



The Effectiveness of Prenatal Yoga on Pregnant Women's Sleep Quality in Third Trimester

Rachmi Nurul Hidayat Hafid¹

¹ Sekolah Tinggi Ilmu Kesehatan Salewangang Maros, South Sulawesi, Indonesia.

Email: rachmi_nurul@poltekkes-mks.ac.id

ABSTRACT

A pregnancy gives physiological and psychological changes in the body of pregnant women, including the resting patterns. Rest is an essential human need, if it is not fulfilled will causing a discomfort and pregnant women will be difficult to start or maintain sleep. One of the treatments that can be done to improve sleep quality is prenatal yoga. The purpose of this study was to analyze the effectiveness of prenatal yoga on sleep quality of third trimester of pregnant women. The research method used is pre-experiment one group pretest-posttest design, with total sampling and got 30 respondents of third trimester of pregnant women who meet the inclusion criteria. The research instrument used the Pittsburgh Sleep Quality Index (PSQI) then the data was analyzed with Wilcoxon Signed Rank Test and got Z-score -5.292 with p value 0.0001 (less than 0.05) so it can be concluded that H_0 is rejected, which means that there is an effectiveness of prenatal yoga on sleep quality of third trimester of pregnant women. Practicing prenatal yoga regularly can keep the mind and body relaxed, so the pregnant women can sleep comfortably.

Keywords: Sleep quality, Prenatal yoga

ABSTRAK

Masa kehamilan memberi perubahan fisiologis dan psikologis pada tubuh ibu hamil, termasuk pola istirahat. Istirahat merupakan kebutuhan dasar manusia, sehingga apabila tidak terpenuhi akan menyebabkan ketidaknyaman dan ibu hamil akan sulit untuk memulai atau mempertahankan tidur. Salah satu penanganan yang dapat dilakukan untuk meningkatkan kualitas tidur dengan melakukan prenatal yoga. Tujuan penelitian ini adalah menganalisis efektivitas prenatal yoga terhadap kualitas tidur ibu hamil trimester III. Metode penelitian menggunakan *pre-eksperimen one group pretest-posttest design*, dengan *total sampling* didapatkan 30 responden ibu hamil trimester III yang memenuhi kriteria inklusi. Instrumen penelitian menggunakan *Pittsburgh Sleep Quality Index (PSQI)* kemudian dianalisa dengan *Wilcoxon Signed Rank Test* didapatkan nilai *Z-score* -5,292 dengan p value 0,0001 ($< 0,05$) sehingga dapat disimpulkan bahwa H_0 ditolak, yang artinya terdapat efektivitas prenatal yoga terhadap kualitas tidur ibu hamil trimester III. Berlatih yoga secara teratur dapat menjaga pikiran dan otot tubuh tetap relaks dan membantu ibu hamil untuk tidur dengan nyaman.

Kata Kunci: Kualitas tidur, Prenatal yoga

INTRODUCTION

One of the goals of The Sustainable Development Goals or SDGs in 2030 is to ensure healthy lives and promote well-being for all people of all ages. Achieving this goal can be done by optimizing maternal and child health (MCH) services. MCH services are important during pregnancy because during this period the mother experiences physical, psychological and social changes (Kemenkes RI, 2021).

Pregnant women is required to be ready physically and psychologically. Many changes occur during pregnancy, for example the enlargement of the uterus which will affect the fulfillment of pregnant women's rest because it is difficult to determine a comfortable position (Chairiyah et al., 2022; Oyiengo et al., 2019). Psychological changes in third trimester pregnant women seem more complex and increased compared to the previous trimester, this is due to increased anxiety and physical discomfort for the mother. In addition, hormonal changes also cause psychological changes in pregnant women making it difficult to start or maintain sleep (Fuziah, 2019).

One hundred sixty-one women reported the occurrence of Restless Legs Syndrome (RLS) symptoms (tRLS group) during pregnancy, giving an RLS

prevalence rate of 26.6%. Among these, 101 women (16.7%) never experienced RLS symptoms in their life and were classified as nRLS. Of the tRLS (n=161), 60 women (9.9%) already experienced RLS symptoms before pregnancy and were classified as pRLS (Manconi et al., 2018; Oyiengo et al., 2019).

When sleep disturbances are not treated, they can affect during pregnancy, such as mothers with sleep apnea, who usually snore during sleep can cause swelling along the airways, so that it can narrow the path for air to pass through. It can also reduce the volume of blood pumped by the heart, so that blood flow to the fetus through the placenta can decrease. Decreased blood flow to the fetus can then reduce the nutrition and oxygen that the fetus receives. As a result, the growth and development of the fetus can be disrupted. Therefore, pregnant women who experience sleep disturbances are recommended to get treatment (Corry et al., 2018).

