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Studying the Sleep Quality of First Pregnant Women in the Third Trimester of Pregnancy and Some Factors Related to It

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Abstract

Sleep is one of the common problems during pregnancy, the decrease in sleep quality. Decreased sleep quality can cause many problems during pregnancy and after delivery for the mother and fetus. The current study was done to study the sleep quality of first-time pregnant women in the third trimester of pregnancy referring to health centers. In this study, 168 eligible women referring to health centers were studied. Information was collected using the Pittsburgh Sleep Quality Questionnaire (PSQI), personal, midwifery profile form, and continuous sampling method. Then the data were analyzed by SPSS21 statistical software and using analytical and descriptive statistical tests. This research reveals that 89.88% of pregnant women had unfavorable sleep quality and the average quality of sleep in the third trimester was 8.27±2.91. A decrease in physical activity (p=0.003) and an increase in the mother's age (p=0.04) were related to the unfavorable sleep quality. In addition, women with unfavorable sleep quality had more visits to the doctor's office (p=0.002). Waking up at night because of frequent urination and changing the position in bed had the highest values. For pregnant women, sleep disorders have a high prevalence and it is necessary to pay attention to finding and implementing safe solutions to improve the sleep quality of pregnant women.

Keywords: Women, Pregnant women, Sleep, Pregnancy

Introduction

Pregnancy is one of the most important periods in a woman's life [1-3]. Significant changes in hormone levels during this period affect the function of various systems of the mother's body [4, 5]. Hormonal changes not only directly affect the sleep-wake cycle and sleep structure, but also cause physical and mental changes that can lead to sleep disorders [6, 7]. Frequent physical and mechanical changes such as frequent urination, back pain, the presence of fetal movements, uterine contractions, and leg cramps, and some emotional factors such as the fear of facing new experiences and accepting a new role can cause sleep disorders [3, 8]. While adequate and comfortable sleep is one of the main foundations of health [1].

By examining the sleep pattern during pregnancy, between 66 and 94 percent of pregnant women have changes in their sleep pattern [9, 10]. The most common type of sleep disorder in pregnancy is insomnia [11, 12]. Most sleep disorders during pregnancy are experienced by expectant mothers in the third trimester and closer to the end of pregnancy [13-15], so in various studies, the prevalence of sleep disorders in the third trimester of pregnancy is reported to be about 75% [14, 16]. Unfavorable sleep quality is one of the common complaints during pregnancy [17, 18].

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It has been reported that unfavorable sleep quality with changes in a person's immune system, such as changes in the level of cytokines and C-reactive protein, can have adverse consequences such as anxiety, reduced pain tolerance, premature birth, birth weight loss, and pressure disorders. Blood, glucose tolerance disorder, and depression during pregnancy and after delivery are related [19-22]. Sleep disorder during pregnancy hurts labor and the delivery process, and affected women are more likely to undergo cesarean section and in the course of normal delivery, the first and second stages are longer [20, 23, 24].
In addition, the decrease in mental and emotional peace caused by insomnia leads to an increase in anxiety and fear of keeping and caring for the baby and accepting the role of the mother in the family. In some cases, it also causes the occurrence of grief after childbirth and the negative impact on the family indirectly leads to the imposition of an economic burden on the society [20, 25, 26].
Based on this, providing the mental and physical health of pregnant mothers is an important issue and is of particular importance in It has prenatal care. Due to the importance of proper sleep on the mother's health and fetus in pregnancy care, complaining of having low-quality sleep is considered a natural occurrence with pregnancy. While examining the quantity and quality of sleep is particularly important in this era, it is hoped that this research will be a step to attract the attention of the health system to find and implement effective solutions for this disorder to improve the quality of women's sleep. The purpose of this study is to investigate the quality of sleep in the third trimester of pregnancy and some factors affecting it.

