

Sleep Disturbances and Fatigue among Postnatal Women

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Abstract

The aim of this study is to assess the prevalence of sleep disturbances and fatigue among postnatal women, and find out the association between sleep disturbance and fatigue. Cross-sectional study was carried out at Alnour Specialist Hospital in Makah in kingdom Saudi Arabia on 500 postpartum primiparous women in reproductive age who delivered vaginally. Tools for data collection were, postnatal women sociodemographic data structured interview schedule, Global Sleep Assessment Questionnaire for sleep pattern (GSAQ), and Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF). The results revealed that 18.4% of the women had sleep disturbances, and 32.4% had fatigue, sleep disturbance and fatigue were significantly higher among non-Saudi women, and a statistically significant positive correlation was revealed between the sleep disturbance and fatigue. It is concluded that sleep disturbance and fatigue are positively correlated. It is recommended that, the discharge plan prepared by the nurse must include all the details of postnatal care, along with instructions for the women regarding sleep and rest. Special care must be given to women who are at higher risk of developing postnatal fatigue and sleep disturbances, such as working mothers and those living in home environment not encouraging rest as living with extended families, and high crowding index.

Keywords: Sleep, Fatigue, Postnatal, Nursing

Introduction

The postpartum period covers a critical transitional time for woman physiological and psychological levels (**Rudman & Waldenström, 2007**). It is a period of important physiological, social and emotional adjustment (**Fuller & Schaller-Ayers, 2000**). Traditionally, the medical perspective of the postpartum period refers to the time after childbirth that is required for the reproductive organs to return to their non pregnant state, a process of about 6 weeks (**Gjerdingen et al., 2009**).

A mother goes through three normal phases to adjust at postpartum period (**Kristenson et al., 2004**). The first one is the taking in phase. It is the

time immediately after birth when the client needs sleep and depends on others to meet her needs. This phase is characterized by dependent behavior, in which the mother assumes a very passive role in meeting her own basic needs. It lasts about 2 days after birth. The second one is called taking-hold phase. It is characterized by dependent and independent maternal behavior. The mother will show independence by caring for herself and learning to care for her newborn, but she still requires assurance that she is doing well as a mother. The last phase is called the letting-go phase. It is occurring later in the postpartum period when the mother reestablishes relationships with other

people. **Engstrom et al., (2007)** added that through this phase the mother assumes responsibility and care for the newborn with a bit more confidence.

More than half of postpartum women are unable to adjust at postpartum period and experience transient mood alterations called baby blues which usually occur during the first week after birth (**Reck et al., , 2008**). In addition the common signs and symptoms of baby blues include sadness, crying, fatigue and low self-esteem (**Robertson , 2010**).

Women experience dramatic changes during the postpartum period involving not only hormones and physiology, but also changes in lifestyle, sleep patterns, responsibilities, and interpersonal relationships, all of these changes can influence sleep patterns , sleep quality and woman's ability to function are impaired (**American Academy of Sleep Medicine , 2007**).

Fatigue was the most frequent symptom among postpartum women (**McGovern et al., 2007**). Fatigue is “the awareness of a decreased capacity for physical and/or mental activity due to an imbalance in the availability, utilization, and/or restoration of resources needed to perform activity” (**Kylea et al., 2010**). Meanwhile, **Allen (2008)** defined postpartum fatigue as a multidimensional phenomenon that causes a woman to feel negative, uncomfortable, and less efficient than usual.

Several postpartum studies suggest that women with fatigue symptoms experience poorer sleep quality, less total sleep time, longer sleep latency (take more time to fall asleep), and experience more sleep disturbance (**Hiscock & Wake, 2001**,

Huang, Carter & Gueo,2004, Dennis & Ross, 2006, Bourgoin et al., 1997, & Goyal, Gay & Lee, 2007). Postpartum period is generally associated with significant lifestyle changes related to infant care, which can induce stress and sleep disruption (**Lee, Zaffke & McEnany, 2000, Tu, Lupiena & Walker, 2006, Soares & Murray, 2006, & Bourgoin et al., 1997**).

While taking care of postpartum mothers after childbirth, nurses are in the best position to carefully observe and evaluate their levels of fatigue and sleep disturbance (**Shih-Yu & Lee, 2007**). However, the period of hospitalization following childbirth is too short for nurses to properly monitor and control postpartum fatigue and sleep disturbance. Postpartum mothers, therefore, should directly learn how to solve their problems with fatigue and sleep disturbance, with the assistance of nurses.

