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Employment Status Association with Quality of Sleep among Married Women Of Defense Housing Authority, Karachi.

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Abstract
On an average 7 hours of sleep per night is required for the better health of an individual. Married women are having the responsibility of their children and if they are working at the same time then their duration of sleep is being affected. There is an increased risk to acquire health disorders, due to inadequate level of sleep. A cross-sectional study was conducted among the area of defense housing authority in Karachi. The aim was to assess the quality of sleep among married women to determine their sleep quality and to assess whether employment status affects their sleep quality with different variables as number and age of children. The data was collected using "Pittsburg sleep quality index". The sample size for the study was n=400, with n=200 for married employed and n=200 for married unemployed. The analysis has shown that the mean global score of 4.9±2.89 for good sleepers, while the score of 7.03±2.79 has been revealed for the power sleepers. Chi-square test was applied to determine association and independent sample t-test were applied to determine the difference in mean values. Increased working hours per week was associated with poor sleep quality among employed, however, a number of children affects sleep employed significantly as compared to unemployed. Sleep quality of married employed was found to be poor as compared to married unemployed. The study provides the recommendation, which the women need to focus on the sleep hours through the adoption of the sleep-hour plan. They may take a nap, while they come back from work and develop a timeline for healthy sleep hours. Work life balance is essential, for the women; else, the risk factors may posit a heck of challenges for these women. The women need to maintain a hygiene plan, with the reduction of caffeine intakes, so that they may get healthy sleep. These women are recommended to create a peaceful and restful environment at home, at the time of night so that they may relax themselves, and regulate their sleep hours, with the minimal sleep levels they get.

***Key Words**:* Sleep quality, employed, unemployed women

Introduction

On an average 7 hours of sleep per night is required for the better health of an individual as described in a research study (1). If sleep hours are below 7 hours may result in meager sleep quality increases risk of various health disorders including; diabetes, hypertension, obesity, mortality risk, mental health disease, stroke etc (2, 3). Sleep quality can be considered as good or bad depending on the duration of sleep hours. Women, who are married and employed at the same time, have to manage their work at work place and also fulfil child-raising responsibilities. Decreased hours of sleep per night may affect the performance of an individual at the workplace. Productivity to do work decreases due to decreased cognitive power and thus chances to commit workplace accidents increased (4).

Prior literature investigating the sleep hours among married women of Karachi has been limited in context and there is a need to evaluate their sleep quality, sleep hours, sleep difficulties and sleep medication usage among married women of defense housing authority and to know whether their sleep quality is affected by employment status and is there any risks of developing various health disorders. The basic aim of the study was to determine subjective sleep quality using Pittsburg sleep quality index (PSQI) among married women of Karachi estimating the global PSQI score in the given sample with respect to employment status and to determine the difference in the quality of sleep among married women with respect to employment status.

Sleep quality can be evaluated by considering a component of sleep quality named as daytime sleepiness. It is an important element which affects sleep wake function. If sleep quality is poor it is associated with poor health, increased healthcare costs, more absenteeism at work and

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increases risks of various psychological disorders as depression (5). Daytime sleepiness is associated with increased chances of workplace accidents, motor vehicle accidents, increased mortality risk and poor physical health (6). Sleep disturbance is another important component of sleep quality which affects the sleep. In healthy women, poor sleep quality and sleep disturbances may result due to a number of factors including changes in hormones (7,8) and psychological disturbances as depression (9,10)

It was evidenced consistently in many studies that sleep-related complaints were higher among women and they were at increased risks of insomnia (11, 12). The differences in sex are responsible to increase risks of psychiatric disorders as depression among women and cause disruptions in sleep (13). Women may need more sleep than men and the same amount of sleep may appear satisfactory for men as for the women and it is an explanation that sex differences are affected by both self-reported and objective sleep measures (12, 14). Two studies reported that there is higher self-reported sleep among women as their need only in subjects aged 20 to 45 years (12,14). Similarly, sex differences in circadian rhythm appear only before the age of menopause (15).One study showed short sleep duration (below 5 hours) results in higher risk of hypertension among middle-aged Americans and not in older individuals (19).

Methodology

The study design was cross-sectional study, data was collected from married women of Defense Housing Authority at one point in time, their demographics were recorded, sleep quality of previous month was recorded and global PSQI for sleep quality was calculated. Two sample study technique using open-epi sample size calculator with a mean PSQI score of employed (7.36±3.14) and mean PSQI of unemployed (6.45±3.22) found in the pilot study and at 95% confidence interval sample size was found to be n= 384 samples, 192 in each group for this study.

