



Factors Affecting Physical Activity During Pregnancy: A Scoping Review

^KAulia Kurnianing Putri¹, Luluk Rosida², Faizatul Ummah³

¹Postgraduate Midwifery Program, Faculty of Health Science, Universitas 'Aisyiyah Yogyakarta.

¹ Faculty of Health Science, Universitas Muhammadiyah Lamongan.

²Postgraduate Midwifery Program, Faculty of Health Science, Universitas 'Aisyiyah Yogyakarta.

³ Faculty of Health Science, Universitas Muhammadiyah Lamongan.

Correspondence Author Email (^K): auliaputrihanafi@gmail.com

ABSTRACT

Pregnancy is an important period before delivery. The findings in several studies mentioned that pregnant women complained of discomfort. One of the solutions is by doing pregnancy exercise. This scoping review aimed to investigate factors affecting pregnant women in carrying out physical activities during pregnancy. It applied the Arksey and O'Malley framework which developed using the PEO framework. The articles were selected through relevant databases, namely Pubmed, Wiley, Ebsco and gray literature from Google Scholar. The results showed that factors affecting pregnant women in doing physical activity included maternal education, maternal physical activity habits before pregnancy, peer influence, healthy motivation and family support, husband, facilitator, and adequate facilities. While the inhibiting factors were lack of free time, lack of information, fatigue, pregnancy symptoms, and lack of motivation. It can be concluded that physical activity during pregnancy which were carried out according to the guidelines and needs is proven to provide optimal health benefits and fitness during the pregnancy process and reduce the risk of delivery with assistive devices or by caesarean section.

Keywords: Pregnancy; Factor or Cause; Physical Activity

Article history :

Received: 6 Juni 2021

Received in revised form: 20 Juni 2021

Accepted: 4 Agustus 2021

Available online: 1 Desember 2021



Licensed by [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

INTRODUCTION

Pregnancy is an important period before the delivery. However, during the pregnancy physiological and anatomical changes can cause discomfort to pregnant women. This discomfort usually leads to changes in the back that tend to be lordotic and cause pain. In addition, increased cardiac physiological changes cause edema and varicose veins. Changes in anatomy and physiology also cause an increase in workload. According to Nugroho in purimama, one of the most effective ways to overcome the problems is by doing pregnancy exercise ¹.

One way to be healthy during pregnancy is by doing fitness activities. These activities will help the delivery process. Tight muscles can reduce pain when pushing so that the labor process goes smoothly². Another benefit of exercise or physical activity during pregnancy are to prevent gestational diabetes, preeclampsia, or perinatal depression. Then physical activity is also considered to be able to reduce the number of cesarean sections, stabilize the appropriate weight gain of the mother and fetus, and to prevent the problem of gestational diabetes ³.

The Maternal Mortality Rate (MMR) in 2012 was 228/100,000 live births. According to the Ministry of Health in 2012, the most direct cause of maternal death was bleeding, which was 28%. One of the causes of bleeding is uterine atony as a result of weak uterine contractions or maternal weakness, while sepsis is the impact of prolonged or cephalic labor. One of the effective health interventions to prevent maternal morbidity and mortality is prenatal care. The main function of prenatal services is health promotion during pregnancy through health education facilities, which are provided individually or in groups. There are many health education materials for pregnant women, one of which is pregnancy exercise. Pregnancy exercises that are carried out regularly during the last three months (trimester) have been proven to have a less painful delivery effect compared to the delivery of pregnant women who do not do physical exercise during their pregnancy. This happens because of the increased levels of endorphins in the body during exercise, which naturally act as painkillers. The advantages of pregnancy exercise for pregnancy include a decrease in heart rate abnormalities, umbilical cord and meconium, decreased energy use, reduced pain, and improved Apgar scores and fetal psychomotor. Pregnancy exercise can reduce the incidence of prolonged labor by 5.5 times compared to mothers who do not participate in pregnancy exercise⁴. Other obstacles affecting pregnant women in carrying out activities are the lack of information related to physical activity, family support, and adequate facilities in the area where they live ⁵.

