

ORIGINAL ARTICLE

A Study of the Psychological and Family Factors Associated with Sleep Quality among Pregnant Women

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ABSTRACT

Objective: Given the significance of sleep quality among pregnant women and its effects on the health of the fetus and the lack of sufficient studies in this field as well, the present study aimed to both identify some of the psychological factors associated with sleep quality among pregnant women and investigate the relationship between sleep quality among pregnant women and other variables, including depression, anxiety, stress, resilience, perceived social support, and marital adjustment.

Materials and methods: In this descriptive-correlational study, 425 pregnant women, visiting Islamabad and Ravansar-based prenatal care centers (randomly selected from the townships of Kermanshah Province (Iran)) in 2015, were selected. To collect the required data, the Locke-Wallace Marital Adjustment Test (LWSMAT), Pittsburgh Sleep Quality Index (PSQI), Conner-Davidson Resilience Scale (CD-RIS), Zimet's Multidimensional Scale of Perceived Social Support (MSPSS), and depression, anxiety and stress scales were used.

Results: The results of data analysis demonstrated that there was a significant relationship between the quality of sleep and variables like depression, anxiety, stress, perception, social support and marital adjustment. Further, the results showed that the hierarchical regression of all variables could predict 31% of the changes of sleep quality. Additionally, anxiety, depression and stress were ranked first, second and third in terms of the shares of variables in predicting the quality of sleep. Whereas, resilience, perceived social support and marital adjustment were unable to predict the quality of sleep.

Conclusion: Given the results of the present study, it is suggested that the roles of the psychological factors be considered in improving the quality of sleep among pregnant women.

Keywords: Sleep quality, mental factors, pregnant women

INTRODUCTION

Pregnancy is the most sensitive and enjoyable part of a woman's life, but this period is often accompanied by

stress, physiological and psychological changes (Sieber, Germann, Barbir, & Ehlert, 2006). In fact, pregnant women's sleep quality may be faced with some challenges due to the systematic changes caused by hormonal, psychological, emotional and physical factors that happen during pregnancy (Lopes et al., 2004). It is claimed that 79% of pregnant women are faced with the painful challenge of sleep deprivation (American Academy of Sleep Medicine, 2005), and the prevalence of sleep disorders has been reported by many researchers (Lee, 1998; Neau, Texier, & Ingrand, 2009; Okun, Luther,

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Wisniewski, & Wisner, 2013; Tsai, Lin, Kuo, & Thomas, 2012). Similarly, the Iranian studies have also reported that 87.2% of pregnant women encounter sleep quality problems (Jahdi, Rezaei, Beboodi, & Hagani, 2013). Problems with the quality of sleep can result in increased anxiety over caring for babies or postpartum depression (Lee & Gay, 2004; Lopes et al., 2004). Additionally, this predicament can cause problems, including premature delivery and giving birth to underweight babies (Smith, Huang, & Manber, 2005). Any changes in pregnant women's quality of sleep may influence their attitudes towards experiencing labor pains and acceptance of the maternal role (Lee, McEnany, & Zaffke, 2000).

Multiple physical and emotional factors, including depression, anxiety and stress, can pose troubles to sleep cycles, leading to sleep disorders (Sahota, Jain, & Dhand, 2003) because the relationship between each of these variables and sleep quality has been confirmed in some studies (Benca & Peterson, 2008; Briones et al., 1996; Staner, 2010; Vgontzas et al., 1998). Similarly, the results of other studies have shown that mental health can predict sleep quality (Mohammadi-Farrokhran, Mokhayeri, Tavakkol, & Mansouri, 2012).

The perceived social support is another variable studied in the present work. The social support is a social network that provides one with considerable psychological resources so that he can cope with stressful events and daily problems of life (Cohen & Wills, 1985), and various studies have pointed towards the relationship between social support and quality of sleep (Brummett et al., 2006; Nakata et al., 2004; Rambod, Ghodsbin, Beheshtipour, Raieyatpishe, & Mohammadi-Nezhad, 2012; Troxel, Buysse, Monk, Begley, & Hall, 2010).