Sleep disturbances and fatigue among postpartum women have received limited research attention. Therefore, this study is carried out to draw the attention of nurses to the important role that fatigue and sleep disturbance play in the lives of postpartum women, and to the related nurse roles can play in practice, research, and health care policy formulation.

Aim of the Study

The aim of this study was to assess the prevalence of sleep disturbances and fatigue among postnatal women.

Subjects and methods

Research Design:

A descriptive research design was utilized in this study.

Setting:

This study was conducted at the

postpartum inpatient and outpatient departments during follow-up visits at Alnour Specialist Hospital in Makah in kingdom Saudi Arabia during the period from the first of April 2009 to end of august 2009.

Sample:

The sample consisted of 500 postnatal women selected from postpartum inpatient and outpatient clinics during follow-up visits at the study setting. Women were eligible for recruitment in the study sample if they met the following inclusion criteria: In normal reproductive age (16-45), Primiparous, delivered vaginally, and free from any medical problems that may cause fatigue or sleep disturbances.

Tools of data collection:

- **Postnatal women socio-demographic data structured interview schedule**, this form was developed by the researcher for collection of the Socio-demographic characteristics, postnatal characteristics and follow up visit data.
- **Global Sleep Assessment Questionnaire for sleep pattern**, this scale was developed by **Roth et al., (2002)**. It used to evaluate sleep pattern and causes of sleep disturbances among postnatal women. It consists of 15 items. Responses are measured on a 4-point Likert scale where the highest score indicates the highest level of sleep disturbances. Scoring: The items of the scale were classified into its six principal components according to **Unger et al., (2004)**. These are 1) insomnia/hypersomnia, 2) non-restorative sleep, 3) sleep schedule disorder, 4) excessive daytime somnolence, 5) sleep apnea, and 6) restlessness. For

individual item analysis, the scale was dichotomized by grouping never with sometimes, and usually with always. Then, for quantitative analysis, the responses never, sometimes, usually, and always were respectively given scores 1 to 4. The sum score of each component was calculated and its mean and standard deviations were computed by dividing by the number of items. Then, the total of each component and of the scale was dichotomized into low if the mean was less than 2 and high if 2 or higher.

- **The Multidimensional Fatigue Symptom Inventory-Short Form - MFSI-SF** - This scale was constructed by **Stein et al., (2004)** to evaluate fatigue symptoms among postnatal women. It consists of 30 items. Responses are measured on a 5-point Likert scale where the highest score indicates the highest level of fatigue symptoms. Scoring: The items of the scale were classified into its six principal components according to **Reeves et al (2003)**. These are 1) emotional, 2) general, 3) mental, 4) physical, and 5) vigor. For individual item analysis, the scale was dichotomized by grouping not at all with a little and moderately, and quite a bit with extremely. Then, for quantitative analysis, the responses not at all, a little, moderately, quite a bit, and extremely were respectively given scores 1 to 5. The sum score of each component was calculated and its mean and standard deviations were computed by dividing by the number of items. Then, the total of each component and of the scale was dichotomized into low if the mean was less than 3 and high if 3 or higher.

Pilot stud:

The pilot study was carried out on 20 postnatal women from Alnour Specialist Hospital in Makah in kingdom Saudi Arabia to test the clarity of questionnaire and to estimate the needed time to fill it. Minor changes were introduced to the used tools related to clarification of some words. All patients involved in the pilot study were excluded from the study sample later on.

Fieldwork:

Once permission was granted to proceed the study, the investigator contacted each woman individually in post natal ward and explained to her the purpose and nature of the study. Upon obtaining her oral consent, the researcher started the interview. At the end of the interview, the woman was given an appointment to meet her in the outpatient clinic for assessment of postnatal details after two weeks. The interview time ranged from 20 to 30 minutes. Collection of data covered a period of five months, three days per week, from April to August 2009.

Ethical considerations

The aim of the study was explained to every woman before participation, which was totally voluntary. Women were reassured that any obtained information will be confidential, and will be used only for the purpose of the study. The study maneuvers had no actual or potential harms on women. Professional help was provided whenever needed.

