Physical Activities That Influence Pregnant Women's Well-Being: Literature Review

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Abstract

Pregnancy and childbirth are physiological processes that influence maternal mortality and morbidity risk factors. Proper mental and physical preparation is essential to prevent pathological conditions that may affect pregnant women. One effective intervention is engaging in physical activity, which positively impacts both the mother and fetus. This literature review aims to examine the relationship between physical activity and the health of pregnant women in physical, psychological, socio-economic, cultural, and environmental aspects. This study employs a literature review methodology using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. Article selection was conducted using the PICO (Population, Intervention, Comparison, Outcome) framework, with keywords such as "pregnant women," "physical activity," "sports," "benefits," and "exercise" in Indonesian and English. The literature search was performed using Sage Journals, Scopus, and Google Scholar for articles published between 2019 and 2024 also free full-text. A total of six relevant studies were selected based on inclusion and exclusion criteria. The findings indicate that physical activity offers significant benefits for pregnant women and fetuses, particularly in improving their quality of life both physically and mentally. Pregnant women in rural areas tend to be more physically active than those in urban areas, and light exercises such as walking or yoga help reduce the body's burden, enhance sleep quality, alleviate stress, and prevent pregnancy complications. Further longitudinal research and education are necessary to understand the long-term effects of physical activity on pregnant women and to raise awareness of its benefits, especially in urban areas.

Keywords: Maternal well-being, Pregnancy, Physical activity

Introduction

Pregnancy is a process that begins from the time of fertilization to the birth of a baby that lasts for nine months after the egg meets the sperm cell (Kusnaningsih et al., 2023). Pregnancy and childbirth are physiological processes that affect the risk factors for maternal mortality and morbidity. In general, mothers during pregnancy experience physical and psychological changes that can cause anxiety and discomfort (Anggraeni et al., 2024), especially in the third trimester such as insomnia, frequent urination, constipation, back pain, varicose veins, fatigue, leg cramps, ankle edema and mood swings and increased anxiety (El-Hosary et al., 2024; Jordan & Cockerham, 2023). Psychological disorders in pregnant women can have a negative effect on fetal development and increase the risk of complications in labor, so prevention is needed with methods to prepare and ease the mother in maintaining her pregnancy and labor process (Astuti et al., 2022).

Good mental and physical preparation is needed to avoid abnormal (pathological) conditions that can attack pregnant women. One of the interventions that pregnant women can do is physical activity. Physical activity has a positive effect on the fetus, pregnancy, birth weight, maternal health and can minimize complications of long labor and can reduce pain levels (Artal, 2021; Fiat et al., 2022). Physical activity (PA) is any bodily activity involving skeletal muscle movement resulting in energy expenditure, and encompasses a range of activity types including sports, recreation, and family and professional activities. Physical activity is a key physical behavior for optimal health across populations including pregnant women (Hartinah et al., 2019).

Pregnant women who experience physical and psychological changes are susceptible to mental health such as depression, stress and anxiety which sometimes occur simultaneously. The prevalence of prenatal depression is reported to 20,7%, and depression is closely associated with adverse maternal and fetal health consequences (Yin et al., 2021). Similarly, antenatal anxiety, with a global prevalence of 20% and higher rates reported in low- and middle-income countries, appears to be associated with preterm birth and decreased breastfeeding rates (Fawcett et al., 2019). Given the impact of maternal mental health on pregnancy outcomes, prioritizing the well-being of pregnant women is essential, and engaging in physical activity has been recognized as an effective strategy to support their mental health.

The latest physical activity guidelines by WHO and the US have identified the importance of the pregnancy and postpartum periods for targeted physical activity recommendations (WHO, 2020). Most previous studies have suggested that physical activity during pregnancy depends on the amount and intensity of activity (Artal, 2021). WHO updated its guidelines for sedentary behavior and physical activity in 2020, encouraging pregnant women to participate in moderate-intensity physical activity (MI) (150 minutes/week) in household chores and daily life, which is associated with various health benefits, and these benefits can be illustrated by changes in cardiovascular and metabolic processes. Pregnant women's compliance with the internationally recommended minimum of 150 minutes of physical activity (PA) per week remains low despite the large body of evidence supporting the benefits of a physically active lifestyle during pregnancy. MI activity contributes to improving the physical condition of pregnant women and optimizing sleep patterns, mood, and health, thereby preventing pregnancy-related complications, and increasing work capacity. Given the above evidence, appropriate physical activity during pregnancy is safe, desirable, and beneficial.