One of the variables that have recently attracted the attention of psychologists and researchers is resilience, defined as a process, ability or the outcome of successful adaptation despite threatening conditions. Resilience is not the absence of risk factors in life, but it means the presence of psychological supportive factors attributed to functional processes and procedures resulting in favorable consequences in people's lives. For instance, when one is faced with dangers and challenges of life, he can diminish the adverse effects of destructive pressures

of life with the help of supportive factors such as optimism, confidence, and controlling the negative emotions (Khodabakhshi Kolaei, Heidari, Khoshkonesh, & Heidari, 2013). Research has shown that one with high levels of resilience enjoy higher levels of general health (Aghayusefi & Bazyari Meymand, 2013). Similarly, some studies have pointed to the relationship between resilience and quality of sleep (Celmer, 2015; Chatburn, Coussens, & Kohler, 2014).

Another variable that the present study deals with is marital adjustment, which is a concept that involves men and women's progress in marriage and is characterized by mutual understanding, continuous friendship, and meeting the expectations of society (Chaudhari & Patel, 2009). No studies have been conducted on the relationship between sleep quality and marital adjustment yet, but some have pointed to the relationship between marital quality and couples' sleep quality (Troxel, Robles, Hall, & Buysse, 2007).

Given the importance of sleep quality among pregnant women and its effects on the health of the fetus and the lack of sufficient studies in this field as well, the present study aimed to both identify some of the psychological factors associated with sleep quality among pregnant women and investigate the relationship between sleep quality among pregnant women and other variables, including depression, anxiety, stress, resilience, perceived social support, and marital adjustment.

MATERIALS AND METHODS

In this descriptive-correlational study, 425 pregnant women, visiting Islamabad and Ravansar-based prenatal care centers (randomly selected from the townships of Kermanshah Province) from May 21st, 2015 to October 22nd, 2015, were selected.

The criteria for entering the study included reading and writing literacy, being at least 18 years of age, lack of physical and psychological illnesses, being non-smoking and not using psychotropic drugs or hormonal and hypnotic drugs, and obtaining their informed consent to participate in the study.

Given the nature of the research (correlational), the

sample population was considered 400 people, but given factors such as lack of cooperation and distorted questionnaires, 425 people were selected. Finally, data analysis was performed for 400 people in the end. Also, due to the unavailability of the subjects' real statistics, the convenience sampling was chosen as the sampling method. After adjusting the questionnaires and selecting the participants, the questionnaires were distributed among them, and the required explanations of how to complete the questionnaires were provided by the researchers. Further, the participants were requested to ask for more clarification in case of encountering problems filling out the questionnaires. Then the participants were assured that their information would remain confidential, and their informed consent was taken. Moreover, the questionnaires were completed individually and collectively in the presence of the researcher. As for data analysis, the statistical tests of Pearson correlation and hierarchical regression analysis were applied in SPSS-19 Software.

Data Collection Tool

Multidimensional Scale of Perceived Social Support (MSPSS): This scale was developed by Zimet, Powell, Farley, Werkman, and Berkoff (1990) with 12 items measuring three dimensions of the support of family, friends and other important people. Each of the dimensions had 4 items on a seven-point Likert scale. Also, the Cronbach's alpha coefficients of other important people, family and friends were 0.91, 0.87, and 0.85, respectively (Zimet et al., 1990). In another study, the Cronbach's alpha coefficients of family, friends and other important people were 0.88, 0.90, and 0.61, respectively (Edwards, 2004).

Depression, Anxiety and Stress Scale (DASS): The DASS is a 21-item instrument for measuring depression, anxiety and stress developed by Lovibond and Lovibond (1995). Each of the questions had four options: Never (0), Low (1), Average (2), High (3). In addition, this scale was examined with factor analysis by Antony, Bieling, Cox, Enns, and Swinson (1998), and the results indicated the presence of the factors of depression, anxiety and stress.

The Cronbach's alphas for these factors were 0.97, 0.92, and 0.95 (Antony et al., 1998). Also, this questionnaire was studied in Iran, and the test-retest reliabilities for depression, anxiety and stress were 0.80, 0.76, and 0.77, and alphas were 0.81, 0.74, and 0.78, respectively (Maleki, Asghari, & Salari, 2005).