Sleep disturbances can be minimized by several actions including muscle relaxation, massage, pregnancy exercise, prenatal yoga, music therapy and breathing techniques (Nurafif & Hardhi, 2019; Zhu et al., 2021). One of the treatments is doing yoga during

pregnancy. The researcher chose prenatal yoga because it is a meditative and intuitive physical activity (done with full awareness) that will not only build the physical body but will also refine the senses and expand awareness and establish an inner connection between mother and fetus. Prenatal yoga (yoga for pregnancy) is a modification of classic yoga that has been adapted to the physical condition of pregnant women and performed at a gentler and slower intensity. Mothers can also do yoga independently, especially yoga pranayama (yoga breathing) because it is a basic breathing technique that is useful for increasing calm and relaxing effect (Sindhu, 2019). Yoga movements can help people with insomnia to sleep well because they have a positive effect on the brain's nerve centers which will release stiffness in the muscles in the body and provide peace of mind so that it helps to sleep (Sindhu, 2020).

Research conducted by (Beddoe et al., 2020), entitled *Effects of Mindful Yoga on Sleep in Pregnant Women* showed that 15 primigravida mothers who practiced Hatha Yoga in the second and third trimesters had less potential to wake up at night and sleep less. In addition, a preliminary study conducted in Rumah Sakit Islam Aisyiyah Kota Malang, East Java, Indonesia, which aims to describe the number of third-trimester pregnant

women found 96 people, so that an average of 16 third trimester pregnant women every year month came to pregnancy check. The purpose of this study was to analyze the effectiveness of prenatal yoga on the sleep quality of third trimester pregnant women.

METHOD

The method used in this research is pre-experimental because the researcher wants to reveal causal relationships (influence) by involving a group of subjects (Hafid et al., 2021). The one group pretest-posttest design with the sample first being given a pretest (initial test) before being given treatment and after being given treatment given a posttest (final test) with the research instrument used the Pittsburgh Sleep Quality Index (PSQI) (Cox et al., 2021).

The population in this study is all third trimester pregnant women at Rumah Sakit Islam Aisyiyah Kota Malang were 32 people. The sample was all third trimester pregnant women and met the inclusion criteria of as many as 30 people without control group. The sampling technique used is total sampling. The consideration of using total sampling is that it is hoped that the sample criteria obtained are truly in accordance with the research objectives to be carried out and

meet the requirements for the number of samples in a study.

This study begins with the respondent being examined by an obstetrics and gynecology specialist, then the respondent filled out a pre-test questionnaire and was given prenatal yoga for 10 minutes on 2 times a week. At the end of prenatal yoga, respondents were given positive affirmations and time to rest for 5 minutes. Prenatal yoga was carried

out for 2 months and at the final meeting, respondents filled out the post-test questionnaire. The research instrument used the Pittsburgh Sleep Quality Index (PSQI) then the data was analyzed with Wilcoxon Signed Rank Test using Statistical Package for the Social Sciences (SPSS) programs.

RESULTS AND DISCUSSIONS

Result

Table 1. Frequency Distribution of Respondents Based on General Data

Characteristics	Sample	
	f	%
Age (n = 30)		
20-35	29	96,6
>35	1	3,3
Parity (n = 30)		
Primigravida	17	56,6
Multigravida	13	43,3
Education (n = 30)		
Middle school	1	3,3
High school	16	53,3
College	13	43,3
Job (n = 30)		
Work & have a steady income	9	30
Not working & not having a steady income	21	70

Based on table 1 above, it can be concluded that for age characteristics it is known that 29 out of 30 respondents (96.6%) are aged 20-35 years, then for parity characteristics, it is known that 17 out of 30 respondents (56.6%) are primigravidas, and for educational

characteristics, it is known 16 out of 30 respondents (53.3%) are senior high school students and for job characteristics, it is known that 21 out of 30 respondents (70%) are not working and do not have a steady income.

Table 2. Table f Sleep Quality Before and After Prenatal Yoga

Prenatal Yoga	Sleep Quality			Σ
	No Sleep Disturbances	Mild Sleep Disturbances	Moderate Sleep Disturbances	
Before	0	16	14	30
After	16	14	0	30

Based on table 2 above, it can be concluded that before prenatal yoga, 16 respondents experienced mild sleep disturbances and 14 respondents experienced moderate sleep disturbances. After the respondents did prenatal yoga for 4 meetings, the results showed that 16

respondents did not experience sleep disturbances and 14 respondents experienced mild sleep disturbances. This shows that there is a difference between before and after prenatal yoga on the sleep quality of third trimester pregnant women.

