

The Effectiveness Of Pregnancy Exercises In Improving The Quality Of Sleep For Pregnant Women

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ABSTRACT

Background: The quality of sleep in pregnant women is very important for the health of the mother and fetus. The National Sleep Foundation (2007) states that 97.3% of pregnant women in the third trimester always wake up at night. On average, pregnant women wake up 3-11 times at night. The cause of mothers often wake up at night due to frequent urination, cramps in the legs, and the mother's anxiety about childbirth. According to Reichner (2015) sleep pattern disturbances in the first trimester were 13%, in the second trimester 19% and increased in the final trimester by 66%. The incidence of sleep disorders in pregnant women in Indonesia is quite high, around 64% of pregnant women in Indonesia experience sleep disorders. To overcome this, pregnant women need to do pregnancy exercises regularly and optimally to increase the comfort of pregnant women. The purpose of this study was to determine the effectiveness of pregnancy exercise on the quality of sleep of pregnant women.

Methods: This research is a literature study by searching for articles using Google Scholar, search engine Pubmed, Semantic Scholar, and Garuda Portal to find articles according to inclusion and exclusion and then reviewing the articles. There were 11 articles obtained from the screening results.

Results: Based on the results of a study of 11 articles, it was found that doing pregnancy exercise with a frequency of frequently or more than once and with a duration according to the ability of pregnant women is more effective in improving the quality of sleep of pregnant women.

Conclusion: Pregnancy exercise activities can be one of the efforts that can be done to improve the quality of sleep of pregnant women

Keywords: Pregnancy, Pregnancy exercise, sleep quality

INTRODUCTION

Pregnancy is a natural and physiological process, pregnancy occurs due to the union of spermatozoa and ovum and then continues with the nidation or implantation process. Normal pregnancy lasts 40 weeks or 10 months or 9 months. Pregnancy is the meeting of egg and sperm in the uterus and ends with the release of the baby and placenta through the birth canal. Pregnancy is divided into 3 trimesters: the first trimester starts from the beginning of conception to 3 months (0-12 weeks), the second trimester starts from the fourth month to the sixth month (13-28 weeks), and the third trimester starts from the seventh month to nine months (29 weeks) -42 weeks). (Sun *et al.*, 2023), (Baker, T. G. 2021), (Afni R DO, 2021)

During pregnancy, pregnant women experience physiological and psychological changes from the first trimester to the third trimester. Change Physiological conditions that occur in pregnant women are due to increasing gestational age, such as uterine enlargement, anatomical changes in the body, and hormonal changes. (Sari, N. P., & Rahmawati, D. 2021), (Afni R DO, 2021). Apart from that, pregnant women also often experience back pain, difficulty breathing, difficulty sleeping, frequent urination, stomach contractions and leg cramps. Meanwhile, the psychological changes in each trimester are different. In the first trimester, many mothers feel distrust of their pregnancy, experience rejection, feel anxious and sad, and have emotional disturbances. In the second trimester, the mother is able to accept her pregnancy, appears calmer and begins to adapt, but occasionally worries about her fetus. In the third trimester, mothers feel afraid and anxious about their birth. The consequences of the

physiological and psychological changes experienced cause discomfort in pregnant women so that. (Gangakhedkar and Kulkarni, 2021)

Their need for rest is inadequate and they have difficulty sleeping (A. RC., 2015). Sleep is an essential and significant behavior, which is influenced by physiological changes during pregnancy. Difficulty sleeping in pregnant women occurs in the middle of pregnancy until the end of pregnancy. Difficulty sleeping is caused by the enlargement of the uterus and psychological changes experienced by the mother such as anxiety, restlessness and fear of childbirth. Other factors such as frequent urination at night can make it difficult for mothers to sleep. Avifah KY. GD, DH, 2018) The result of a decrease in sleep quality in pregnant women can be risky for the pregnancy, the fetus, and at risk during childbirth. (Editorial, 2022), (Fatimah N. 2017)

National Sleep Foundation (2007) stated that 97.3% of pregnant women in the third trimester always wake up at night. Flat On average, pregnant women wake up 3-11 times at night. Maternal cause often wake up at night due to frequent urination, cramps in the legs, and maternal anxiety about childbirth. (GQ KN's daughter, 2021). Based on preliminary data from Ratna's (2021) research regarding the management of sleep disorders in pregnant women, it was found that 25% of pregnant women often wake up at night because they are anxious about giving birth, experience the trauma of caesarean delivery, and urinate frequently at night. (Mayasari R. 2021) According to data obtained by *National Sleep Foundation* 78% of pregnant women in America have difficulty sleeping. According to Reichner (2015), sleep pattern disturbances in the first trimester are 13%, in the second trimester 19% and increase in the final trimester, namely 66%. (7) Fernandez-Alfonson, Trabalon-Pastor (2012) stated that 73.5% of pregnant women experienced insomnia at 39 weeks of pregnancy, of which 50.5% had mild insomnia, 15.7% had moderate insomnia. (Lee, S. M., et al. (2022),

and severe insomnia by 3.8%.(GQ KN's, 2021). The incidence of sleep disorders in pregnant women in Indonesia is quite high, around 64% of pregnant women in Indonesia experience sleep disorders. Pregnant women who experience *sleep apnea* as many as 65% and 42% experienced preeclampsia. (N. C. 2012). WHO says that almost 20% of maternal deaths in developing countries are due to lack of rest. (Okun ML SCGL.2011)

Sleep quality is a person's satisfaction while sleeping, so that a person does not show feelings of tiredness, restlessness, lethargy and apathy, blackness around the eyes, swollen eyelids, sore eyes, distracted attention, headaches, frequent yawning and drowsiness. Someone is said to have good sleep quality if someone does not show signs of sleep deprivation and does not experience problems sleeping. (Betyar *et al.*, 2023), (A. RC., 2015).