Results:

Table (1): revealed that women age ranged from 18 to 33 years, with mean (SD) 24.3 ± 3.0 years. The great majority (88.2%) were Saudis. About half of them (48.0%) had secondary

education. The majority was housewives (71.8%), with private residence (65.0%), a private room for rest (83.4%), and a crowding index less than two persons per room (70.8%).

Table (2): It is clear from this table that the most common problems were related to sleep schedule disorders. The items of worries interfering with sleep (72.6%). Other items frequently reported to have included feeling sad and anxious (58.0%), and daytime sleepiness (31.2%), which lead to non-restorative sleep. About one-third of the women (30.8%) reported having nightmares and screaming during sleep, which leads to restlessness. In total, the most frequent sleep disturbance was that non-restorative sleep (34.6%), followed by excessive daytime somnolence (26.0%). On the other hand, the least sleep disturbance was that of sleep apnea (0.4%).

Table (3): Shows that, the most common type of fatigue among studied women was the emotional (74.4%), followed by the general (59.4%). Meanwhile, only nine women (1.8%) had physical fatigue. About one-third of the women (32.4%) had fatigue, with a mean (SD) score 1.3 ± 0.4 from a maximum of 4.

Table (4): Demonstrates statistically significant associations between sleep disturbance and women's nationality ($p < 0.001$), job status ($p = 0.005$), residence ($p < 0.001$), crowding index ($p < 0.001$), and number of helpers ($p < 0.001$). It is evident that the percentages of sleep disturbance were higher among non-Saudi women, who were working, living with extended families, with high crowding index, and with only one helper.

Table (5): shows statistically significant associations with women's fatigue and their nationality ($p < 0.001$), education ($p = 0.001$), job status ($p = 0.02$), residence ($p < 0.001$), and crowding index ($p < 0.001$). It is noticed that the percentages of fatigue problem were higher among non-Saudi women, who were illiterate, working, living with extended families, and with high crowding index.

Table (6): shows a statistically significant relation between women's sleep disturbance and fatigue problem ($p < 0.001$). It is evident that most women with low fatigue problem had low sleep disturbance (78.4%). On the other hand, most women with high fatigue problem had high sleep disturbance (80.4%). In further confirmation, the scatter plot in **Figure (1)** indicates a moderate to strong statistically significant positive correlation between the sleep disturbance and fatigue scores ($r = 0.662$).

Discussion

After birth, woman enters directly into the challenge of combining baby- and self-care. Pregnancy and labor represents a condition of intense physical and physiological changes ultimately interfering with their quality of sleep. Sleep deprivation can lead to several harmful consequences for the woman and the child, and can potentially undermine the mother-infant relationship

It is obvious that, fatigue plays an important role in the lives of postpartum women, and to the related roles nurses can play in practice, research, and healthcare policy formulation. In about one-third of the studied women, the sleep disturbance

was related to having nightmares and screaming during sleep, which leads to restlessness. This is certainly due to the stress of pregnancy, and the concerns about labor. In congruence with this result, women suffer of episodes of anxious dreams and nightmares about the new infant that are accompanied by complex behaviors as motor activity, speaking, and expressing emotions. Also, more postpartum women reported dreams containing anxiety and the infant in peril than did pregnant women (**Nielsen & Paquette, 2007**).

Furthermore, about one third of the present study women had sleep disturbances related to quality of sleep such as non-restorative sleep, which might be the reason underlying excessive daytime somnolence among more than one-fourth of them. The finding is in agreement with that the most common mother's sleep problem was poor sleep quality (**Hayama et al., 2008**).

Also in agreement with the present study findings, **Montgomery et al., (2010)** reported that the disturbance of the quality of postnatal sleep was more important than the total time of sleep. Though postpartum mothers' total sleep time was higher than expected during the initial postpartum months, this sleep was highly fragmented and inefficient. This profile of disturbed sleep should be considered in intervention designs and family leave policies.

On the other hand, the least sleep disturbance revealed in the current study was that of sleep apnea. The low frequency of sleep apnea among women might be explained by the inclusion and exclusion criteria of the sample, where only women with normal pregnancy and uneventful

delivery were included. Apnea is in fact more common with pregnancy disorders such as eclampsia, as well as with obesity (**Louis et al., 2010**).

Meanwhile, sleep related apnea disorders observed during pregnancy are more likely upper airway resistance syndrome (**Verdaguer et al., 2008**).

