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Assessment of Sleep quality Index among Working and Non-working Women using Pittsburgh scale.

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Abstract

Introduction: Sleep disturbance is a complex health problem causing significant negative effect on mental and physical health, leading to stress particularly among women because of their increased socio-familial roles. Sleep related disorders (SRDs) though frequent, are under-reported and their implications are often neglected. The disease burden and risk factors of poor sleep quality among women needs to be verified using a validated form of measurement in urban India.**Objectives**: To determine the quality of sleep among working and non-working women and to study the factors affecting it.**Materials and Methods**: A community based cross-sectional study conducted among urban women, both working and non-working aged 18 years and above. Data were collected by house-to-house survey using predesigned and pretested proforma and Pittsburgh Sleep Quality Index questionnaire (PSQI). Descriptive statistics and Chi-square test were used for analysis. **Results**: Majority, 38.5% women were in the age-group of 30-39 years, with 33.5% belonging to Class II socio-economic status, 87.5% were married, 36.5% had completed high school education. 60% women were sedentary workers, with 93% working between 4-8 hours. Poor sleep quality was seen in 71% working women as compared to 18% non-working women [p< 0.001, OR=11.15 (95% CI= 6.95 to 17.89)], with majority 97.75% of them having mild sleep disturbance.**Conclusions**: Prevalence of sleep-related problems was found to be higher among working women than non-working women. Socio-demographic factors like education, marital status, socio-economic status and working pattern had an impact on the sleep quality of both working and non-working women.

Key-words: PSQI, sleep, Urban, Working Women

INTRODUCTION

Sleep is a vital element throughout the life of all mammals and its quality must be preserved,[1] as sleep is an essential part of the physiological process contributing to good health and well-being of the individual. Sleep disorder is a common and complicated health problem which contributes positively to health and welfare and these disorders are one of the major causes for morbidity, mortality as well as leading to decreased functional capacity and Quality of life (QOL).[2,3] Many populations from low income countries and developing countries are undergoing a rapid demographic and epidemiological transition leading to high burden of infectious diseases and emerging burden of Non-Communicable Diseases (NCDs). Thus this transition has led to an unrecognised public health issue related to sleep disorders in many developing countries leading to global 'sleeplessness epidemic' affecting 150 million people. Levels of sleep problems in Asia and Africa are approaching those seen in developed nations with 16.6% population reporting insomnia and other severe sleep related disturbances. In India low levels of severe sleep problems are reported with 6.5% of women and 4.3% of men getting affected.[4]

Sleep quality represents a complex phenomenon that is difficult to define and measure objectively. It includes quantitative aspects of sleep such as duration, latency and more subjective aspects such as depth or restfulness of sleep.[5,6,7,8] Sleep disturbances affect day time functioning and general well-being of individuals, whereas well-being is associated with positive emotions, recall of more positive incidents, optimism and lower feelings of anxiety or depression. It is also reported and documented that good sleep quality is associated with well-being,[9,10] leading to increased efficiency and lesser morbidity.

In recent years the role and status of Indian women have been gradually changing as they are coming out of their traditional and stereotyped images, which is because of increasing female education and more liberty towards their

rights and privileges.Women in India today have more opportunities to pursue their higher education and more women have started taking up the jobs outside their homes which has led to their increased socio-familial roles. Indian women are bound with cultural norms and values, so they have to make adjustments with the family members.[11] which has led to stress and strain among working women in turn affecting their sleep.

Several work characteristics such as higher job demands, physical effort at work and night shift have been linked to increased sleep disturbance among women employees.Today with increasing female labour force participation, especially married women with children have exacerbated the complications for balancing work-life with household and childcare responsibilities, thus indirectly women are engaging in a greater share of domestic and child care responsibilities compared to men in both developed and developing countries.Lack of ability to balance work and home responsibilities may cause work-family conflict and has shown to affect health and health-related behaviours including sleep disturbances and its related complaints.[12]

Sleep-related disorders (SRDs) though frequent, are under-reported and their implications are often neglected.[13] These findings suggest a need for research on determining the factors related to poor sleep quality among women. Very few community-based studies have been conducted in India to understand this problem. Hence the present study was undertaken to assess the quality of sleep and factors affecting it among working and non-working women using Pittsburgh Sleep Quality Index (PSQI).

MATERIALS AND METHODS

Study design and setting:

This study was a community based, cross-sectional study, which was carried out for a period of 6 months, from June 2016 to November 2016. The study was conducted among working women and non-working women, in the field practice area of Urban Health Training Centre attached to a tertiary care hospital.

Sampling method:

The overall (working and nonworking women) sample size calculated was 400, using the formula 4 pq/L^2, where p is the prevalence (50%), q = 1-p (50%) and L the permissible error, taken as 10%, the sample size worked out to be 400 at 5% alpha error. The total population of urban field practice area is 30,000. Considering average family size of five, there were 6000 families in the study area. To achieve the sample size calculated, every 10th family was considered and only one women was considered from each family, as she was considered to be representative of the selected family.[14]

Sampling procedure:

A house-to-house survey was carried out by the investigators, by doing systematic random sampling (every 10^{th} house was considered), with the help of medico-social workers and anganwadi workers. The anganwadi workers helped in locating the house while the medico-social workers aided in establishing a rapport with the study participants. Individual houses were selected separately for working and non-working women. Only one woman was considered from each house as she was considered representative of that family, and no other woman from the same family was considered to avoid duplication and bias.