The instrument to be used in the study will be Pittsburg Sleep Quality Index (PSQI). It includes 19 items to determine the seven clinically derived domains of sleep difficulties so that quality of the amount of sleep consumed by an individual can be determined (5). Sleep duration among married women will be a question. “During the past month, how many hours of actual sleep did you get at night?” It included a question from a score of 0 to 3, with 3 showing worst sleep condition.

Purposive sampling technique was used in the study as a non-probability sampling technique, sample size was divided into two groups as married employed and married unemployed and data were collected from different areas of Defense Housing Authority purposely. Married, employed women under age groups of 18-60 years were part of the study, while those who were at risks of various health disorders were excluded. After collection, data was entered in the SPSS 22 for statistical analysis. Mean and the standard deviation was calculated in order to know the observed sleep quality among the population of Defense Housing Authority, Karachi. Frequency and Percentages for demographic variables were calculated. The different variables include: age, pregnancy status, educational status, number of children, the age of children, and number of hours worked per week. Chi-square test was applied and p values were calculated. Independent sample t-test was applied to determine whether there exists a difference in mean values of sleep quality according to the employment status of two groups.The sample size of n=400 included n=200 married employed women and n=200 as married unemployed women. The demographics added in the study were age, height, weight, BMI and education status.

Results

Table.1 shows mean Global PSQI values for the complete sample of n=400 representing mean of 5.96±3.03 representing that overall sleep quality among women of defense housing authority is not as good as it should be. The same table also shows mean Global PSQI for married employed and unemployed women using independent sample t-test, there exists a significant difference in mean values of employed women with a mean value of 7.03±2.79 showing poor sleep quality, however, a mean of 4.9±2.89 represents good sleep among married unemployed women.

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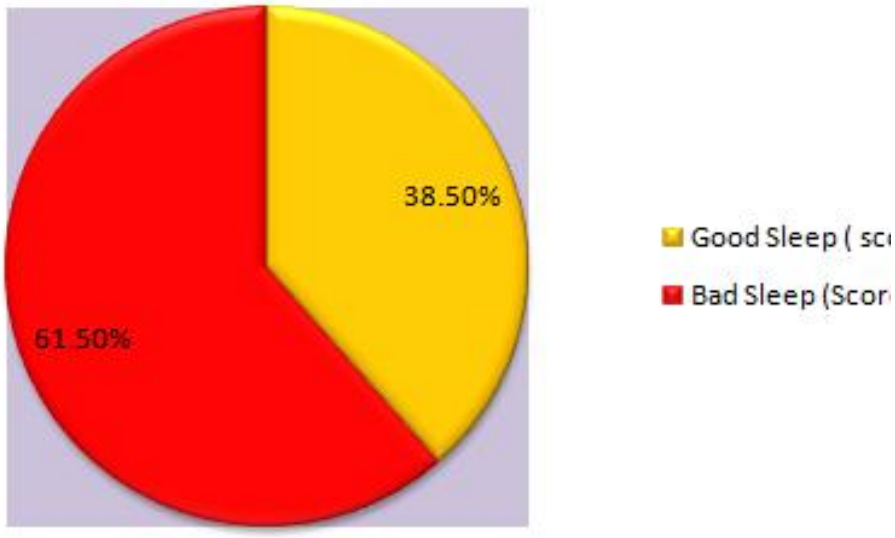
	Overall Total Global PSQI	MARRIED EMPLOYED n=200	MARRIED UNEMPLOYED n=200	p-value
MEAN± S.D	**5.96±3.03**	**7.03±2.79**	**4.9±2.89**	**<0.01***
Independent sample t-test, p-value				
p-value <0.05 counted significant				
***significant**				

Table 1 Mean Global PSQIamong Married Employed and Married Unemployed Women

The sleep quality of overall sample showed frequency of Global PSQI scores with 38.5% as good sleepers and 61.5% as poor sleepers.



Sleep quality for different components utilizing Global PSQI questionnaire was calculated and found a significant difference in mean scores of sleep hours, sleep difficulties and sleep medication usage. The mean scores showed that unemployed homemakers had better sleep quality as compared to employed homemakers. Independent sample t-test was applied and found a significant difference in mean scores as shown in the following table.