Overall, about one-fifth of the studied women had sleep disturbance. The prevalence of sleep problems was 57.7% in a Japanese study found that about thirty percent of mothers experienced some sleep problems and were suspected of being at high risk of insomnia (**Dorheim et al., 2009 & Hayama et al., 2008**).

Regarding postnatal fatigue, about one-third of the studied women had postnatal fatigue. An important finding was that the frequency of emotional fatigue was much higher than physical fatigue; they affected about three-fourths and one-tenth of the women, respectively. This indicates that the problem of postnatal fatigue is not primarily a physical one due to tiredness and exhaustion. In congruence with these findings, **Kammerer et al. (2009)** demonstrated that postnatal fatigue was one of the best discriminating symptoms of postnatal depression, which confirms its emotional and mental rather than physical elements.

Some factors were identified to be related to sleep disturbance and fatigue in the present study. These included non-Saudi nationality, working status, living with extended families, with high crowding index, and with only one helper. Furthermore, both sleep disturbance and fatigue scales were positively and significantly correlated with the crowding index. These factors reflect stressful life

conditions. The home condition allowing privacy, with low crowding and in the presence of a helper could give the postnatal woman the chance to rest and have good sleep. Also, this environment might save her the tiredness of frequent baby crying, which has been shown as a predictor of postnatal fatigue.

In congruence with these present study findings, **Kurth et al., (2009)** in a systematic review of studies published from 1980 to 2007 found that the amount of infant crying during the first three months postpartum is associated with the experience of tiredness and fatigue in new mothers. Infant crying disrupts new mothers' circadian rhythms, reducing opportunities to rest and exacerbating tiredness. Incremental exhaustion diminished parents' ability to concentrate, raising the fear of harming their children, triggering depressive symptoms and burdening parent-child interaction.

Concerning the relation between fatigue and work as revealed in the current study, a relation was found between employment and emotional wellbeing of postpartum women (**Webb et al., 2008**). Therefore, the postpartum women whose fatigue or postpartum symptoms has limit daily role function may need counseling regarding return to work.

The present study revealed a statistically significant positive correlation between postnatal sleep disturbance and fatigue. This means that fatigue might be increased by sleep deprivation, or reciprocally the excess fatigue leads to sleep disturbance. This latter possibility may be supported by the fact that the postnatal fatigue in the present study sample was mainly emotional rather

than physical, and emotional fatigue unlike physical fatigue most probably deprives from sleep. In line with this **Hunter, Rychnovsky & Yount. (2009)** concluded from a systematic review that the relationship between sleep disturbance and fatigue in postpartum women still lacks clarity.

In agreement with the foregoing present study findings, **Rychnovsky and Hunter (2009)**, in a study in San Diego, California, examined the relation between sleep characteristics and postpartum fatigue during the first six weeks after delivery. They demonstrated that fatigue had a positive correlation with sleep disturbance, indicating that higher levels of fatigue are associated with more disturbed sleep. Moreover, the levels of fatigue had a negative correlation with sleep effectiveness, indicating that the women were more fatigued if they perceived their sleep quality and adequacy to be poor or if they perceived the time spent sleeping to be short. Moreover, **Meltzer and Mindell (2007)** in a USA study found that maternal sleep quality was a significant predictor of maternal fatigue.

Furthermore, **Lavidor, Weller & Babkoff (2003)** mentioned that although it is evident that sleep patterns have direct effects on fatigue, the multidimensionality of fatigue may imply that complex patterns of relationships exist between fatigue and sleep characteristics. In their study, they investigated the correlations between fatigue and quantitative and qualitative sleep measurements, while taking into consideration depression and somatization which are known to affect both sleep and fatigue. Fatigue was significantly predicted by subjective sleep quality, but not

quantitative sleep characteristics such as sleep latency, nocturnal awakenings and early morning arousals.

Conclusion

Based on the findings of the present study, it can be concluded that:

Fatigue is more emotional rather than physical. The sleep disturbance and fatigue are significantly and positively correlated.