A good preparation plan for childbirth can be carried out through physical exercises including breathing techniques and abdominal strengthening techniques. By preparing information and pregnancy exercises, mothers are calmer to go through the labor process (Smolen et al, 2015). Thus, the purpose of this sopng review is to investigate the evidence about the supporting and inhibiting factors of pregnant

women doing physical exercise during pregnancy.

METHODS

This research was a scoping review, which aimed to map concepts or literature, extracted information about research activities related to the topic under study and also investigated any problems or gaps in the research area that was used as a research reference so that this scoping review could provide basic information regarding the need for research that may be carried out in relation to their topic. The steps of the researcher are as follows:

Step 1: Identify Scoping Review Questions

The researchers developed a focus review and search strategy with the PEO (Population, Exposure and Outcome) framework in managing and solving the focus review.

Table 1 Framework PEO

Population	Exposure	Outcome
<i>Pregnancy</i>	<i>Factor/causes</i>	<i>Physical activity</i>

Scoping Review Questions: What are the Factors Affecting Physical Activity During Pregnancy?

Step 2: Identify Relevant Studies.

The identification of relevant articles used the following inclusion and exclusion criteria; the inclusion criteria included discussion on physical activity during pregnancy, discussion on health education about physical activity during pregnancy, could be accessed in full text (Open access Journals), published 2010 – 2021, original articles, peer-reviewed articles published in journals, and written in English and Indonesian. Then, the exclusion criteria included opinion articles, review articles, book reviews, and letters. The process of conducting evidence searches used the relevant databases including PubMed, Wiley, and EBSCO databases. After selecting the relevant database, the researcher made a search keyword, namely: First enter ((((((((((((((factor*) OR causes*) OR causes*) AND pregnan*) OR pregnant mother*) OR pregnant women*) pregnancy *) OR antenatal*) OR perinatal*) OR maternal*) AND physical activity*) OR physical exercise*) OR gym*) OR Exercise*) OR workout*). The identification determined the relationship in using keywords to organize searches that could facilitate search as needed. OR defined records that contained any conditions and AND combined two words or phrases. Then, the database only retrieved records that contain both terms. The search was determined by limiting the year of publication, from 2010 to 2021, as well as free full text or open access articles so that searches could be more specific.

Step 3: Selection with Prisma Flowchart.

The search on the database was started by entering the predetermined keywords in each database (Pubmed, Wiley and Ebsco). The results obtained 251 articles from Wiley, 50 articles from Ebsco, and 146 articles from Pubmed. Next, the researcher screened the titles and abstracts. The articles were eliminated again after full text-reading. Eight relevant articles were taken and reviewed independently based on the inclusion and exclusion criteria. The researcher utilized PRISMA flow diagram to transparently describe the process.

