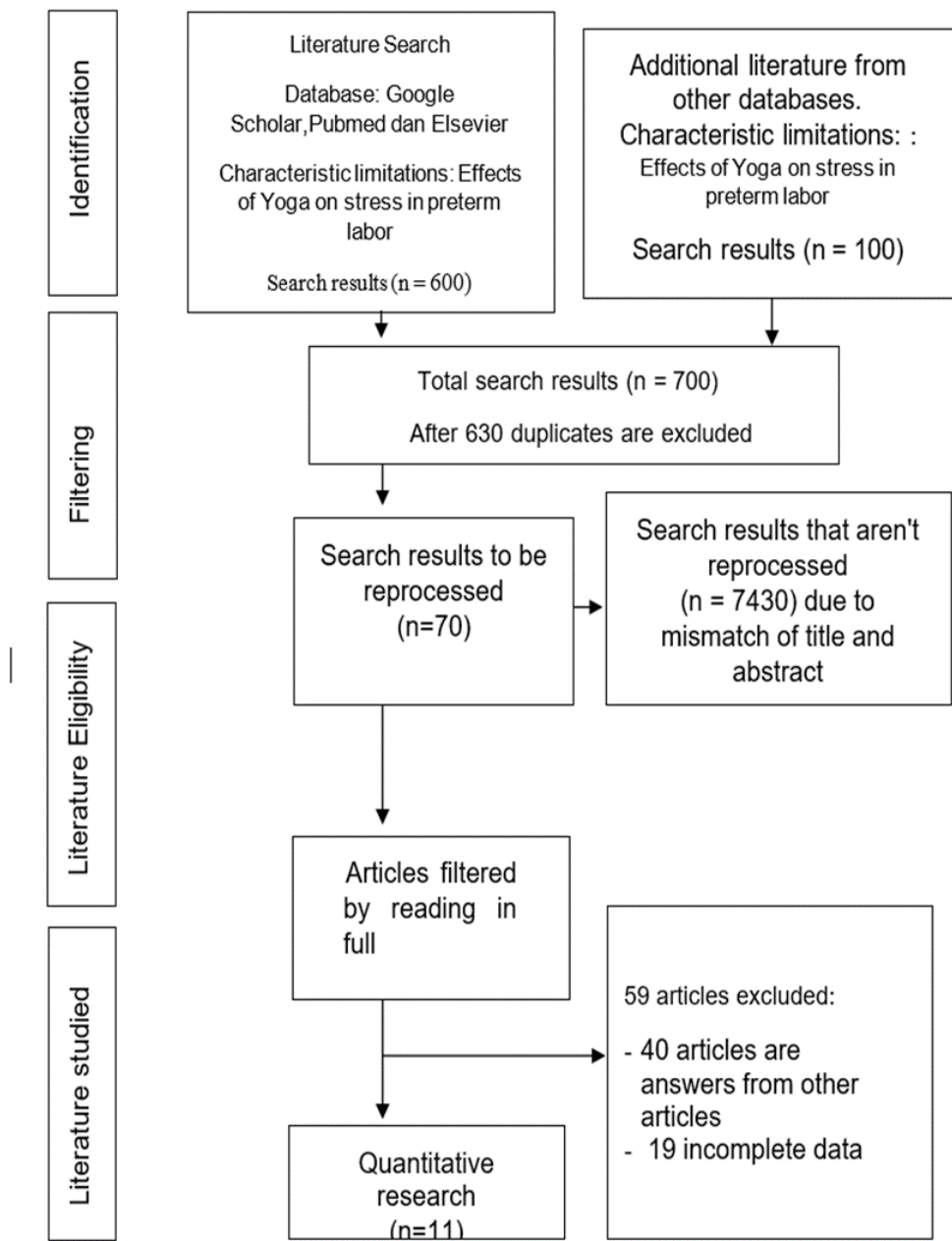


Figure 1 Literature Search Flow

N o	Name Research	Journal	Journal Title	Researc h	Method	Subject	Researc h Result
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h				Objectives			
1	Julie bergeno n <i>et al.</i>	Maternal Stress During Pregnancy and Gestational Duration : A Cohort Study From The Danish National Birth Cohort	Journal of 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 – 2022 who have a level of life stress and the emotional distress collected at the age of pregnancy mother pregnancy 31	Emotional distress and life have been proven to be gestational age during birth, with pregnancy related stress being the only trigger stress
2	Tojok ar da GDE Agung Suar Dewa <i>et al.</i>	High maternal cortisol serum levels as a risk factor for preterm labor	European 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 informati on	Analyzi ng the diffences in prenatal classes yoga on mental health	Eksperi ment with tan post test-only control apporo ac design	A total of 30 pregnant women were taken in total samplin g. Sample it is divided into two groups, the treatme nt group and the control group.	There were differenc es in the mental health of pregnant women between control group (not attendin g prenatal yoga classes and treatmen t groups attendin g prenatal classes yoga)
4	Kiki Reski <i>et al.</i> ,	The effectiv ess of gentle prenatal yoga on the recover of depress ion level in pregna nt women aged	SESPAS	Research aims to analyze the effective ness of prenatal yoga on depressi on up to the hormon e serotoni n which is not nomrla in	Quasi emperi ment with an approac h to group design non equival ence control	A total of 24 pregnra nt women aged <20 and >35 years of age had no complic ation in pregna ncy divided into 2 groups	There was a differenc e in BDI-II scores between the intervent ion group and the control group after receivin g a gentle yoga

				pregnant women <0 and >35 years old		(control group & intervention group)	prenatal treatment
5	Kitikhuntappa raditt, duck	Tags effect of perceived stress during pregnancy on patermbirth	International 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 postpartum of premature birth and mother postpartum birth at term.	The stress that mother feeling during pregnancy is statistically greater at birth premature
6	Momo Ko Kusak <i>et al</i>	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 concentration)

							ations in saliva) after a yoga class during pregnancy
7	Pao-Ju Chen <i>et al</i>	Effects of prenatal yoga on women's 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
8	Nikita Bhartia <i>et al</i>	Effect of antenatal yoga on maternal stress and clinical outcomes in	Journal Indian academy and clinical medicine	Observe influence of therapy yoga against maternal stress levels and nerveou	A randomised controlled trial	Recruited mother pregnancy age 18-20 weeks which divide become control	Found decline stress significantly after yoga therapy for 12 Sunday using paramet