Inclusion and exclusion criteria:

Women aged 18 years and above, residing in the study area for more than 1 year, who consented to participate on a voluntary basis, were included in the study. Women not complying with the inclusion criteria were excluded.

Certain definitions considered in our present studyfor study participants are mentioned below:

- **Working women**: Women who were paid wages for the work done by them.
- **Non-working women**: Women confined to their house, with no wages being paid for their services.

Data collection:

Data was collected by interviewing all 400 women participants (200 working and 200 non-working) by conducting house-to-house survey using a pre-designed, pre-tested proforma and Pittsburgh Sleep Quality Index (PSQI) questionnaire.[5] Tested proforma included questions on the socio-demographic profile, their monthly income and their work status. The PSQI was used to assess quality of sleep during the past month and contained 19 self-rated questions from which seven component scores were calculated.[7,15,16] The component scores consist of subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction. Component scores were summed into a global score with higher scores representing worse sleep quality. The component scores range from 0 to 3 and global scores range from 0 to 21.[8,17] A global score of less than 5 was considered as normal and any score equal to or greater than 5 was indicative of poor sleep quality.[1,18]

Further, as per the need and requirement of our study, detailed assessment was done by grading the PSQI global score indicating disturbed sleep into mild (5-10), moderate (11-15) and severe (16-21). The PSQI questionnaire used for the study purpose was translated to vernacular language and validated by the investigators.After completion of this, based upon the assessment of proforma, health education regarding the importance of sleep and ill-effects associated with inadequate sleep was imparted to all the study participants. Education regarding lifestyle behaviour was also given to all the family members.

Data was collected after signing a written informed consent form on voluntary basis and confidentiality was assured. The study was approved and ethical clearance was obtained from Institutional Ethics Committee. Data were analysed using SPSS software version 20.0. Descriptive statistics and Chi-square test was applied to find an association between two attributes and $P<0.05$ was considered as statistically significant.

RESULTS

A total of 400 women (200 working and 200 non-working) were included in the study.

Table 1: Socio-demographic Characteristics of the Study Participants

Socio-demographic characteristics	Working women (n = 200)		Non-working women (n = 200)		Total (n = 400)	
	No.	%	No	%	No	%
Age (in years)						
20-29	42	21	64	32	106	26.5
30-39	86	43	68	34	154	38.5
40-49	56	28	38	19	94	23.5
50-59	14	7	28	14	42	10.5
>60	2	1	2	1	4	1
Educational status						
Illiterate	6	3	16	8	22	5.5
Primary	30	15	48	24	78	19.5
High school	70	35	76	38	146	36.5
Secondary	24	12	42	21	66	16.5
Graduate	50	25	18	9	68	17
Postgraduate	20	10	0	0	20	5
Marital Status						
Married	168	84	182	91	350	87.5
Unmarried	26	13	6	3	32	8
Widow / Divorced / Separate	6	3	12	6	18	4.5
Socio economic status*						
Class 1	102	51	16	8	118	29.5
Class 2	44	22	90	45	134	33.5
Class 3	34	17	50	25	84	21
Class 4	18	9	38	19	56	14
Class 5	2	1	6	3	8	2

**As per modified B. G. Prasad classification 2015.*

Table. 1 describes the socio-demographic characteristics, where maximum 43% working and 34% non-working women were in the age group of 30-39 years. A maximum of 35% working and 38% non-working women had completed high school education, 84% working and 91% non-working women were married as well as 87% of working and 65% of non-working women belonged to nuclear family. 51% of working women belonged to class I socioeconomic status, whereas a maximum 45% of non-working women belonged to class II socio economic status (SES, Modified B. G. Prasad's Classification 2015 - India).

Table 2: Working pattern of the Study Participants

Working pattern	Working women (n = 200)		Non-Working women (n = 200)		Total (n = 400)	
	No.	%	No.	%	No.	%
Type of work						
Sedentary	92	46	148	74	240	60
Moderate	96	48	52	26	148	37
Heavy	12	6	0	0	12	3
Working hours						
< 4 hours	6	3	0	0	6	1.5
4 – 8 hours	172	86	200	100	372	93
> 8 hours	22	11	0	0	22	5.5
Night shift						
No	196	98	200	100	396	99
Yes	4	2	0	0	4	1

The working pattern of the study participants is presented in Table.2. A maximum of 48% of working women were doing moderate work and 74% of non-working women were sedentary workers. Among working women, a majority 86% worked for 4-8 hours per day and only 2% did night shifts.

Table 3: Grading and Comparison of Quality of sleep using Pittsburgh Sleep Quality Index.

