

The Relationship Between Sleep Quality and Mental Health During Pregnancy

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Abstract

Background: Due to the high prevalence of sleep disorder during pregnancy, this study was done to evaluate the relationship between sleep quality and mental health during pregnancy.

Methods: One hundred forty four pregnant women have been randomly selected for this study. Standard questionnaires including Pittsburg sleep quality (PSQI) and mental health (GHQ28) as well as the pregnant and demographic information were used for data collection. All acquired data were analyzed with the SPSS statistical software (version 17).

Results: The average score of sleep quality was 7.74 ± 3.41 for the 144 pregnant women. Sixty one (42.4%) had normal and 83 (57.6%) had abnormal mental health. The average score of sleep quality was 6.1 for the women with normal mental health and 8.95 for those with abnormal mental health ($P = 0.000$). Regarding the demographic variables and pregnancy, both of the sleep quality score ($P = 0.012$) and mental health score ($P = 0.009$) had a positive correlation with the family and friends' support. There was also a significant relationship between the sleep quality score and the trimesters of pregnancy ($P < 0.05$). Neither sleep quality nor mental health was related with other variables including age, education level, employment status, economic status, and pregnant times.

Conclusion: There was a significant relationship between sleep quality and mental health during pregnancy. Sleep hygiene training and promotion of mental health can improve the pregnant women's sleep quality and mental health status.

Keywords: Sleep quality, mental health, trimesters, pregnancy

Introduction

The need to sleep is one of the human's primary requirements (1). One third of human life passes in the sleep, which leads to energy renewal and protection, helps physical health preservation, and gets rid of stress and anxiety (2). The theory of "sleep is related to health" indicates that having a suitable quantity of sleep is necessary for human's body improvement. Pregnancy and childbirth are one of the women's main events of life (3). Pregnancy leads to many changes and is stressful. High level of concern and stress during pregnancy can result in long-term

consequences for fetus. It is believed that pregnancy with mental health problems may lead to schizophrenia and future mental illness of child (4, 5). Pregnancy is the most important and critical period in a woman's life and psychological comfort supports mother and her fetus. Sleep leads to energy restore, regulation of hormone secretion and immune system, etc. (6, 7). Systemic changes caused by hormonal, emotional, mental and physical changes during pregnancy disturb sleep patterns and lead to sleep disorders. About two-thirds of pregnant women have abnormal sleep patterns and complain about it. Sleep disorders increase in pregnancy compared to the three months before pregnancy (8). Starting at twelve weeks of pregnancy to two months after delivery, women complain of sleep disorders (9). Emotional, hormonal and physical changes and increased size of fetus can lead to anxiety and sleep disorders during pregnancy (10, 11). Changes in sleep quality of pregnant women, especially in the last three months of pregnancy, cause anxiety and depression, thus reducing resistance and tolerance to pain and losing emotion control (12). Changes in sleep patterns can lead to disruption of daily function, fatigue and reduction of life quality (8, 13). Due to the high prevalence of sleep disorders in pregnancy, the physical and psychological consequences, and the importance of maternal mental health, this study investigated the relationship between sleep quality and mental health during pregnancy.

Materials and Methods

This was a descriptive study. The subjects included the pregnant women who were referred to the pregnancy care clinics in Yazd during the first six months of 2014. The inclusion criteria were the healthy pregnant women who were willing for cooperation. The exclusion criteria were those who were suffering from severe physical diseases, under acute psychiatric therapy, taking psychiatric drugs, or had recent shock for any reasons such as death of relatives, financial and economic problems, addiction, etc.

A total of 144 pregnant women participated in the study. They first received the explanation regarding the research and then completed the three questionnaires including Pittsburg sleep quality standard question (PSQI) (this questionnaire evaluates patient's attitude about sleep quality during the past four weeks), standard questionnaire-GHQ 28 (GHQ28) (a questionnaire with multiple nature and self-performance to study mental health condition and mental disorders in society), and demographic information questionnaire (age, education level, occupation, economic condition, building size, family and friends' support, and pregnancy information (trimester of pregnancy)).

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Statistical analysis

All data were analyzed with the SPSS17 software. The Pearson correlation coefficient tests, *t*-test, Anova and chi-square tests were used for statistical analysis.

Results

In this study, 144 pregnant women were evaluated through interview and completing questionnaires regarding sleep quality, general health, and demographic features to determine the relationship between sleep quality and mental health. Of them, 101 (70%) were at the ages of 16-29 years and 43 (30%) were at the ages of 30-39 years. Sixty-one women (41.4%) had academic education and 58 were the first pregnancy (40.3%). In terms of employment, 118 (81.9%) were housekeeper and 26 (18.1%) were employed. In terms of the trimester, 55 (38%) were in the third trimester. Of the 144 women, 121 (84%) were pregnancy willingness. Eleven women (7.6%) had a child younger than 2 years old and 108 (75%) were under the support of family and friends. The average score of sleep quality was 7.74 ± 3.41 .

The average scores of sleep quality and mental health showed a positive correlation between them ($P = 0.00$) (Table 1). The correlation was significant for all of the three trimesters (Table 2).