		north Indian women		s system otonom		and interva ntion	er subjectiv e (stress scale stress scaleich) (variabit as ats art)
9	Rukiye Hobek Akar Su <i>et al</i>	The effects of pregna ncy yoga on the pregna nt's psycho social health and prenata a attach ment	Indian journal of tradition to the knowledg e	Identify influenc e yoga in prenanc y against psychos ocial pregnan cy	A random ized controll ed experim antal study	63 women primipa ra 14-26 weeks without chronic disease and experie nce yoga previou sly	Prenatal yoga is effective in the increasin g psychos ocial level and attachme nt
10	Ana Garcia, White, <i>et al</i>	Can stress biomar kers predict preter m birth in women with preter m labor?	Psycho neuro endocrino logy	Study influenc e biomar marker stress at time until childbirt h threatened preterm women labor (TPL)	Case control	Mother 24-31 week treated at home sick with a diagnos is f threate ned preterm labor (TPL)	The high kortisol may have an importa nt role in birth predictio n prematu re

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 complex phenomenon influenced by various factors, with approximately 70% of cases occurring spontaneously and often without identifiable medical reasons. One significant contributor to spontaneous preterm labor is maternal stress, which can trigger physiological responses in the body, such as the release of stress hormones like cortisol, potentially leading to uterine contractions and the premature onset of labor. Research indicates that elevated stress levels can disrupt hormonal balance and impair immune response, resulting in complications during pregnancy. Chronic stress is linked to inflammation, which has been associated with an increased risk of preterm birth. Additionally, stress can negatively affect maternal behavior and lifestyle choices, including poor nutrition, inadequate sleep, and decreased engagement with prenatal care, further elevating the risk of adverse pregnancy outcomes.

Psychosocial factors, such as anxiety, depression, and a lack of social support, can exacerbate the effects of stress on pregnant women, impacting their mental health and contributing to physiological consequences that increase the likelihood of premature labor. Understanding the role of stress in preterm labor is essential for developing effective interventions and support systems for pregnant women. By addressing stress through therapeutic measures like counseling, mindfulness practices, and relaxation techniques, healthcare providers can help mitigate its negative impact, ultimately aiming to reduce the incidence of preterm labor and improve overall maternal and fetal health. 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.