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	EMPLOYED n=200	UNEMPLOYED n=200	
	MEAN±S.D	**MEAN±S.D**	**p-value**
SLEEP QUALITY	1.01±0.78	1.03± 0.88	0.72
SLEEP LATENCY	1.19±0.94	1.16± 1.12	0.77
SLEEP DURATION	1.35± 1.06	0.78± 0.99	<0.01*
SLEEP EFFICIENCY	0.335± 0.76	0.35± 0.79	0.84
SLEEP DIFFICULTIES	1.485 ±0.66	1.215±0.566	<0.01*
SLEEP MEDICATION	1.15±1.05	0.665±0.75	<0.01*
DAYTIME SLEEPINESS	0.84± 0.83	0.79± 0.84	0.59
Independent sample t-test p-value <0.05 counted significant *significant			

Table 2 Components of Global PSQI score and its association among two groups

Table.3shows the association between a number of children and the quality of sleep among married employed and married unemployed with sleep significantly affecting employed women who work more than 30 hours per week along with child raising and home care responsibilities.

		Global PSQI Score		
	Number of Children	**Good Sleep (Score <5)**	**Bad Sleep (Score ≥5)**	**p-value**
EMPLOYED	Two	23	59	***<0.01**
	More than Two	25	20	
UNEMPLOYED	Two	15	14	**0.232**
	More than Two	41	57	

Table 3 Association between Global PSQI and Number of children with respect to Employment status

Table.4 shows that age of children significantly affects sleep of married employed women. The sample contained an increased number of participants having children age between 0 - <2 years, complaining that their sleep gets disturbed due to their children waking them up during the night resulting in poor sleep. Among a sample of married employed, there were a total of 75(35%) mothers with children aged 0-<2 years. Chi-square test was applied to determine the association and p values were calculated.

	Age of Children	**Global PSQI Score**			**p-value**
		Good Sleep (Score <5) n(%)	**Bad Sleep (Score ≥5) n(%)**	**Total**	
EMPLOYED WOMEN	**>0-<2 years**	16(44.4%)	**54(32.9%)**	70(35%)	**0.03***
	2-<6 years	3(8.3%)	13(7.9%)	16(8%)	
	6-<13 years	7(19.4%)	29(17.7%)	36(18%)	
	13-<18 years	5(13.9%)	44(26.8%)	49(24.5%)	
	No children	4(11.1%)	22(13.4%)	26(13%)	
Chi-square tests, p value p-value <0.05 counted significant *significant					

Table 4 Association between Global PSQI and Age of Children among Employed Women

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Table. 5 showed an association between Global PSQI and age of children among unemployed women. 44.1 % of the women were found good sleepers showing women with children aged 0-<2 years showing sleep no significant association of sleep among unemployed women and age of children.

	Age of Children	Global PSQI Score			p-Value
		Good Sleep (Score <5) n(%)	Bad Sleep (Score ≥5) n(%)	Total	
UNEMPLOYED WOMEN	**>0-<2 years**	52(44.1%)	31(37.8%)	81(41.5%)	
	2-<6 years	18(15.3%)	15(18.3%)	33(16.5%)	
	6-<13 years	13(11%)	1(1.2%)	15(7%)	**0.44**
	13-<18 years	31(26.3%)	25(30.5%)	56(28%)	
	No children	3(2.5%)	10(12.2%)	13(6.5%)	
Chi-square tests, p value **p-value <0.05 counted significant** ***significant**					

Table 5 Association between Global PSQI and Age of children among Unemployed Women

Working hours per week an important factor affecting sleep quality was calculated. Chi-square test was applied to the sample of 200 married who were employed and found a significant association with a p-value of 0.000. The score of < 5 for 1-34 hours were 28(77.8%), for 35-40 hours of work 5(13.9%) and for women working ≥ 41hours of work 3(8.3%) with a total of only 36 subjects receiving good quality of work with their job and family child raising responsibilities. A total of 164 subjects responded poor sleep quality with different working hours representing a significant association with women 32(19.5%) working 1-34 hours a week, 60(66.6%) working 35-40 hours per week and 72(43.9%) showing ≥ 41 hours of work per week.

Table.6 shows that employment status has a significant impact on the sleep of married women, they go to work and come back home raising their children and playing part in other responsibilities of their homes, increased number of hours at work does not let them have good quality of sleep and in turn increases risk for various health diseases.