Materials and Methods

In this descriptive study, using the multi-stage and random sampling method, the samples were included in the available method. The criteria for entering the study include first being pregnant, gestational age of 28-32 weeks, singleton, normal body mass index, low-risk pregnancy, no drug use, no history of infertility, no chronic physical and mental illness, no drug addiction, and The absence of major stressful life events in the past 6 months.
The sample size was calculated by the sample size formula to estimate the proportion of a trait in the population and using the results of previous studies [27] based on $\alpha = 0.05$ and $p = 0.89$, equivalent to 150 people, and finally 168 people were included in the study.
The Pittsburgh Sleep Quality Questionnaire is an international standard tool for assessing sleep quality. This index examines the person's attitude about sleep quality in the last 4 weeks. This questionnaire consists of 9 questions in 7 dimensions, including the subjective quality of sleep, the duration of sleep delay, the duration of sleep, the adequacy of sleep, sleep disorders, the use of daily dysfunction, and sleeping pills. The sum of the scores of the seven dimensions constitutes the overall score of a person's sleep quality. The scoring of each of the dimensions is based on a score of 0 to 3, where the score of 3 is the maximum negative on the Likert scale. The total score of this questionnaire is between 0 and 21. The total score greater than or equal to ten indicates quality [28]. This tool has a sensitivity of 89.6% and a specificity of 86.5% [29]. The reliability of this questionnaire was calculated by calculating Cronbach's alpha of 0.73 [30]. The reliability of this questionnaire in the current study or the approximate calculation of Cronbach's alpha was calculated as 0.77.
To collect data, the researcher visited the selected health centers daily from 8 am to 12 pm, and after obtaining the consent of pregnant mothers with the conditions of the study and obtaining informed consent was requested to complete the questionnaires in a quiet environment away from noise in the presence of the researcher. The average time to complete the questionnaires was 15 minutes. In this way, information related to 168 first-time pregnant women referring to selected health centers was analyzed. For this purpose, SPSS 21 statistical software, descriptive and analytical statistical methods, independent t-tests, and Pearson's correlation test were used.

Results and Discussion

168 pregnant women participated in this study. Their average age was 25.09 ± 4.57 years. This research reveals that 89.88% of pregnant women had unfavorable sleep quality and the average quality of sleep in the third trimester was 8.27±2.91 **(Table 1)**.

Table 1. The sleep quality of the research units according to the desirable and undesirable sleep quality.

Group	Good sleep quality (PSQI<5)		Poor sleep quality (PSQI≥5)		p-value
	N (%)	Average ± Standard deviation	N (%)	Average ± Standard deviation	
Sleep quality score	17 (9.13%)	3.41 ± 0.79	151 (89. 88 %)	8.82 ± 2.52	< 0.001*

* Independent T-test

To investigate the relationship between two quantitative variables, Pearson's correlation test showed that increasing the mother's age and decreasing the amount of physical activity was related to a more unfavorable sleep quality **(Table 2)**.

Table 2. The relationship between the mean and standard deviation of some individual characteristics with the sleep quality of the research units.

Variable		Average ± Standard deviation	N	p-value*
Age (Years)	15-20	18.61 ± 1.26	31	0.04
	21-26	23.74 ± 1.65	74	
	27-32	28.90 ± 1.51	51	
	33-37	34.00 ± 0.95	12	
Gestational age (Weeks)	28-28.9	28.40 ± 0.39	29	0.28
	29-29.9	29.52 ± 0.27	35	
	30-30.9	30.41 ± 0.25	47	
	31-31.9	31.28 ± 0.24	26	
	32-32.9	32.69 ± 0.66	31	
Body Mass Index (BMI)	<19.8	19.40 ± 0.43	5	0.37
	19.8-26	23.48 ± 1.58	121	
	26.1-29	27.08 ± 0.70	42	
Average daily exercise time (Minutes)		6.56 ± 8.58	168	0.003

*Pearson correlation test

In addition, poor sleep quality (scoring 5 or more on the sleep quality questionnaire) was related to more visits to a gynecologist (p = 0.002) **(Table 3)**.

Table 3. Comparison of the mean and standard deviation of the number of visits of the research units to the health center, doctor's office, and midwife.

Variable	Mean ± Standard deviation	p-value*
Average number of visits to the health center	3.07 ± 0.84	0.25
Average number of visits to the doctor's office	4.75 ± 1.31	0.002
Average number of visits to the midwife's office	0.59 ± 1.49	0.75

*Pearson correlation test

Table 4 shows some of the physical complaints of pregnant women that cause them to wake up at night. Waking up at night because of frequent urination and changing the position in bed (56%) had the highest values, and the frequency of urination (p = 0.02), hunger (p = 0.02), and feeling pain (p = 0.03) had a significant relationship. They had research units with sleep quality.