Recommendation:

Based on the main study findings, the following recommendations are suggested:

- The discharge plan prepared by the nurse must include all the details of postnatal care, along with instructions for the women regarding sleep and rest.
- Special care must be given to women who are at higher risk of developing postnatal fatigue and sleep disturbances, such as working mothers and those living in home environment not encouraging rest as living with extended families, and high crowding index.
- Further research is proposed to assess the effect of nursing interventions to help women who have postnatal sleep disturbances and fatigue to cope with these problems.
- There is also a need to investigate the effectiveness of nursing interventions during pregnancy to prevent the occurrence of postnatal fatigue and sleep problems.
- Farther research duplication of study on multipara and who had high risk labor

Table (1): Socio-Demographic Characteristics of the Studied Postnatal Women (N=500).

Characteristics	Frequency	Percent
Age (years):		
<21	53	10.6
21-	204	40.8
25+	243	48.6
Range	18-33	
Mean±SD	24.3±3.0	
Nationality:		
Saudi	441	88.2
Egyptian	14	2.8
Indian	14	2.8
Filipino	12	2.4
Pakistani	12	2.4
Sudanese	7	1.4
Education:		
Illiterate	4	0.8
Read/write	15	3.0
Primary	23	4.6
Preparatory	91	18.2
Secondary	240	48.0
University	127	25.4
Job:		
Housewife	359	71.8
Working	141	28.2
Residence:		
Private	325	65.0
With extended family	175	35.0
Have private room for rest:		
No	83	16.6
Yes	417	83.4
Crowding index:		
<2	354	70.8
2+	146	29.2

Table (2): Frequency Distribution of Sleep Disturbances among Studied Postnatal Women (N=500).

Items	Usually/always		Mean \pm SD
	No.	%	
Sleep apnea:			
▪ Snore loudly	2	0.4	0.4 \pm 0.3
▪ Hold breath, have breath pause or stops during sleep	11	2.2	
Excessive daytime somnolence:			
▪ Fall asleep unintentionally or have to fight sleep during day	130	26.0	1.1 \pm 0.9
Insomnia/hypersomnia:			
▪ Have difficulty falling asleep or feel poorly rested in the morning	118	23.6	1.0 \pm 0.7
Non-restorative sleep:			
▪ Feel sad or anxious	290	58.0	
▪ Daytime sleepiness interfere with activities	156	31.2	1.1 \pm 0.6
▪ Work, travel or other activities prevent from getting enough sleep	7	1.4	
Restlessness:			
▪ Have nightmares, scream, walk, punch or kick during sleep	154	30.8	0.8 \pm 0.4
▪ Have restlessness or crawling feelings in legs at night that went away after moving legs	12	2.4	
▪ Have repeated rhythmic leg jerks or twitches	7	1.4	
Sleep schedule disorder:			
▪ Have worry interfering with sleep	363	72.6	0.8 \pm 0.4
▪ Have something else interfering with sleep	233	46.6	
▪ Have pain interfering with sleep	108	21.6	
▪ Use medications interfering with sleep	0	0.0	
Total			0.9\pm0.4

Table (3): Frequency Distribution of Fatigue Symptoms among the Studied Postnatal Women (N=500)

Multidimensional Fatigue Symptom Inventory (MFSI-SF)	No.	%	Mean \pm SD
			(max=4)
Emotional	372	74.4	1.9 \pm 0.7
General	297	59.4	1.5 \pm 0.4
Mental	72	14.4	1.0 \pm 0.4
Physical	9	1.8	0.3 \pm 0.3
Vigor	102	20.4	1.8 \pm 0.5
Total scale	162	32.4	1.3\pm0.4

Table (4): Relation between Postnatal Women's Sleep Disturbance (GSAQ) and their Socio-Demographic Characteristics.

Items	GSAQ				X ² Test	p-value
	Low (<2)		High (2+)			
	No.	%	No.	%		
Age (years):						
<21	43	81.1	10	18.9		
21-	164	80.4	40	19.6	0.41	0.82
25+	201	82.7	42	17.3		
Nationality:						
Saudi	280	86.2	61	31.8		
Non-Saudi	28	47.5	31	52.5	51.94	<0.001*
Education:						
Illiterate/read write	12	68.4	6	31.6		
Basic	88	77.2	26	22.8	7.36	0.06
Secondary	195	81.3	45	18.8		
University	112	88.2	15	11.8		
Job:						
Housewife	304	84.7	55	15.3		
Working	104	73.8	37	26.2	8.04	0.005*
Dwelling:						
Private	292	89.8	33	10.2		
With extended family	116	66.3	59	33.7	42.05	<0.001*
Crowding index:						
<2	319	90.1	35	9.9		
2+	89	61.0	57	39.0	58.52	<0.001*
Number of helpers:						
1	260	77.2	77	22.8		
2+	148	90.8	15	9.2	13.63	<0.001*