Table 3. Sleep Quality of Third Trimester Pregnant Women Before and After Prenatal Yoga

Categories	Sample	
	f	%
Increase	28	93,3
Fixed	2	6,6
Total	30	100

Based on table 3 above, it can be concluded that between before and after prenatal yoga, 28 out of 30 respondents (93.3%) experienced an increase in the quality of moderate and mild sleep disturbances to no sleep disturbances. Meanwhile, 2 out of 30 respondents (6.6%) experienced constant sleep quality.

Based on the Wilcoxon Signed Rank Test using the SPSS version 20 application, a Z-score was obtained -5.292, which means that there is a large difference between before and after prenatal yoga on the sleep quality of third trimester pregnant women with a ρ value of 0.0001 which is smaller than the

significant level. Because $\rho < 0.05$, H_0 is rejected, meaning that there is a difference between before and after prenatal yoga on the sleep quality of third trimester pregnant women.

Discussion

The results for 30 third trimester pregnant women showed that 16 respondents had mild sleep disturbances. Symptoms that are often complained of by pregnant women who experience sleep disturbances are not being able to sleep for ≥ 30 minutes, often waking up to go to the bathroom and feeling hot with the characteristics of lack of concentration

when communicating. According to (Fuziah, 2019; Purwanto, 2018), physical discomfort often interferes with the mother's rest so it is difficult for the mother to sleep well at night and resulting in a lack of sleep quality for pregnant women, especially in the third trimester. In addition, the average gestational age of women who experience mild sleep disturbances is 28-34 weeks of gestation with complaints of an increasingly enlarged stomach. According to

The same thing can happen to pregnant women who work, making it difficult to arrange rest patterns.

The average respondent with mild sleep disturbance has a high school level of education, so there is still a lack of information about the benefits of quality sleep for pregnant women. According to (Potter, 2019), the educational background will shape one's way of thinking including forming the ability to understand factors related to lifestyle and use this knowledge to maintain health. The higher the education, the higher the way one thinks. So that ignorance and inability to control discomfort and breathing often worsen the quality of sleep for pregnant women. This is one of the factors causing a decrease in sleep quality which causes discomfort (Nurafif & Hardhi, 2019).

The results of this study after prenatal yoga showed that 16 respondents

(Hamilton, 2018), generally pregnant women complain of difficulty sleeping because their chest cavity is pressed against an enlarged stomach or an uncomfortable sleeping position. The number of parities is also one of the factors causing the mother to experience mild sleep disturbances, this is indicated by the results of a study on 6 respondents who said that this was the second or third pregnancy, so the mother still did not get maximum rest for taking care of the child. did not experience sleep disturbances. After routinely doing prenatal yoga, pregnant women tend to be able to sleep for 10-15 minutes, wake up to the bathroom only occasionally and feel more comfortable and calmer during sleep. The characteristics of pregnant women who have good sleep quality are smiling easily, concentrating more when communicating and being more responsive to stimuli (Hafid et al., 2022). Through prenatal yoga, pregnant women can be trained to bring up a relaxation response so that they can achieve a calm state until they fall asleep. This relaxation response occurs through a significant decrease in the body's need for oxygen, which in turn becomes smooth blood flow, calming neurotransmitters will be released, and the nervous system will work properly so that the relaxed muscles of the body will cause

feelings of calm and comfort (Erliana, 2018).

The 14 respondents initially experienced moderate sleep disturbances and became mild sleep disturbances after participating in prenatal yoga. Many factors influence the quality of sleep, such as the discomfort of third trimester pregnant women. The results showed that 21 respondents did not work. Housewives have household chores that can be arranged according to the will of the mother and without pressure from other parties, so there is more time to rest and reach a peak of calm at home compared to pregnant women who work.

After all the respondents did prenatal yoga, there were 28 respondents who experienced an increase in sleep quality with the characteristics of smiling easily, concentrating more when communicating and being more responsive to stimuli. According to (Benson, 2018) in (Erliana, 2018) active sympathetic nerves make a person unable to relax and unwind. Through prenatal yoga, pregnant women can be trained to bring up a relaxation response so they can achieve a calm state. This relaxation response occurs through a significant decrease in the body's need for oxygen, which in turn improves blood flow, calming neurotransmitters will be released, the nervous system will work properly, and relaxed body muscles will

cause feelings of calm and comfort (Kwon et al., 2020).