Connor-Davidson Resilience Scale (CD-RISC): This scale was developed by Connor and Davidson in 2003 to measure the strength against pressures and threats. It is believed that this questionnaire could distinguish between resilient and non-resilient individuals in clinical and non-clinical groups, and it can be used in research and clinical contexts. This scale consists of 25 questions with a five-point Likert scale from zero to four, including 'never, rarely, sometimes, often and always.' Moreover, the participants' minimum and maximum scores of resilience were zero and 100 (Connor & Davidson, 2003). The reliability and validity of the Persian version of resilience have been also evaluated and verified in preliminary studies on normalized samples. This scale was normalized by Mohammadi in Iran in 2005, and the Cronbach's alpha coefficient for the reliability of this test was 0.89 (Mohammadi, 2005).

Pittsburgh Sleep Quality Index: This standard Index is a self-report questionnaire with 18 questions classified under seven items. The first component is related to subjective sleep quality, determined by one question (question 9). The second one is related to delays in falling asleep, determined by two questions, i.e. the average score of the second question and section 'A' of the fifth question. The third component is related to sleep duration, determined by one question (question 4). The fourth one deal with one's sleep efficiency and effectiveness whose score is calculated through dividing the total sleep hours by the total hours that one is in bed multiplied by 100. The fifth component is related to sleep disorders and is determined by calculating the average scores of the fifth question. The sixth component is related to the consumption of sleeping pills, determined by one question (question 6). The seventh one deals with poor performance, determined by two questions (the

Table 1: The descriptive status of variables of the sample under study

| variable | minimum | maximum | Mean | SD |
|--------------------|---------|---------|-------|-------|
| Depression | 0 | 19 | 5.66 | 4.08 |
| Anxiety | 0 | 21 | 5.11 | 3.86 |
| Stress | 0 | 21 | 6.79 | 4.13 |
| Resilience | 38 | 118 | 88.56 | 4.68 |
| Social Support | 23 | 83 | 66.18 | 11.53 |
| Marital adjustment | 15 | 101 | 77.58 | 11.57 |
| Sleep Quality | 1 | 30 | 12.75 | 6.03 |

average of the scores of the seventh and eighth questions), and the score of each question ranges from zero to three, with a maximum score of three for each item. The total of these seven components makes up the total score of the tool, ranging from zero to 21. The higher the score, the lower the sleep quality will be, and a score higher than six indicates poor sleep quality. In addition, the reliability of the Persian version of the Pittsburgh Sleep Quality Questionnaire was 0.83 (Emkani & Khanjan, 2013).

Locke & Wallace Marital Adjustment Test: This is a self-report questionnaire designed to measure the quality of marital functioning (Harrison & Westhuis, 1989). This scale consists of 15 items, showing how participants agree with their wives about the activities playing roles in marital adjustment. The higher the scores in this questionnaire, the higher the adjustment will be. In addition, the split-half methodology showed a reliability of 0.90. Further, this test has demonstrated a high reliability through clearly differentiating between spouses who have adapted well in their marriage and those who are experiencing stress (Locke & Wallace, 1959). The test was translated by Mazaheri in 2000 and was normalized on a sample of Iranian partners (Mazaheri, 2003).

RESULTS

The mean age of subjects in the sample was 27.76 with a standard deviation of 5.65. The descriptive status of variables of the sample under study was described in Table 1.

To examine the relationship between the predictor variables and sleep quality, the Pearson correlation test was used (see Table 2).

Table 2: The correlation coefficients between the predictor variables and sleep quality

| Variable | r | P |
|--------------------|-------|-------|
| Depression | 0.48 | 0.001 |
| Anxiety | 0.51 | 0.001 |
| Stress | 0.46 | 0.001 |
| Resilience | -0.14 | 0.004 |
| Social Support | -0.25 | 0.001 |
| Marital Adjustment | -0.19 | 0.001 |

The results showed that the correlations between sleep quality and other variables were as follows: depression (0.48), anxiety (0.51), stress (0.46), resilience (-0.14), perceived social support (-0.25), and marital adjustment (-0.19). Moreover, the hierarchical regression analysis was used to predict sleep quality according to the variables of depression, anxiety; stress, perceived social support, resilience, and marital adjustment (see Table 3).