Table 1. Correlation coefficient among sleep quality, mental health, age, and economic situation

Correlation coefficient	r	P value
Sleep quality and mental health	0.476	0.001
Sleep quality and age	0.059	0.485
Sleep quality and economic situation	-0.033	0.696
Mental health and age	-0.01	0.87
Mental health and economic situation	0.01	0.86

Table 2. Correlation coefficient between sleep quality and mental health during different trimesters

Trimester	n	r	P value
First	40	0.56	0.001
Second	49	0.37	0.001
Third	55	0.44	0.001

For the GHQ28 questionnaire, a cutoff point below 23 was considered as normal mental health and above 23 as abnormal. Sixty-one women (42.4%) had normal mental health and 83 (57.6%) had abnormal mental health. The average scores of sleep quality were 6.1 and 8.59 for the women with desirable and undesirable mental health, respectively. The difference was significant ($P = 0.00$) (Table 3). In the other words, there was a significant relationship between sleep quality and mental health status. The average age was 27.08 ± 5.04 ranging 16 - 39 years old. The average monthly income was 1029.37 ± 396.87 ranging 300-3000 Iranian Rials. In this study, the associations of sleep quality and mental health with the age, education, pregnant times, employment, and support from family and friends were also assessed. There was no significant association of either sleep quality or mental health with age, education, pregnant times, and employment (all $P > 0.05$). However, both the mental health and sleep quality had a significant relationship with the support from family and friends ($P < 0.05$). For the trimesters, the average score

of sleep quality was highest in the third trimester (8.67) and lowest in the second trimester (7.16) with a significant difference ($P = 0.035$). It was also different for the sleep quality between the first and third trimesters ($P = 0.035$). There was no difference for the sleep quality between the first and second trimesters (Table 4). These results indicated that the worst sleep quality was related to the third trimester and the best to the second trimester.

Table 3. The average score of sleep quality in women with normal and abnormal mental health

Mental health status	n	Score of sleep quality (average \pm SD)
Normal	61	$6.1 \pm 2.51^*$
Abnormal	83	$8.95 \pm 3.48^*$
Total	144	7.74 ± 3.41

* $P = 0.00$

Table 4. Average score of sleep quality in different trimesters

Trimester	n	Score of sleep quality			
		Average	SD	Min	Max
First	40	7.17	3.5	1	18
Second	49	7.16	3.1	1	16
Third	55	8.67	3.5	3	16
Total	144	7.74	3.4	1	18

The *P* values were 0.683, 0.035 and 0.035 for first vs. second; first vs. third; and second vs. third trimesters, respectively

Discussion

Mother's mental health is one of the most important issues during pregnancy and the sleep pattern disorder is one of the determining factors of mother's mental health. Determining the relationship between sleep pattern disorder and mental health is very important. The 144 pregnant women were randomly selected in this study and they were evaluated through interview and completing questionnaires regarding the mental health, sleep quality and demographic information. The results showed that the average score of sleep quality was 7.74 ± 3.41 . 42.4% of the women had desirable mental health and 57.6 % had undesirable mental health. The average score of sleep quality was 6.1 for the women with desirable mental health and 8.95 for those with undesirable mental health. This difference was significant. There was a positive relationship between sleep quality and mental health condition, which confirmed our hypothesis. The results of this study were consistent with the findings by Gelaye *et al.* and others (14). These studies have shown that there is a direct relationship between sleep quality and suicidal thoughts as well as between sleep quality and depression following childbirth. Sleep disorder can be a sign of depression existence, therefore it could be said that the results of this study were consistent with those by Parsaie Rad *et al.* and Mellor *et al.* (15, 16). Findings by Parsaie Rad *et al.* and Mellor *et al.* have shown that the severity of sleep disorders is related to depression in pregnancy. Anxiety in pregnancy is one of the factors disturbing mother's sleep during the full-term pregnancy. The present results showed that there was a significant relationship between the sleep quality and the third trimester of pregnancy, which was not consistent with the studies by Babanazari *et al.*, but consistent with the studies by Da costa *et al.*

(17, 18). Babanazari *et al.* have shown that the rate of pregnancy anxiety is high in the first and third trimesters and low in the second trimester. There were no significant relationship between age at pregnancy, education, economic conditions, or pregnancy ranking and either sleep quality or mental health, which was not consistent with the results by Forouzandeh *et al.* (19), Meller *et al.* (16) and Lindgren *et al.* (20). Social support has been recognized as one of the most important supportive sources for stress such as during pregnancy and it facilitates tolerance and problem-solving. Individuals with a high level of social support are less vulnerable even in exposure of new stress, tension, and maladaptive thought and behaviors in comparison with persons who have less social support from family. Mckee *et al.* have shown that social support is associated with mental health in 155 women as measured with the SF-36. In Abdollahzade's study, the relationship between social support with depression and anxiety during third trimester pregnancy was evaluated, indicating that depression in the third trimester will decrease if social support increases. Aktan also assessed the social support and anxiety in pregnant and postpartum women and have shown that there is a relationship between social support and anxiety during pregnancy and postpartum. It was also observed a significant reverse relationship in the present study among family and friends' support and sleep quality and mental health, consistent with the studies by Mckee *et al.* (21), Abdollahzade *et al.* (22), and Aktan *et al.* (23).

Conclusion

The present study showed that there was a positive relationship between sleep quality and mental health status during pregnancy. Sleep hygiene education and ways of promotion of mental health have positive effects on the improvement of quality of sleep and health of pregnant women.

Study Limitation

The limitation of this study is too many questions for the questionnaires, which devoted much time for pregnant women and might lead to insufficient attention to complete the questionnaires. Adequate explanations and choosing the right time were used for reduction of the limitation.

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