The relaxed condition is because prenatal yoga can provide a gentle massage to various glands in the body, reduce cortisol production in the blood, and restore adequate hormone production to provide emotional balance and peace of mind. In addition, according to (Erliana, 2018), breathing techniques in prenatal yoga respond to tension. This response causes changes that can control the activity of the autonomic nervous system in the form of reduced oxygen function, respiratory frequency, pulse, muscle tension, blood pressure, and alpha waves in the brain so it is easy to sleep.

Prenatal yoga that is done regularly at least once a week for 4 weeks can improve the quality of sleep for pregnant women. Prenatal yoga has been adapted to the physical condition of pregnant women, which is done with a gentler and slower intensity. In addition to overcoming sleep disorders, practicing yoga during the third trimester of pregnancy is also a useful solution as a self-help medium that will reduce discomfort during pregnancy (Sindhu, 2019). Yoga teaches body mastery techniques and emphasizes that tense muscles will affect sleep and labor. When the body is tense, the mind will be tense and the mother will tend to hold her breath. Practicing yoga regularly, the

mother will be able to recognize the emergence of any of these tensions and keep the mind relaxed, keep the breath deep, and finally relax the body's muscles (Sindhu, 2019). When relaxed, a nerve cell secretes opiate peptides or the essence of pleasure throughout the body so that what is felt is a sense of pleasure and the body relaxes (Erliana, 2018).

The effectiveness of prenatal yoga on the sleep quality of third trimester pregnant women is proven by the results of the Wilcoxon Signed Rank Test analysis using the SPSS verse 20 application showing that there is a difference between before and after prenatal yoga on the sleep quality of third trimester pregnant women.

There were 2 respondents who experienced consistent sleep quality even though they had participated in prenatal yoga. These two pregnant women had almost the same characteristics, namely age 25-28 years, first pregnancy, gestational age ≥ 36 weeks, last education was bachelor's degree with complaints of not being able to sleep for 30-40 minutes because of pain in the back area and feeling restless evening. After conducting a more in-depth study, it was found that the two respondents had quite busy activities, namely respondent R9 works as a wedding dress designer who usually serves clients from 10:00 to 15:00 WIB so it is difficult for mothers to have lunch,

rest and cannot practicing prenatal yoga breathing techniques at home. Meanwhile, respondent R22 works as a Posyandu cadre and a basic food shop keeper who guards the shop every day from 07:00 to 16:00 WIB, making it difficult for mothers to rest and practice prenatal yoga breathing techniques at home. This makes pregnant women have limited time to rest and feel exhausted. One of the contributors to fatigue is an increase in oxygen consumption or oxygen demand. If the physical workload exceeds the maximum oxygen intake, it will cause a decrease in oxygen supply to the muscles so an anaerobic process will occur in breaking down muscle glycogen into energy and lactic acid.

Lactic acid together with water then accumulates in the muscles it making the muscles swollen and it will be difficult for them to contract. This will cause symptoms of fatigue. In addition, based on research it was found that both respondents had less calorie intake. Lack of calorie intake causes the body to lack glucose. This causes the body to break down glycogen. The breakdown of glycogen produces lactic acid, so if calorie intake is reduced, lactic acid in the body will accumulate (Holden et al., 2019). According to (Suma'mur, 2019), muscles work by contracting (contracting) and relaxing. When the muscles contract, the

blood that is between the muscle fibers and outside the blood vessels will be pinched. The pinched blood will inhibit blood circulation. This can interfere with the exchange of substances in the body and cause the oxygen carried by the blood to decrease so that the body does not have enough oxygen. Reducing the amount of oxygen in the body will cause the production of lactic acid to increase, causing fatigue. In addition, observations were made when the two respondents were participating in prenatal yoga, there were several movements that the mother could not imitate optimally due to the growing size of the mother's stomach and the mother was sometimes worried if contractions suddenly appeared. The benefits of prenatal yoga on the sleep quality of pregnant women can increase if the movements are followed optimally and good time management.

The limitation of this study is that researchers did not conduct laboratory tests on hormones that can affect the sleep quality of pregnant women, such as the melatonin and serotonin hormones.

CONCLUSION

This study concluded that 16 out of 30 respondents (53.3%) experienced mild sleep disturbances before doing prenatal yoga. Meanwhile, 14 out of 30

respondents (46.6%) experienced moderate sleep disturbances. After doing prenatal yoga regularly once a week for 4 weeks, it was found that 16 respondents (53.3%) experienced an increase in sleep quality from mild sleep disturbance to no sleep disturbance. While 14 respondents (46.6%) experienced an increase in sleep quality from moderate sleep disturbance to mild sleep disturbance. It can be concluded that prenatal yoga is effective in improving the sleep quality of third trimester pregnant women.

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