The study highlights that stress triggers the activation of the HPA (Hypothalamic-pituitary-adrenal) axis, leading to increased production of

cortisol, the primary stress hormone. This elevation in cortisol levels during pregnancy has been significantly correlated with a higher risk of premature labor. Prolonged exposure to high cortisol can adversely impact maternal health and fetal development, contributing to increased uterine contractility and inflammation, which are associated with preterm labor. Therefore, it is essential for healthcare providers to prioritize stress management strategies, such as counseling, mindfulness practices, and prenatal yoga, to help reduce HPA axis activation and cortisol levels. By addressing maternal stress, we can foster a healthier intrauterine environment, ultimately lowering the risk of premature labor and improving outcomes for both mothers and infants. This underscores the need for further research into effective interventions that can be incorporated into routine prenatal care.

Similar research related to the hormone cortisol was also discussed in the journal (Ana Garcia, 2017) Elevated cortisol levels in the diagnosis of Threatened Preterm Labor (TPL) may play a significant role in predicting the risk of premature birth. The findings of the study indicate a strong correlation between cortisol levels and the time to delivery, with a p-value of 0.001, suggesting that increased cortisol levels in women experiencing TPL can hasten the onset of labor. Given that cortisol is a crucial hormone in the body's response to stress, its elevation during pregnancy can substantially affect uterine function and the overall pregnancy environment (Egliston *et al.*, 2021). Therefore, high cortisol levels at the time of TPL diagnosis can serve as an important indicator for healthcare providers, providing valuable insights into the severity of the condition and the likelihood of preterm birth. Monitoring cortisol levels in patients presenting with TPL enables clinicians to make more informed decisions regarding treatment and management strategies. This underscores the importance of integrating cortisol assessments into routine evaluations for pregnant women at risk of TPL, allowing for proactive measures to alleviate stress and regulate cortisol levels, ultimately improving pregnancy outcomes. Furthermore, additional research is needed to explore the mechanisms through which cortisol influences labor dynamics and to establish standardized protocols for utilizing cortisol levels as predictive markers in prenatal care, thereby enhancing the overall quality of maternal and fetal care.

The Effect of Prenatal Yoga on Pregnant Women's Stress

Based on the studies mentioned, substantial evidence demonstrates a relationship between stress in pregnant women and the incidence of preterm labor, indicating that such occurrences, especially when linked to stress, can be effectively mitigated through the reduction of stressors, particularly by incorporating complementary therapies. One notable approach is prenatal yoga, which is specifically designed to address the unique physical and emotional needs of pregnant women (Beddoe *et al.*, 2019). As a form of stress management therapy, prenatal yoga engages the entire body, promoting relaxation, flexibility, and strength while alleviating anxiety and depression. Unlike pharmacological treatments that may pose risks of side effects for both mother and fetus, prenatal

yoga offers a holistic and non-invasive alternative with numerous benefits, including lowering cortisol levels, improving mood, enhancing sleep quality, and reducing physical discomfort. Additionally, prenatal yoga fosters mindfulness and breathing techniques, helping mothers cope with the stressors of pregnancy and childbirth.

By promoting relaxation and emotional well-being, prenatal yoga creates a more supportive environment for fetal development, ultimately decreasing the likelihood of preterm labor. As healthcare providers increasingly recognize the importance of mental health in prenatal care, integrating complementary therapies like prenatal yoga can equip expectant mothers with valuable tools to manage stress and improve overall pregnancy outcomes. Continued research into the efficacy of such therapies will further solidify their role in promoting maternal and fetal health, underscoring the need for a more integrated approach to prenatal care that prioritizes both physical and emotional well-being. (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 impact of yoga therapy on stress reduction in pregnant women at risk of preterm labor, highlighting the therapeutic potential of this holistic practice. Analyzing 11 studies reveals that prenatal yoga, as a form of complementary therapy, significantly contributes to lowering stress levels in expectant mothers. This reduction in maternal stress not only enhances the mother's overall well-being but also has a direct, positive effect on pregnancy outcomes, notably reducing the risk of preterm labor (Austin & Leader., 2020). High levels of stress and anxiety are recognized as key factors that can lead to spontaneous preterm labor, which occurs without any identifiable medical indications. Through its emphasis on mindfulness, relaxation, and gentle physical movement, yoga therapy effectively helps regulate the body's stress responses, fostering a state of calm that mitigates the physiological triggers associated with early labor.