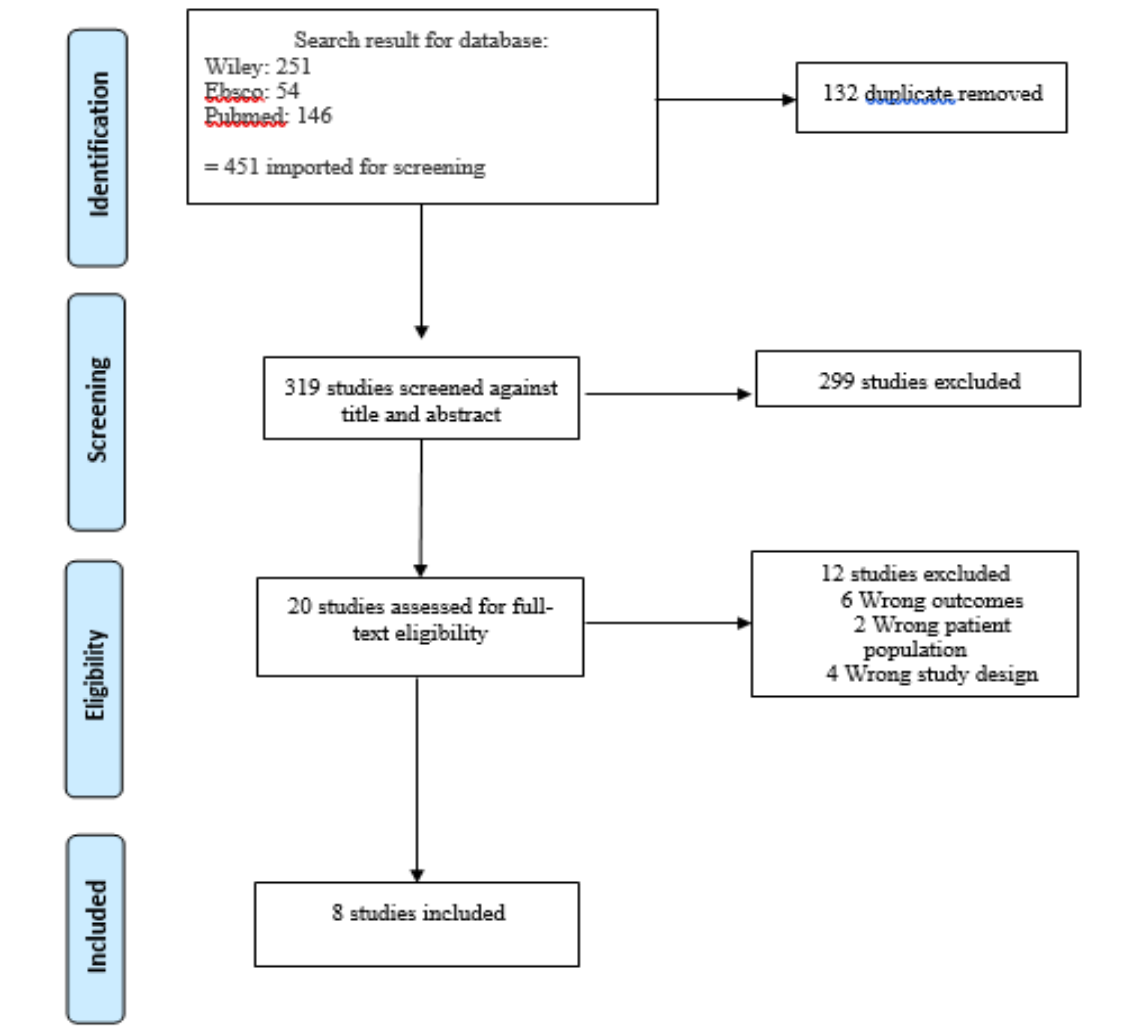


Chart 1. PRISMA Flow Diagram

Step 4. Critical Appraisal

A critical appraisal was carried out with the Hawker Tools as one of the tools for assessing evidence instruments and systematically reviewing different data. There were 8 articles that met the

topic and inclusion criteria. The grade scale used was a scale of 1, 2, 3, and 4 to categorize the articles into the GOOD = 4, FAIR = 3, POOR = 2 and VERY POOR = 1.

Table 2. Range Evaluation Critical Appraisal Hawker Tools

No	Assessment Elements	6 (A 1)	7 (A 2)	8 (A 3)	9 (A4)	5 (A5)	10 (A6)	11 (A7)	12 (A8)
1.	Abstracts and titles	4	4	4	4	4	4	4	4
2.	Introduction and objectives	4	4	3	3	4	4	4	4
3.	Method and data	3	4	4	4	4	4	4	3
4.	Samples	4	4	4	4	4	4	3	4
5.	Data Analysis	4	4	4	4	4	4	3	4
6.	Ethics and Bias	1	2	2	3	1	2	4	3
7.	Results	4	4	4	4	4	3	4	4
8.	Transferability or generalization	3	4	3	3	3	4	4	4
9.	Implications and uses	3	3	3	4	3	3	3	4
	Grade	30/A	33/A	31/A	33/A	31/A	32/A	34/A	34/A