The results of regression analysis showed that when in step one of the process, the variables of depression, anxiety and stress were simultaneously inserted into the equation, the whole of predicting variables could explain 30 percent of the variance of sleep quality. In this step, the impact factors of the variables of depression, anxiety and stress were 0.17, 0.31, and 0.13, respectively. In the second step, the perceived social support was added to the aforementioned variables, and R2 did not have significant changes. Furthermore, this variable alone couldn't predict the quality of sleep. The variables of resilience and marital adjustment also had the same situation, and by entering these variables, R2 did not have significant changes, and in the next steps, these three variables were incapable of predicting the quality of sleep. In the final step, all the inserted variables could

Table 3: The results of regression analysis for predicting the quality of sleep

| step | variable | B | β | t | P | Model summary | change |
|------|--------------------|-------|---------|------|-------|-----------------------|--------------------|
| 1 | Depression | 0.26 | 0.17 | 2.62 | 0.009 | R= 0.55 | - |
| | Anxiety | 0.48 | 0.31 | 5.24 | 0.001 | R ² = 0.30 | |
| | Stress | 0.19 | 0.13 | 2.05 | 0.04 | F=56.84 P<0.001 | |
| 2 | Depression | 0.23 | 0.16 | 2.29 | 0.02 | R= 0.55 | $\Delta R^2=0.003$ |
| | Anxiety | 0.48 | 0.30 | 5.17 | 0.001 | R ² = 0.30 | $\Delta F= 1.62$ |
| | Stress | 0.19 | 0.13 | 2.04 | 0.04 | F=43.10 | P<0.20 |
| | Social Support | -0.03 | -0.06 | 1.27 | 0.20 | P<0.001 | $\Delta R^2=0.002$ |
| 3 | Depression | 0.24 | 0.16 | 2.35 | 0.02 | R= 0.55 | $\Delta F= 1.18$ |
| | Anxiety | 0.48 | 0.31 | 5.24 | 0.001 | R ² = 0.31 | P<0.27 |
| | Stress | 0.19 | 0.13 | 2.06 | 0.04 | F=43.09 | |
| | Social Support | -0.04 | -0.07 | 1.54 | 0.12 | P<0.001 | |
| | Resilience | | | | | | |
| 4 | Depression | 0.23 | 0.15 | 2.24 | 0.03 | R= 0.55 | $\Delta R^2=0.000$ |
| | Anxiety | 0.48 | 0.31 | 5.21 | 0.001 | R ² = 0.31 | $\Delta F= 1.62$ |
| | Stress | 0.20 | 0.14 | 2.09 | 0.04 | F=34.73 | P<0.68 |
| | Social Support | -0.04 | -0.07 | 1.34 | 0.16 | P<0.001 | |
| | Resilience | 0.02 | 0.05 | 1.15 | 0.25 | | |
| | Marital Adjustment | -0.01 | -0.02 | 0.41 | 0.68 | | |

predict 31% of the changes of sleep quality, but in the end, anxiety, depression and stress had the largest shares in descending order. The variables of resilience, perceives social support and marital adjustment were incapable of predicting the quality of sleep.

DISCUSSION

The present study aimed to delve into the relationship between sleep quality and other variables, such as depression, anxiety, stress, resilience, perceived social support, and marital adjustment. The results indicated that sleep quality and other variables, such as depression, anxiety, stress were related, i.e., the higher the level of depression, anxiety, stress, the lower the quality of sleep will be, and vice versa. The results of this section were consistent with previous research (Benca & Peterson, 2008; Briones et al., 1996; Staner, 2010; Vgontzas et al., 1998).

The studies that have been recently performed on depression among patients with respiratory disorders while sleeping have reported a high prevalence of depression among patients (Baran & Richert, 2003; Hayano et al., 2012). It is believed that depression, anxiety

and stress affect the quality of sleep (Mohammadi-Farrokhran et al., 2012). On the other hand, one with anxiety and worries would be obsessed with recurring thoughts concerning negative events (Brosschot, Gerin, & Thayer, 2006) that there is the possibility of their happening, which is shared by pregnant women concerning their children's future. These thoughts cause emotional and physiological arousal (Espie, Broomfield, MacMahon, Macphee, & Taylor, 2006), which will result in more attention to the environmental and personal stimuli. Given the fact that research has shown that sleep quality and recurring thoughts are related (McEvoy, Mahoney, & Moulds, 2010), the results of this section and the relationship between the quality of sleep and other variables, such as depression, anxiety and stress should be further explained.