Despite the potential biases found in individual studies, the consistent findings across the literature highlight a strong correlation between maternal stress and the incidence of preterm birth, emphasizing the critical need for healthcare providers to address maternal stress in prenatal care. Incorporating yoga therapy as a complementary intervention allows providers to adopt a proactive approach that supports not only the emotional and psychological well-being of mothers but also creates a more stable and nurturing prenatal environment. Yoga, through its combination of physical movement, breathing exercises, and mindfulness, can significantly reduce anxiety and promote relaxation, thereby mitigating the physiological stress responses that contribute to preterm labor. This makes yoga therapy a valuable, non-invasive, and cost-effective strategy for enhancing prenatal care, benefiting a wider range of expectant mothers.

The integration of yoga into routine prenatal practices has the potential to improve health outcomes for both mothers and infants, including lower rates of preterm birth and enhanced maternal mental health. Given these promising findings, further research is needed to explore the long-term benefits of yoga therapy on maternal and child health outcomes and its effectiveness within comprehensive prenatal care strategies. This could involve longitudinal studies assessing the impact of regular yoga practice on stress reduction and subsequent effects on pregnancy outcomes, ultimately empowering women to take an active role in their mental and physical health during pregnancy while fostering a healthier start for their children. Drawing from the psychological findings of this study, closely monitoring depression levels in expectant mothers from early pregnancy through to just before delivery is essential (Rallis *et al.*, 2024).

Continuous assessment is crucial in preventing severe depressive states that can adversely affect the mother's overall well-being, disrupt pregnancy progression, and impede healthy fetal development (Meltzer., 2021). Significant maternal depression can lead to a range of complications, including preterm birth, low birth weight, and developmental delays in the child, highlighting the need for early intervention. Research indicates that effectively managing maternal stress and depression requires a holistic approach that integrates emotional, psychological, and social support systems, ensuring that mothers receive the necessary resources to navigate the challenges of pregnancy while promoting a sense of security and comfort. Access to mental health services, such as counseling and support groups, alongside social support from partners, family, and friends, creates a nurturing environment that fosters positive mental health. Additionally, educational programs focusing on stress management techniques—such as mindfulness, relaxation exercises, and prenatal yoga—empower expectant mothers to take an active role in their mental well-being. Collaboration among healthcare professionals, including obstetricians, midwives, psychologists, and social workers, can further enhance maternal health by addressing the multifaceted needs of pregnant women.

By prioritizing the mental health of expectant mothers through comprehensive assessment and support, we can significantly improve the overall pregnancy experience, reduce the risk of complications, and promote healthier developmental outcomes for children. This review aims to deepen the understanding of healthcare practitioners regarding the connection between stress and premature labor, along with the complementary therapeutic strategies that midwives can employ to assist mothers. By implementing suitable interventions such as yoga, counseling, and mindfulness techniques, healthcare providers can help alleviate stress and depression among pregnant women. These strategies have the potential to significantly lower the rates of morbidity and mortality for both mothers and infants, leading to healthier pregnancies and improved outcomes. The findings of this review highlight the importance of adopting a comprehensive approach to prenatal care that emphasizes mental well-being in conjunction with physical health, ultimately enhancing the overall pregnancy and childbirth experience for women (Crane & Fenner., 2021).

CONCLUSION

The conclusion derived from this literature review is that there exists a significant influence of yoga on the incidence of premature labor. The evidence presented supports the positive effects of yoga in alleviating stress and anxiety among pregnant women, which can consequently help prevent premature labor. Therefore, the findings provide valuable insights for healthcare professionals regarding the implementation of complementary therapies for expectant mothers. It is recommended that health workers integrate yoga into their preventive care services, as this approach not only enhances the mental well-being of pregnant women but also reduces the risk of complications during pregnancy, including premature delivery. By offering yoga as a complementary therapy, healthcare providers can empower pregnant women with effective tools to manage stress, thereby creating a more supportive and healthier pregnancy experience. This proactive strategy emphasizes the importance of addressing both the physical and emotional needs of pregnant women, ensuring a holistic approach to maternal care that ultimately benefits both mothers and their infants. In summary, incorporating yoga into prenatal care represents a promising avenue for preventing premature labor and enhancing overall maternal health.

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