For some pregnant women, doing physical activity has several barriers to its implementation such as fatigue, lack of time, pregnancy discomforts such as nausea and pain. However, if we do physical activity according to the guidelines given, we will avoid unwanted things. In addition, physical activity has potential benefits as a step to improve the quality of health life (HRQoL). Pregnancy can lead to decreased HRQoL, which includes physical, mental, and social aspects. (Wu et al., 2021). Therefore, physical activity can be a means of reducing the negative impact of HRQoL challenges.

Understanding the relationship between these physical behaviors among pregnant women can help health care providers and public health practitioners better identify women at risk for associated health risks and design effective strategies to maximize health outcomes (Howie et al., 2023). This literature review aims to examine the relationship between physical activity and the health of pregnant women in physical, psychological, socio-economic, cultural, and environmental aspects.

Research Methods

This study employs a literature review methodology using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach to systematically filter and analyze relevant articles based on predefined inclusion and exclusion criteria. The data collection process involved a systematic search using specific keywords in both Indonesian and English from reputable databases such as Sage Journals and Scopus, supplemented by Google Scholar as a secondary search tool. The search focused on publications from 2019 to 2024, free full-text, using keywords such as 'pregnant women,' 'physical activity,' 'sports,' 'benefits,' and 'exercise.' A total of six articles were selected following the PICO (Population, Intervention, Comparison, Outcome) criteria to ensure relevance and methodological rigor.