RESULT AND DISCUSSION

The results of data extraction on the selected articles by categorizing title, year of publication, research objectives, methods, number of samples and research results can be perceived below:

Table 3. Research Characteristics

Articles No.	Authors and Year of Publication	Countries	Methods	Respondents	Grade Scale
A1	6	Brazil	Quantitative Study Cross sectional	Pregnant Women	A (GOOD)
A2	7	Australia	Descriptive Study, Qualitative	Pregnant Women	A (GOOD)
A3	8	Brazil	Quantitative Study, <i>cross sectional</i>	Pregnant Women	A (GOOD)
A4	9	Saudi Arabia	Quantitative Study, <i>cross sectional</i>	Pregnant Women	A (GOOD)
A5	5	Pakistan	Quantitative Study, <i>cross sectional</i>	Pregnant Mothers	A (GOOD)
A6	10	Australia	Qualitative Analysis Study	Pregnant Mothers	A (GOOD)
A7	11	Canada	Qualitative Study	Pregnant Mothers	A (GOOD)
A8	12	Japan	Quantitative Study, <i>Cohort</i>	Pregnant Mothers	A (GOOD)

Then the mapping step was carried out, the researchers mapped into 2 themes.

Table 4. Theme Mapping

No.	Theme	Articles
Factors Supporting Physical Activities of Pregnant Women		
1	Education	A3, A4
2	Exercise Habits Before Pregnancy	A3, A4,
3	Peer Influence	A2, A7
4	Motivation to Stay Healthy (maternal and fetal health)	A1, A4, A7, A8
5	Support from Family, Husband, Facilitator/ Counseling of Physical Activities and Adequate Facilities	A2, A3, A5, A7,
Factors Inhibitting Physical Activities of Pregnant Women:		
1	Lack of free time due to mother's work.	A1, A5, A6,
2	Lack of Information/Knowledge related to physical activity	A4, A5, A6, A7,
3	Fatigue/Loss of Energy	A4, A6, A5
4	Pregnancy Symptoms that Disturb Daily Activities (Physical Limitations)	A6, A7
5	Lack of Motivation	A5, A6,

1. Factors Supporting Physical Activities of Pregnant Women:

a. Education

It has been observed that higher/postgraduate education significantly increased the likelihood of exercising during pregnancy. Multiple logistic analyzes showed a significant relationship between physical exercise during pregnancy and level of education (undergraduate or postgraduate), primiparity, exercise training before pregnancy and guidance on exercise during prenatal care, all of which increased the likelihood of physical activity during pregnancy ⁸. In the study of pregnant women in Saudi, it was also stated that one of the factors that influenced pregnant women to do physical activity was the educational background ⁹.

b. Exercise Habits Before Pregnancy

It has been reported that women in Brazil engaged in the physical activity of Pilates and it was possible that women practiced it before pregnancy and then continued during pregnancy. Although this Pilates physical activity has interesting contradictions regarding the musculoskeletal adaptation of pregnancy, there is not enough literature data to assess its effect on pregnant women. ⁸.

Another research also presented the national survey of pregnant women in Saudi Arabia. Only 12% of the total population who met the physical exercise guidelines because of their lifestyle before pregnancy and likely to remain the same during pregnancy. Thus, it can be concluded that the habit of doing physical activity before pregnancy is one of the factors that make a pregnant woman perform physical activity during pregnancy ⁹.

c. Peer Influence

When pregnant women get the opportunity to socialize in pregnancy classes, they will be encouraged to do their pregnancy optimally, experience low stress, and have a fit pregnancy condition. Those factors are able to make pregnant women do physical activities during pregnancy ⁷.

Having pregnant friends also provides motivation for pregnant women in Canada to carry out physical activities during pregnancy ¹³.

d. Motivation to Stay Healthy (maternal and fetal health)

In a study conducted by Alaglan, et al (2017), motivation to be healthy during pregnancy and after pregnancy and had an impact on fetal health. After several doctor diagnoses, pregnant women were motivated to do physical activities ⁹.