(*) Statistically significant at $p < 0.05$

Table (5): Relation between Postnatal Women's Fatigue (MSFI) and their Socio-demographic Characteristics

Items	MFSI				X ² Test	p-value
	Low (<3)		High (3+)			
	No.	%	No.	%		
Age (years):						
<21	32	60.4	21	39.6		
21-	141	69.1	63	30.9	1.49	0.48
25+	165	67.9	78	32.1		
Nationality:						
Saudi	330	74.8	111	25.2		
Non-Saudi	8	13.6	51	86.4	89.19	<0.001*
Education:						
Illiterate/read write	6	31.6	13	68.4		
Basic	69	60.5	45	39.5	17.50	0.001*
Secondary	168	70.0	72	30.0		
University	95	74.8	32	25.2		
Job:						
Housewife	254	70.8	105	29.2		
Working	84	59.6	57	40.4	5.77	0.02*
Dwelling:						
Private	268	82.5	57	17.5		
With extended family	70	40.0	105	60.0	93.64	<0.001*
Crowding index:						
<2	280	79.1	74	20.9		
2+	58	39.7	88	60.3	73.15	<0.001*

(*) Statistically significant at $p < 0.05$

Table (6): Relation between postnatal women's fatigue (MSFI) and sleep disturbance (GSAQ)

Items	MFSI				X ² Test	p-value
	Low (<3)		High (3+)			
	No.	%	No.	%		
GSAQ:						
Low	320	78.4	88	21.6		
High	18	19.6	74	80.4	118.77	<0.001*

(*) Statistically significant at $p < 0.05$

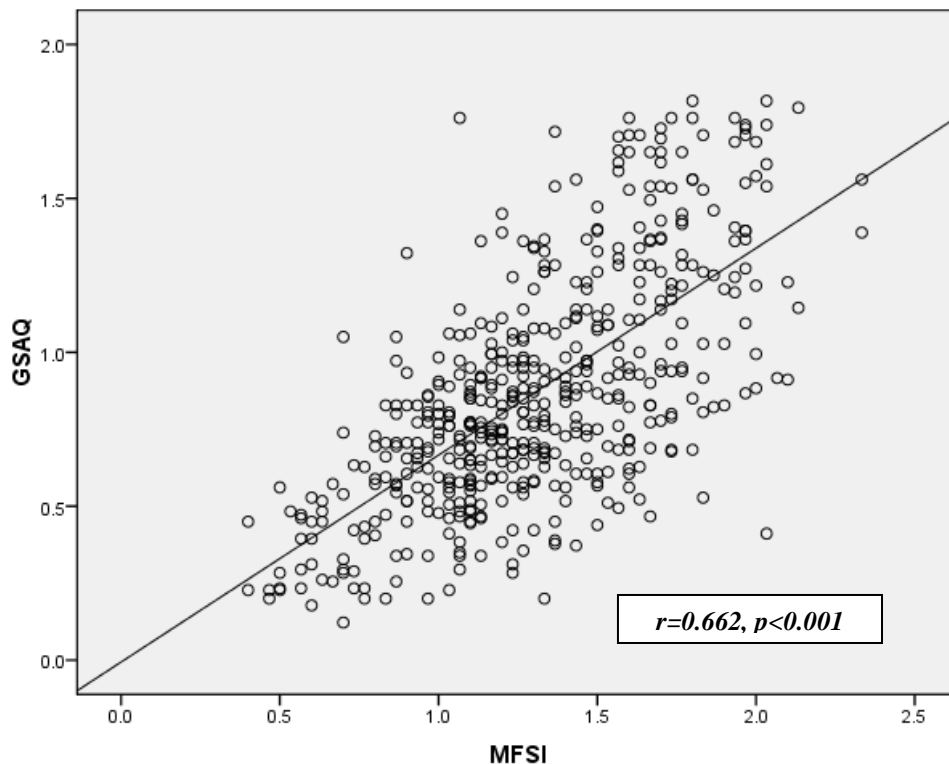


Figure (1): Correlation between women's fatigue and sleep disturbance scores (n=500)

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