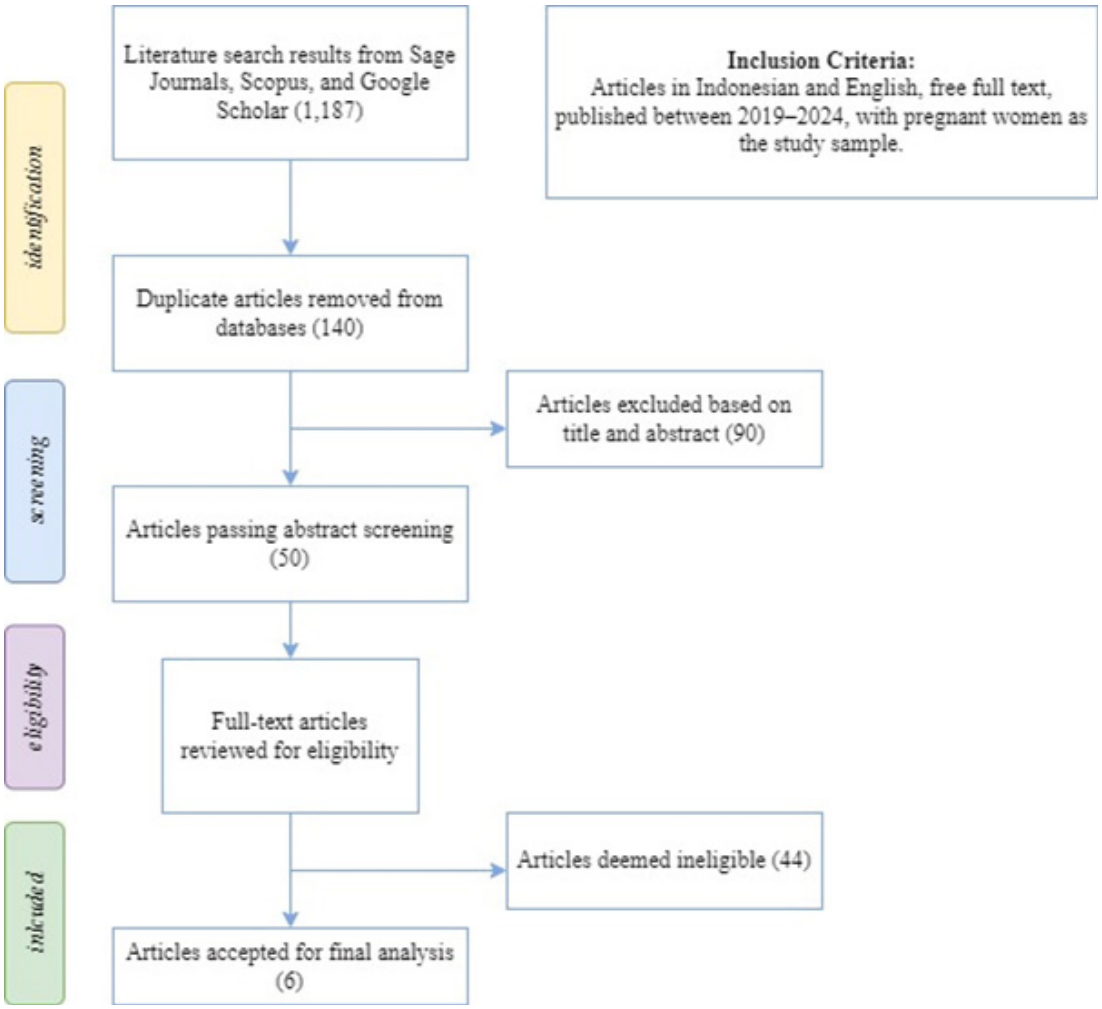

Figure 1. PRISMA flow diagram of study selection process

Results

6 articles were selected based on search performance in databases and adjusted to align with pre-established criteria.

Table 1. Characteristics of the literature review

No.	Authors	Objectives	Methodology and Sample	Intervention	Result
1.	Factors associated with meeting the WHO physical activity recommendations in pregnant Colombian women Author : José Francisco López-Gil, Mikel Izquierdo, Antonio García-Hermoso, Alicia M.Alonso-Martínez, David Rincón-Pabón, Marco Antonio Morales-Osorio & Robinson Ramírez-Vélez. (2022)	The aim of this study was to determine the prevalence of compliance with the World Health Organization Physical Activity recommendations for Colombian pregnant women, as well as possible factors that may be associated with compliance with those recommendations.	The research method was a cross-sectional study that included representative data from the National Nutritional Situation Survey (2015) in Colombia. Data were collected in 2015–2016. From an initial sample of 1140 pregnant Colombian women, 702 participants with complete data were included in the final analysis.	Physical activity is widely done by pregnant women in Colombia, especially in rural areas compared to urban areas because the average urban person is too busy working so they don't have time to do physical activity like in rural areas. physical activities such as farming, agriculture and walking in every activity they do	Although physical activity during pregnancy is beneficial, most pregnant women in Colombia analyzed in this study were not sufficiently active. This low level of physical activity can significantly impact both their health and the health of their children. The observed associations based on race/ethnicity and proximity to safe green spaces for physical activity highlight fundamental individual, interpersonal, and community-level disparities that affect the ability of Colombian pregnant women to meet recommended physical activity guidelines.
2.	The Relationship between Physical Activity Patterns and Constipation in Pregnant Women in the Third Trimester at the Gribig Health Center, Gebog District, Kudus Regency in 2017 Author: Dewi Hartinah, Sri Karyatia, Siti Rokhania (2019)	To determine the relationship between physical activity patterns and constipation in pregnant women in the third trimester at the Puskesmas Gribig, Kecamatan Gebog, Kabupaten Kudus 2017	Type of research Analytical Correlation. Using Cross Sectional approach. Sample 46 respondents pregnant women trimester III with random sampling technique. The measuring instrument used is a questionnaire. Data analysis univariate and bivariate. The test of the relationship of this study using Kendall Tau	Education on regular defecation patterns and not ignoring or delaying defecation, and doing general exercises, walking every day, maintaining good posture, regular abdominal muscle contraction exercises.	There is a relationship between physical activity patterns and constipation in pregnant women in the third trimester (p = 0,0001).
3.	The Effectiveness of Prenatal Massage and Prenatal Yoga on Sleep Quality in Pregnant Women in the Third Trimester Author: Hutari Puji Astuti, Christiani Bumi Pangesti, Galih Setia Adi (2022)	effectiveness of prenatal massage and prenatal yoga on sleep quality in pregnant women in the third trimester at Samudra Mom Kids and Baby Spa Krapyak Sragen Wetan Sragen.	quasi-experimental (Quasi Experimental Design), with the research design used is Nonequivalent Control Group Design. The sample of this study was obtained using a purposive sampling technique with a population of pregnant women in Trimester III who visited the research site.	Pregnant women are given physical treatment in the form of prenatal massage and prenatal yoga once a week for one month.	There is a significant relationship between the implementation of prenatal massage and yoga therapy with the level of sleep quality of pregnant women in the third trimester. Physical complaints felt are reduced because pregnant women feel more relaxed and blood circulation works well.