Physical activity carried out during pregnancy in accordance with the guidelines of health professionals has a significant effect on reducing the risk of preterm labor, cesarean delivery and assisted delivery. This makes pregnant women in Japan did physical activity during their pregnancy ¹².

Pregnant women in Canada felt motivated to be healthy for their babies. This makes them do physical activity regularly during pregnancy ¹³.

e. Support from Family, Husband, Facilitator/ Counseling of Physical Activities and Adequate Facilities

It was stated that pregnant women who received counseling from health services about physical activity during pregnancy were 3 times more likely to have more opportunities to do physical activity during pregnancy than pregnant women who did not receive guidance. ⁸.

Other research reviews also mentioned that social support from family and friends as well as motivation to do physical activity and information provided by health professionals were factors that supported pregnant women to do physical activity during pregnancy ⁵.

Support from partners and health professionals is also one of the biggest motivations for pregnant women to do physical activity during pregnancy ⁷.

2. Factors Inhibiting Physical Activities of Pregnant Women:**a. Lack of free time due to mother's work**

Free time was reported to be the most frequent obstacle to physical activity during pregnancy because it is related to the work that the mother/pregnant woman does ¹⁰.

b. Lack of Information/Knowledge related to physical activity

Knowledge (e.g. how to perform physical activity safely during pregnancy) is an important factor to consider when developing interventions to promote physical activity during pregnancy, as it is one of the factors that prevent pregnant women from carrying out physical activity on an ongoing basis.

The reason was the lack of education from health care providers about physical activity during pregnancy¹⁰.

Lack of information conveyed by respondents as much as 15-25%. Research conducted by Alaglan, et al showed that lack of information about physical activity during pregnancy made pregnant women not do physical activity in accordance with professional recommendations⁹.

Other research reviews also mention that motivation to do physical activity and information provided by health professionals were factors that supported pregnant women to do physical activity during pregnancy⁵.

Limited knowledge was also mentioned as the barriers of pregnant women for not doing physical activity in Canada. Access to information about safe physical activity during pregnancy made pregnant women wanted to do physical activity during pregnancy¹³.

c. Fatigue/Loss of Energy

Many pregnant women felt too tired to do physical activity because their work had drained her energy. This response emerged from women across all socioeconomic groups, although some women also expressed their fatigue regarding the physical effects of pregnancy¹⁰.

Then in Alaglan, et al mentioned that the obstacles experienced by Saudi women who did not was due to fatigue⁹.

Other research reviews also mentioned that fatigue due to household activities caused pregnant women avoiding physical activities according to the guidelines during pregnancy because they ran out of energy⁵.

d. Pregnancy Symptoms that Disturb Daily Activities (Physical Limitations)

Physical limitations during pregnancy such as pelvic and back pain due to pregnancy and other complaints had resulted in little or no physical activity that was professionally recommended¹⁰.

Diagnosis given to pregnant women related to excessive weight gain causes a pregnant woman to be active in carrying out physical activities during pregnancy, in the hope of obtaining health facilities in the face of pregnancy and staying fit during and after pregnancy⁶.

Symptoms of pregnancy beyond the control of pregnant women such as nausea, vomiting and fatigue made the women reluctant in carrying out physical activity during pregnancy¹³.

e. Lack of Motivation

Some women suggested that lack of motivation to perform physical activity during pregnancy. This type of response was more common than women with low to middle socioeconomic position, while some women said they did not like exercising or were too lazy to do it¹⁰. Lack of access to information was also mentioned in the Canadian study.¹³

Other research reviews also mentioned that motivation to do physical activity and information provided by health professionals were factors that supported pregnant women to do physical activity ⁵.