The impact of prolonged sleep deprivation on pregnant women can cause babies to be born with Low Birth Weight (LBW), premature birth, the development of the baby's nervous system is unbalanced, and the baby's immunity or immune system becomes weak. Apart from that, lack of sleep can also cause depression and stress which can harm the fetus in the womb. Mild stress will cause the fetus' heart rate to increase, while severe stress can cause the fetus to become more hyperactive. (Gulia, 2023), (Rahayu DT, HNH. 2018)

Efforts that can be made to overcome sleep difficulties in pregnant women include doing light exercise that is safe for pregnant women, hypnotherapy, providing health education on how to maintain sleep quality and relaxation exercises. (Wulandari, A., & Sari, M. 2022), (Ratna, 2021) Sport is one of the efforts made to overcome sleep disorders in pregnant women. The recommended exercise for pregnant women is exercise that is safe for the pregnancy. One light exercise that can be done is pregnancy exercise. (McDonald *et al.*, 2022), (A. RC., 2015).

Pregnancy exercise is a structured form of exercise or training. Pregnancy exercise is one effort that can break the cycle of anxiety and increase the comfort of pregnant women when sleeping or to reduce complaints from pregnant women which cause the quality of pregnant women's sleep to decrease (Avifah KY. GD, DH, 2018). There is still little interest among pregnant women in participating in pregnancy exercise, this is due to several factors such as lack of support from family or husband, and the mother's lack of knowledge about the benefits of pregnancy exercise (Sihotang P, RE, TJ, BF, 2016). Even though pregnancy exercise has many benefits for pregnant women. Among the benefits of pregnancy exercise are that it can help with the birthing process, train breathing and relaxation, can strengthen the abdominal and pelvic muscles, and can improve the sleep quality of pregnant women because pregnancy exercise can make mothers relaxed and comfortable.

Based on the description above, pregnancy exercise is quite important for pregnant women to overcome the complaints that mothers feel during pregnancy. One of the benefits of pregnancy exercise is as an alternative to overcome the disturbed sleep quality of pregnant women. Therefore, researchers are interested in finding out more about the effectiveness of pregnancy exercise in improving sleep quality in pregnant women.

METHODS

The research method used is literature study. The literature study method is a form of research carried out through searches by reading from various sources such as books, journals, scientific articles, and other publications related to research topics. The article search method uses Google Scholar, PubMed, Semantic Scholar, and the Garuda Portal. With the inclusion criteria, namely, the article contains the same keywords as the research topic, the article is an article *full text*, the article uses Indonesian and English, the article is *original research*, articles come from accredited journals, and articles from the last 5 years (2017-2021). again according to the predetermined criteria. Articles that have been filtered based on title, abstract, keywords and a maximum time span of article publication of 5 years (2017-2021)

RESULTS

The results of this research showed that a total of 1,416 articles were obtained through a search process using electronic based indexes such as Google Scholar (n=1,320), Pubmed (n=57), Semantic Scholar (n=28), and Garuda Portal (n =11). Article or journal searches are carried out to obtain literature that discusses the topic in accordance with the problem formulation in the literature study research, namely "The Effectiveness of Pregnancy Exercise in Improving the Sleep Quality of Pregnant Women". Furthermore, after the search process, articles will be filtered again according to the predetermined criteria. Articles that have been filtered based on title, abstract, keywords and a maximum time span of article publication of 5 years (2017-2021) resulted in the remaining 124 articles. Then the articles were filtered again by looking at the entire article, then tested for suitability and it turned out that there were 11 articles or journals that met the literature study criteria.

Based on the 11 articles selected, the research methods used in the articles analyzed varied, but the most widely used research method was the *like an experiment* and *for experiment*, and 11 of these articles also used the same instrument to measure sleep quality, namely using an instrument *Pittsburgh Sleep Quality Index* (PSQI). There are 11 articles discussing the effectiveness of pregnancy exercise in improving the sleep quality of pregnant women.

DISCUSSION

Description of Sleep Quality in Pregnant Women

Sleep quality is a person's sense of satisfaction with their sleep so that a person does not show characteristics such as feelings of tiredness, restlessness, lethargy and apathy, blackness around the eyes, swollen eyelids, red conjunctiva, sore eyes, headaches and frequent yawning or drowsiness.(Wang, Y., et al. 2022). The measuring tool used to measure sleep quality is the Pittsburgh Sleep Quality Index (PSQI) instrument. Of the 11 articles that have been studied, found 5 articles that used the Pittsburgh Sleep Quality Index (PSQI) instrument to measure the sleep quality of pregnant women, namely Marwiyah's research, Witari, Ozkan, Liwei Tan dkk and Proprojecti et al. In these 5 research articles the PSQI instrument was used during data collection and the PSQI score value was not written in the research results.