4.	**Influence of Physical and Psychological of Pregnant Women Toward Health Status of Mother and Baby** **Author:** **Alfiah Rahmawati, Rr Catur Leny Wulandari (2019)**	**To find out about health monitoring in pregnant women**	**The type and design of research used in this study is observational analytic, while the approach method used is cross sectional.** **The sample in this study was all pregnant women in the third trimester who were examined at Rusunawa Kaligawe in July-August 2018, totaling 70 pregnant women.**	**Interventions are carried out by conducting routine prenatal check-ups, psychological support, nutritional counseling and prenatal yoga to reduce anxiety and increase physical readiness for childbirth.**	**After the intervention, the physical and psychological readiness of pregnant women was positively and significantly related to fetal well-being, thus increasing readiness in the labor process.**
5.	**The Relationship Between Physical Activity and Sleep Quality of Pregnant Women in Desa Neglasari, Kecamatan Majalaya, Kabupaten Bandung** **Author:** **Eli Rusmita, Silvya (2023)**	**To determine the relationship between physical activity and sleep quality of pregnant women.**	**The research design used a correlational approach with a cross-sectional approach using the Pittsburgh Sleep Quality Index (PSQI) instrument.** **The sample in this study was 38 pregnant women.**	**Programmed physical activity, especially moderate intensity physical activity such as doing housework (mopping, hanging out clothes, cleaning the house) and walking, can help improve the quality of sleep for pregnant women.**	**The study found a significant relationship between physical activity and sleep quality in pregnant women in Desa Neglasari, Kecamatan Majalaya, Kabupaten Bandung. Most respondents (51.4%) engaged in light physical activity, while 48.6% did moderate activity. Similarly, 51.4% experienced poor sleep quality, and 48.6% had good sleep quality. Fisher's Exact Test ($p = 0.022$) indicated that pregnant women with light physical activity were more likely to have poor sleep quality, whereas those with moderate activity had better sleep quality.**
6.	**Relationship between Physical Activity and Nutritional Status in Pregnant Women** **Author:** **Resy Haryanti, Vella Yovinna, Agnita Utami (2021)**	**To determine the relationship between physical activity and nutritional status in pregnant women at the Puskesmas Rawat Inap Simpang Tiga Pekanbaru.**	**This type of research is quantitative research with descriptive correlation with cross-sectional research design.** **The sample in this study was 95 pregnant women.**	**Nutrition education and physical activity are provided to pregnant women, such as providing material on the types of nutritious food needed during pregnancy**	**Research on the relationship between physical activity and nutritional status in pregnant women at Puskesmas Rawat Inap Simpang Tiga Pekanbaru found no significant association ($p > 0.05$). Most respondents were in early adulthood, of Malay ethnicity, had a high school education, and were in the second trimester. The majority had good nutritional status and engaged in light physical activity. While pregnant women are increasingly aware of health, excessive physical activity without adequate nutrition can lead to malnutrition due to increased energy demands, making proper dietary intake essential during pregnancy.**

The studies reviewed in the table explore the relationship between physical activity and various health aspects of pregnant women. Research highlights that while physical activity is beneficial, many pregnant women do not meet recommended guidelines, especially in urban areas due to busy lifestyles. Studies indicate that physical activity can reduce pregnancy-related complications such as constipation, poor sleep quality, and anxiety. Interventions such as prenatal yoga, massage, and routine check-ups positively impact maternal health. However, one study found no significant relationship between physical activity and nutritional status, emphasizing the need for a balanced diet alongside physical activity. Overall, the findings underscore the importance of promoting physical activity during pregnancy to enhance maternal and fetal health.

Discussion

The Role of Physical Activity in Pregnancy

The reviewed literature highlights the significant role of physical activity in pregnant women's overall health and well-being. Several studies confirm that adequate physical activity contributes to improved sleep quality, reduced pregnancy-related discomforts, and enhanced psychological preparedness for childbirth (Howie et al., 2023). However, disparities in physical activity levels exist among pregnant women, influenced by socioeconomic status, environmental conditions, and daily workload. Given these findings, integrating physical activity into prenatal care programs is essential to ensuring a healthier pregnancy. Healthcare providers should actively promote safe and accessible exercise routines, tailored to each woman's individual circumstances, to maximize maternal and fetal benefits.