Table 4. Examining the relationship between some physical complaints of pregnancy and the sleep quality of research units.

Physical complaints	N (%)	p-value	Physical complaints	N (%)	p-value
The feeling of fetal movement	46 (27.4%)	0.37	Frequent urination	103 (61.3%)	0.02
Leg cramps	65 (38.7%)	0.11	Shortness of breath	24 (14.3%)	0.14
Nausea and vomiting	7 (4.2%)	0.59	Hunger	85 (50.6%)	0.02
Heartburn	55 (32.7%)	0.33	Thirst	29 (17.3%)	0.99
Skin itching	3 (1.8%)	0.60	Digestive problems	28 (16.7%)	0.08
Feeling pain	82 (48.8%)	0.03	Change of position in bed	94 (56%)	0.40

*Pearson correlation test

This study was conducted to investigate the sleep quality of pregnant women in the pregnancy's third trimester and some factors affecting it. Based on the findings of this study, 89.88% had unfavorable sleep quality and the average sleep quality score of the research units in this study was 8.27 ± 2.91. Increasing maternal age and decreasing physical activity were associated with poorer sleep quality. In Taskiran's study [27], the average quality of women's sleep during pregnancy was reported as 8.23 ± 3.02 and 89% of pregnant women had sleep disorders.

Of course, in Taskran's study, pregnant women of any gestational age were included in the study. In Jahdi *et al*.'s study [31], the average sleep quality in the pregnancy's second trimester was 7.78 ± 3.14, and sleep quality was reported as optimal in 87.2% of research units.

Some studies show that the quality of sleep decreases with age [1, 28]. In this study, increasing maternal age was associated with more unfavorable sleep quality. However, in Jahdi *et al*.'s study [31], the relationship between mother's age and sleep quality was not significant. However, in Taskiran's study [27], age had a significant relationship with the sleep quality of the research units, but age in the two groups did not have a significant relationship with the separation of favorable and unfavorable sleep quality, which is contrary to the results of the present study.

This issue can probably be due to the larger sample size in the present study. In Rajabi's study [32], intense physical activity was related to poor sleep quality, while there was no relationship between daily physical activity at home and work and recreational sports activities. While in this study, more physical activity was associated with better sleep quality in the research units. Of course, the physical activity in the study of the month was in the form of daily exercise and the form of slow walking, and it is probably due to the calming effects of the physical activity of walking in the research units.

Gestational age is another factor affecting sleep quality. Sleep disorders are more common in the third trimester of pregnancy. However, in the current study, probably because the gestational age of all research units was in the range of 28-32 weeks, in other words, they were all in the third trimester of pregnancy, gestational age did not have a significant relationship with sleep quality. In Taskiran's study [27], there was no relationship between gestational age and sleep quality. However, in Taskran's study, a specific gestational age was not considered as an entry criterion.

According to the results of this study, unfavorable sleep quality was associated with more visits to gynecologists and the number of visits to the health center was not significantly different in the two groups. This difference is probably because pregnant women return to the health care facilities only based on the pre-scheduled appointment date for antenatal care. In Taskiran's study [27], the number of visits to the doctor was significantly higher. Maybe pregnant women with poor sleep quality due to more need to see a doctor due to resulting physical and psychological problems have unfavorable sleep quality.

Urinary frequency and feelings of hunger were the most common causes of waking up at night in pregnant women in this study. However, frequent urination, hunger, and pain were associated with more unfavorable sleep quality.

Among the limitations of this research, we can point out the possibility of the influence of unknown individual factors and other psychological factors of the mother on the results of the research, which are beyond the control of the researcher.

Conclusion

Due to the high prevalence of sleep disorders during pregnancy, this factor has adverse effects on the mother's and fetus's health. In prenatal care, the mother is not asked about this issue and it is even considered as a normal thing in pregnancy. It is hoped that this research will be a step towards attracting the attention of midwives to this issue and also provide the necessary grounds to investigate and diagnose sleep disorders in prenatal care for all pregnant women referring to health centers and by teaching effective ways to promote The quality of sleep and the necessary training and the provision of educational booklets to reduce the common complaints during pregnancy to all pregnant women, from the beginning of pregnancy and providing the necessary care and guidance to women with sleep disorders to prevent many adverse physical and mental consequences caused by it.

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