Most of the results of the study articles state that the sleep quality of pregnant women is poor in the third trimester. The discomfort felt in the third trimester causes difficulty sleeping in pregnant women, namely frequent urination at night, an increasingly enlarged uterus, back pain, leg cramps, and difficulty breathing due to the enlarging uterus pressing on the diaphragm. Apart

from that, psychological factors also influence the sleep quality of pregnant women in the third trimester because pregnant women are anxious and anxious because they are worried about labor getting closer so that pregnant women often wake up at night. (Sahin and Eren, 2022), (Tosto, V. et al. 2023)

Effectiveness of Pregnancy Exercise in Improving the Sleep Quality of Pregnant Women

From the results of a study of 11 articles discussing the effectiveness of pregnancy exercise in improving the sleep quality of pregnant women, the majority of pregnant women experienced sleep disorders in the third trimester of pregnancy. The sleep quality of pregnant women is caused by physical and psychological changes in the mother, causing discomfort during sleep. Physiologically, the quality of sleep of pregnant women is caused by the growth and movement of the fetus which can put pressure on the bladder so that it can increase the frequency of urination, the weight of the body becomes heavier which can change the structure of the pregnant woman's spine so that pregnant women feel pain in the back and also

Pregnant women often experience cramps in the extremities. Apart from physiological changes, psychological changes can also affect the quality of pregnant women's sleep, such as stress during pregnancy, feeling anxiety and worry about facing childbirth, this is what can affect the quality of pregnant women's sleep. (Gonzalez, A. M., & Hurst, S. 2021), (Tosto, V. *et al.* 2023)

One of the pregnancy exercise movements that can affect the sleep quality of pregnant women is relaxation movements. Relaxation movements or relaxation exercises in pregnancy exercise can have a relaxing effect involving the parasympathetic nerves in the central nervous system. Where one of the functions of the parasympathetic nerve is to reduce hormone production *adrenalin* or *epinephrine* (stress hormone) and increase hormones *norepinephrine* or *norepinephrine* (relax hormone) so that it can reduce anxiety and tension in pregnant women causes pregnant women to become more relaxed and calm. This is made clear in the seventh article researched by Ozkan⁽⁵⁹⁾ who stated that the results of his research showed that after doing relaxation training for 4 weeks there was an increase in sleep quality in pregnant women, increased sleep latency, and increased sleep duration. (Tosto *et al.*, 2023), (Kim, H. J., *et al.* (2021).

Apart from pregnancy exercise, aerobic exercise and yoga can also improve the sleep quality of pregnant women. This is confirmed by the results of the tenth study which stated that pregnant women who were given aerobic exercise 3 times a week for 12 weeks showed that the quality of pregnant women's sleep increased. Likewise, the eleventh article states that yoga exercise can improve the sleep quality of third trimester pregnant women. Not only that, the eleventh article also states that yoga can increase the volume of the lungs of pregnant women.

Pregnancy exercise should be done at 24-28 weeks of gestation to avoid abortion. Pregnancy exercise is carried out at least 2-3 times a week with a ratio of 15-30 minutes. The effectiveness of pregnancy exercises in improving the sleep quality of pregnant women can be seen from the number of times pregnant women do pregnancy exercises regularly so that pregnant women feel relaxed so they can sleep comfortably. This is made clear in the second article where the results of the research show that after doing pregnancy exercises 6 times for 3 weeks, significant results were obtained, namely before doing pregnancy exercises the mean value was 12.43 but after being given pregnancy exercises the mean value decreased to 6.43 . From this it can be seen that by doing pregnancy exercises with more than one frequency times more effective in improving the sleep quality of pregnant women. Lee, S. M., *et al.* (2022), Choi, J. H., *et al.* 2022), (GQ KN's, 2021).

The conclusion is that the more treatment given in the form of pregnancy exercise for pregnant women, the better the value of the mother's sleep quality compared to one treatment. Apart from pregnancy exercises, relaxation exercises, aerobic exercise and yoga have also been proven to have an effect on improving the sleep quality of pregnant women.

CONCLUSIONS

The description of the sleep quality of pregnant women is that pregnant women often complain of difficulty sleeping in the third trimester due to the enlargement of the uterus, frequent urination and difficulty breathing. The measuring tool used to assess sleep quality is an instrument *The Pittsburgh Sleep Quality Index* (PSQI).

Good physical activity for pregnant women is light exercise that does not harm the mother and fetus, one of the physical activities recommended for pregnant women is pregnancy exercise which is good to do 3 times a week with a duration of 15-30 minutes. Apart from pregnancy exercises,

relaxation exercises, aerobic exercise and yoga also have an effect on improving the sleep quality of pregnant women. The results of a literature study from 11 articles that have been analyzed can conclude that pregnancy exercise is effective in improving the quality of maternal sleep.

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