Physical Activity and Rural-Urban Differences

As mentioned in the study by López-Gil et al. (2022), pregnant women living in rural areas tend to be more productive in engaging in physical activities compared to those in urban environments. Additionally, pregnant women who engage in light physical activity in rural areas experience unique effects that contribute to a sense of bodily ease and improved pregnancy health. In fact, physical activities such as daily light walking, maintaining good posture, and regularly performing abdominal muscle contraction exercises can help manage constipation in pregnant women (Hartinah et al., 2019). Strategies to encourage physical activity among urban pregnant women should be developed, such as the provision of accessible exercise spaces and community-based prenatal activity programs, to bridge the gap in physical activity engagement between rural and urban settings.

Physical Activity and Sleep Quality

Several studies indicate that physical activity significantly contributes to improved sleep patterns in pregnant women. Recommended activities include prenatal exercise, yoga, prenatal massage, and light activities such as walking. Research conducted by Astuti et al. (2022) suggests that practicing yoga once a week can help reduce physical complaints felt because pregnant women feel more relaxed and blood circulation is good. This aligns with other studies that emphasize the role of physical activity in preventing complications, reducing stress, improving blood circulation, and enhancing sleep quality for pregnant women (Rusmita & Silvya, 2023). Increasing awareness about the benefits of prenatal exercises should be a priority in antenatal care, as improved sleep quality directly impacts maternal health and overall pregnancy outcomes.

Psychological Benefits of Physical Activity

Study by Rahmawati & Wulandari (2019) emphasized the psychological benefits of physical activity during pregnancy, showing that prenatal exercises and routine check-ups play a crucial role in supporting maternal mental and physical health. Regular physical activity helps reduce anxiety, improve mood, and enhance emotional stability, which are essential for a positive pregnancy experience (Alfaqih et al., 2024; Kołomańska-Bogucka & Mazur-Bialy, 2019; Kołomańska et al.,

2019). Additionally, routine check-ups provide reassurance and guidance, allowing pregnant women to better understand their physical condition and prepare for labor. By maintaining an active lifestyle and receiving adequate medical support, expectant mothers can build greater confidence, reduce the risk of pregnancy complications, and improve overall well-being for both themselves and their babies.

Limitations and Future Research Directions

However, not all studies found a direct correlation between physical activity and health outcomes. Haryanti (2021) found no significant relationship between physical activity and nutritional status among pregnant women, suggesting that additional factors such as diet and individual metabolism may play a more critical role. Overall, these studies indicate that while physical activity is beneficial, its effectiveness depends on multiple factors, including socioeconomic conditions, individual health status, and access to supportive environments. Future research should explore personalized physical activity programs tailored to the specific needs of pregnant women to optimize maternal and fetal health outcomes.

This literature review highlights variations in research methodologies. Cross-sectional studies are useful for establishing correlations between variables and providing a general overview of the prevalence of a phenomenon. Other methodologies applied include accelerometer measurements, and nonequivalent control group designs. These methods have been proven reliable and appropriately suited to the research context. However, certain limitations exist, such as restricted sample sizes and insufficient long-term data. Specifically, there is a lack of sufficient information regarding the long-term effects of prenatal exercise on maternal and fetal health, as well as the optimal duration for performing prenatal exercises or yoga. Additionally, some studies present inconsistent findings regarding the benefits of light physical activity. While some research suggests that light physical activity does not significantly impact sleep quality, moderate physical activity appears to yield more substantial benefits.

Conclusion

We conclude that physical activity provides important benefits for pregnant women and their fetuses, especially in supporting their quality of life physically and mentally. Pregnant women who live in rural areas tend to be more active than those who live in urban areas, and light physical activity such as walking or yoga can help relieve body burden, improve sleep patterns, reduce stress, and prevent complications during pregnancy. Although various research methods are used in this literature, the cross-sectional method is most often used to understand the relationship between variables. However, there are limitations in the number of samples and the lack of long-term data on the effects of physical activity on maternal and fetal health. Some research results also show inconsistencies regarding the impact of light physical activity on sleep quality, which is considered less significant compared to moderate physical activity. Further longitudinal research is needed to understand the long-term effects of physical activity on maternal and fetal health. In addition, socialization and education related to safe physical activity for pregnant women need to be improved, especially for those who live in urban areas with limited space and time to move actively.

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