EMPLOYED WOMEN				
WORKING HOURS PER WEEK	**Global PSQI Score**			
	Good Sleep (Score <5)	**Bad Sleep (Score ≥5)**	**Total**	**p-value**
1-34 hours	28(77.8%)	32(19.5%)	60(30%)	<0.01*
35-40 hours	5(13.9%)	60(66.6%)	65(32.5%)	
≥41 hours	3(8.3%)	72(43.90%)	75(37.5%)	
	36(100%)	164(100%)	200(100%)	
UNEMPLOYED WOMEN				
Not Working	118(59%)	82(41%)	200(100%)	
Chi-square test				
p-value <0.05 counted significant				
***significant**				

Table 6 Association between Global PSQI and Working Hours per Week among Employed and Unemployed Women

Discussion

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The study contained 400 subjects as a whole and among them, two hundred were married employed and remaining married unemployed women. To determine the sleep quality among one of the important areas of Karachi that are defense housing authority were most women prefer to work but also look after their children whether young or old. The Pittsburg Sleep Quality Index was quite helpful in calculating the Global PSQI scores among this sample. The tool has valuable implications in measuring the level of sleep, in all types of women, post menopausal, pregnant, employed, etc (20, 21, and 22). However, the studies based on women resident in Karachi, were limited in context, which served as a basis for the current research investigation.

Women were quite cooperative and concerned to know about their sleep quality. The Global PSQI consists mainly of seven components of sleep out of which sleep hours and sleep difficulty is the most significant. Sleep hours determine whether sleep is short or long and in return increases risks of various health disorders. The Global PSQI for married employed women were poor in comparison to the unemployed as they stay at home and play their part as solely mothers and wives. However, employed have to manage their time at work along with the child rising responsibilities at home. Although the women living in defense mostly are educated they prefer to work rather staying at home. It is essential for the women, to have considerable amounts of sleep. This is necessary for a healthy life style, assuring the work-life balance. Evidence has shown, that the women posing the negative sleep quality scores of PSQI are at a high risk of metabolic syndrome. These women furthermore, demonstrate a high risk of altered psycho-physiological pathways, and increased risk of cardiovascular diseases (23).

Mean sleep hours in the sample of n=400 was found to be 6.51 ± 1.71 representing that most women in Karachi defense sleep around 6 to 7 hours on an average. And the amount of sleep quality which is self-perceived appears to be a score of 1 that shows "fairly good'' on the Global PSQI however, in actual after combining all the score the situation appears different. It shows that the participants think that they are having good sleep on an average but they should consume more sleep hours, especially the employed homemakers. Women take medicine for sleep as they feel it difficult to sleep and as observed a lot of women having increased sleep latency. One study conducted in Paris, France showed that their women's consumed 11.3% of medication for sleep with a prevalence of 26% of sleep difficulty (16). Another study was conducted in Tehran, Iran on the adult population and showed that in the urban adult population 35% women showed poor sleep (17).

A number of children is not a factor affecting sleep quality among unemployed however, employment status significantly affect sleep of women rising four or more or fewer children as they have to manage their work along with their children. Also, sleep quality is being affected by the age of children and the younger the child is; more difficult is for the mother to sleep at night. One study supported this fact showing that if child's age is under 2 years, mothers sleep is reduced to 13 fewer minutes, for child under age of 2-5 years showed nine minutes less sleep duration and those with children aged between 6 to 18 years showed that four minutes of sleep is reduced (18)

Conclusion

The study showed that women of defense were educated and frequency of sleep quality among overall sample was poor. Married women who stay at home were able to manage their sleep and obtained good sleep scores while those working outside home found it difficult to manage sleep with sleep affected by age of children, number of children, working hours per week at work, they also had high mean scores showing sleep difficulties and taking medications intake. Women of Karachi are recommended to take good care of their sleep-wake cycles, through the adoption of healthy life cycles. These women are recommended to create a schedule based on seven hour sleep, with the division of sleep hours, after coming from work and remaining during night. The women are also suggested to reduce those foods or drinks, which create a negative impact on the sleep-wake cycle, for instance, caffeine. This will help these women; have a better sleep cycle, with managed work-life balance. The limitations of the study were that the study was restricted to one although a large area of Karachi, due to the short time interval and cannot be generalized. It was restricted to married women, however, its effect can also be observed among the unmarried population of Karachi.

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