Further, the results of the present study showed that resilience and quality of sleep were related among pregnant women, and to further explain the results of this section, it can be pointed out that resilient individuals display more adaptive behaviors in the face of negative events in their lives (Peng et al., 2012). According to Connor (2006), resilience causes one's well-being through reducing and relieving stress and depression (Connor,

2006). Some studies have shown that reducing resilience in the face of events in one's life is accompanied by stress, anxiety, or depression (Bonanno, 2004; Connor & Davidson, 2003; Masten, 2001), and some researchers have it that resilient individuals are more flexible in the face of traumatic circumstances and maintain themselves in such situations (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005). Similarly, given the stressful conditions to which the pregnant women are exposed, resilience can be related to sleep quality. The results of this section were consistent with the previous studies (Chatburn et al., 2014; Chaudhari & Patel, 2009).

The results of the present work also demonstrated that there was a relationship between the perceived social support and quality of sleep. The reasons why it is claimed that the social support is effective in improving the quality of sleep are as follows: causing positive affection, improving health-related behaviors and leading to habits associated with optimal sleep quality (Troxel et al., 2010). Additionally, the feeling that there is one on somebody's side prevents feelings of loneliness, and research has shown that loneliness disrupts the quality of sleep (Cacioppo et al., 2002; Chen, Kawachi, Subramanian, Acevedo-Garcia, & Lee, 2005; Pressman et al., 2005).

On the other hand, it is believed that the perceived social support affects the biological rhythm of sleep and can influence the quality of sleep through its effects on mental stress (Akerstedt, Fredlund, Gillberg, & Jansson, 2002; Hall et al., 2008; Morin, Rodrigue, & Ivers, 2003). The results of this section were consistent with previous research (Brummett et al., 2006; Nakata et al., 2004; Rambod et al., 2012; Troxel et al., 2010).

The results showed that the more the marital adjustment, the better the sleep quality will be. To further explain the results of this section, the theory of family functioning can be pointed to, in which family functioning is an important aspect of family that affects one's physical, social and emotional health. In fact, what happens within a family and how it functions can be a key factor in the flexibility and reduction of current and future risks associated with healthy living (Vieno, Santinello, Pastore, & Perkins, 2007).

It is held that family functioning is one of the most

important indicators guaranteeing the family members' lives and mental health, and its negative relationship is considered as one of the most common causes of mental and emotional disorders, and it seems that families with internal interactions based on intimacy, warmth and understanding would be fairly resistant against the pressures of life.

Families with poor performance will be exposed to discontinuation, emotional separation and family members' lack of intimacy and adaptability, and low household satisfaction, resulting in inconsistency and mental health problems. As previously mentioned, mental disorders can decrease the quality of sleep. In effect, the family functioning is associated with the mental health, and a psychological trauma is not principally a family member's interpersonal problem, but it is an interactive process between family members. Research indicates that there exists a significant relationship between poor family functioning and one's suffering from somatic symptoms, anxiety, sleep disorders, depression and social dysfunction (Feeley et al., 2014). No studies have been conducted on the relationship between marital adjustment and sleep quality yet, but some studies have pointed to the relationship between the quality of marital relationships and sleep quality (Troxel et al., 2007).

The results demonstrated that resilience, perceived social support and marital adjustment alone could not predict the quality of sleep among pregnant women whereas depression, anxiety and stress could do so. Of the three of them, the role of anxiety was greater, which could be due to the influence of anxiety on the human physiological systems.

According to the results of the present study, it is recommended that the role of the psychological factors be considered towards improving the quality of sleep among pregnant women. Additionally, the present work was conducted in a limited sample in Kermanshah Province, and both the required precautions should be taken, and more studies should be done in other populations towards generalization of the results. Moreover, another limitation of the present study was its cross-sectional nature, so it is recommended that future studies be performed in longitudinal formats.

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