CONCLUSION AND SUGGESTION

Physical activity during pregnancy that is carried out according to the guidelines and needs of each pregnant woman and does not have a high-risk diagnosis and has valid information is proven to provide health and fitness benefits during the pregnancy process and reduces the risk of delivery with assistive devices or Caesarean. Social support from family, partners, peers, and health professional services is also very much needed to support the implementation of physical activity during pregnancy. Of the 8 articles discussed in this scoping review, there are still shortcomings that have not been found, one of which is the psychological effect or psychological benefits after doing physical activity during pregnancy. Thus, it is hoped that further researchers investigate the psychological benefits of carrying out physical activity during pregnancy.

Support programs from the government and education from health workers about the implementation of physical activity during pregnancy should also be given to couples and families of pregnant women so that they are able to support the implementation process both at the care center and when done alone by the mother at home.

REFERENCES

1. Studi P, Program K, Terapan S. Kehamilan Trimester III. Published online 2018.
2. de Oliveira CS, Imakawa T dos S, Moisés ECD. Physical activity during pregnancy: Recommendations and assessment tools. *Rev Bras Ginecol e Obstet.* 2017;39(8):424-432. doi:10.1055/s-0037-1604180
3. Hinman SK, Smith KB, Quillen DM, Smith MS. Latihan dalam Kehamilan: Tinjauan Klinis. 2015;7:25-27.
4. Yuniastari A, P S, P D. Analisis Faktor-Faktor Yang Berhubungan Dengan Pelaksanaan Senam Hamil Di Wilayah Puskesmas Purwokerto Barat Tahun 2013. *J Kesehat Masy.* 2014;2(5):283-291.
5. Hoodbhoy Z, Qureshi RN, Iqbal R, Muhabat Q. Household chores as the main source of physical activity: Perspectives of pregnant Pakistani women. *J Pak Med Assoc.* 2018;68(4):565-569.
6. De Barros Leite Carvalhaes MA, De Almeida Martiniano AC, Malta MB, Takito MY, D'Aquino Benício MH. Physical activity in pregnant women receiving care in primary health care units. *Rev Saude Publica.* 2013;47(5):958-967. doi:10.1590/S0034-8910.2013047004689
7. Cioffi J, Schmied V, Dahlen H, et al. Physical activity in pregnancy: Women's perceptions,

- practices, and influencing factors. *J Midwifery Women's Heal.* 2010;55(5):455-461. doi:10.1016/j.jmwh.2009.12.003
8. Nascimento SL, Surita FG, Godoy AC, Kasawara KT, Morais SS. Physical activity patterns and factors related to exercise during pregnancy: A cross sectional study. *PLoS One.* 2015;10(6):1-14. doi:10.1371/journal.pone.0128953
 9. Alaglan AA, Almousa RF, Alomirini AA, et al. Saudi women's physical activity habits during pregnancy. *Women's Heal.* 2020;16. doi:10.1177/1745506520952045
 10. Connelly M, Brown H, van der Pligt P, Teychenne M. Modifiable barriers to leisure-time physical activity during pregnancy: A qualitative study investigating first time mother's views and experiences. *BMC Pregnancy Childbirth.* 2015;15(1):1-7. doi:10.1186/s12884-015-0529-9
 11. Grenier LN, Atkinson SA, Mottola MF, et al. Be Healthy in Pregnancy: Exploring factors that impact pregnant women's nutrition and exercise behaviours. *Matern Child Nutr.* 2021;17(1):1-9. doi:10.1111/mcn.13068
 12. Takami M, Tsuchida A, Takamori A, et al. Effects of physical activity during pregnancy on preterm delivery and mode of delivery: The Japan Environment and Children's Study, birth cohort study. *PLoS One.* 2018;13(10):1-16. doi:10.1371/journal.pone.0206160
 13. Grenier L, Lori JR, Darney BG, et al. Building a Global Evidence Base to Guide Policy and Implementation for Group Antenatal Care in Low- and Middle-Income Countries: Key Principles and Research Framework Recommendations from the Global Group Antenatal Care Collaborative. *J Midwifery Womens Health.* Published online October 3, 2020;jmwh.13143. doi:10.1111/jmwh.13143