Sleep Quality	Working women (n = 200)		Non-working women (n = 200)	
	No.	%	No.	%
Disturbed	142	71	36	18
Normal	58	29	164	82

$\chi 2 = 113.736$, df = 1, p = <0.001, OR=11.15 (95% CI= 6.95 to 17.89)

Grading of Disturbed sleep	Working women (n = 142)		Non-working women (n = 36)	
	No.	%	No.	%
Mild (5-10)	142	100	32	88.89
Moderate (11-15)	0	0	4	11.11
Severe (16-21)	0	0	0	0

Table.3 shows comparison of PSQI grading of quality of sleep. 71% of working and 18% non-working women had disturbed sleep and this difference was statistically significant ($\chi 2$=113.736, df=1, P=<0.001) with OR=11.15 (95% CI = 6.95 to 17.89). This shows that working women are eleven times more at risk of having disturbed sleep than

non-working women. The disturbed sleep was further graded and it was found that almost all working women and 88.89% of non-working women with disturbed sleep had mild sleep disturbances.

Table 4: Association between demographic characteristics and disturbed sleep among study participants

Socio-demographic characteristics		Disturbed sleep				
		Working women (n = 142)		Non-working women (n = 36)		Chi-square (p value)
		No.	%	No.	%	
Education status	Illiterate	6	4.23	6	16.7	7.07
	Literate	136	95.77	30	83.3	-0.008
Marital status	Married	128	90.14	36	100	3.85
	Unmarried / Others	14	9.86	0	0	-0.049
Socio economic status*	Class I	80	56.34	4	11.1	
	Class II	28	19.72	14	38.9	24.03
	Class III	14	9.86	6	16.7	-0.001
	Class IV + V	20	14.08	12	33.3	

**As per modified B. G. Prasad classification 2015.*

Table.4 shows the association between demographic characteristics and disturbed sleep among study participants. A majority of 95.77% of working women and 83.33% of non-working women with disturbed sleep were literates, which was statistically significant (p=0.008). A majority of study participants with disturbed sleep were married. 56.34% of working women with disturbed sleep belonged to Class I socio economic group and 38.89% of non-working women with disturbed sleep belonged to Class II socio economic group (as per modified B. G. Prasad classification 2015).

Table 5: Association between working pattern and disturbed sleep among study participants

Working pattern		Disturbed sleep				
		Working women (n = 142)		Non-working women (n = 36)		Chi-square (p value)
		No.	%	No.	%	
Type of work	Sedentary	61	42.96	26	72.2	
	Moderate	71	50	10	27.8	10.68
	Heavy	10	7.04	0	0	-0.005
Working hours	< 4 hours	6	4.23	0	0	
	4-8 hours	124	87.32	36	100	5.08
	>8 hours	12	8.45	0	0	-0.079
Night shift	Yes	2	1.41	0	0	0.51
	No	140	98.59	36	100	-0.473

Table.5 shows the association between working pattern and disturbed sleep among study participants. 50% of working women with disturbed sleep were moderate workers, whereas 72.22% of non-working women with disturbed sleep were sedentary workers. A majority of both working women (87.32%) and non-working women (100%), worked for 4-8 hours per day and only 1.14% working women with disturbed sleep were having night shift duties.

DISCUSSION

The present study was aimed at assessing the quality of sleep among working women and non-working women and its relation to their socio-demographic factors. In our study, 71% of working women and 18% of non-working women had poor sleep quality. Overall, non-working women had better sleep quality than working women, which could be attributed to factors like education, marital status, socio-economic status and working pattern as well as their nature of work.

In our study, majority 38.5% women were in the age group of 30-39 years, 93% worked for 4-8 hours per day, 36.5% of women had completed high school education and 44.5% women had poor sleep as compared to a study done in Vadu,[4] where 84.6% had only finished primary education and only 6.5% women had poor sleep. The difference may be due to the fact that, Vadu being rural area, had lower education standards as compared to our study and the difference in sleep quality may be attributed to the fact that, the better educational standards of urban women, increases their job prospect, which in turn affects their general well-being and quality of sleep.

In an another study done in South India by Samhita, et al.,[13] where the mean age was 35.14 ± 8.73 years, average daily work hours were 7.8±1.33 hours, 23.1% had secondary education and only 6.2% of study participants had poor sleep quality. A majority, 41.4% of study participants in South Indian study were rural residents as compared to our study, where all women were urban residents. This again shows that the quality of sleep indirectly depends upon the educational status and place of residence of the individual.

The present study showed that a majority 47.19% of women with disturbed sleep belonged to class I SES, which suggests that sleep quality declined with increasing income. This was in contrast to a study conducted in Germany by Anders MP, et al.,[20] and a study conducted in America by Mezick EJ, et al.,[21] where individuals with high or medium SES had a greater probability of good sleep quality than individuals from low SES. Our study finding may be attributed to the fact that, high socio economic status may be due to better educational standards, highly skilled and more demanding jobs, which in turn may increase work related stress because of no restrictions to number of working hours as per stipulated labour laws indirectly affecting quality of sleep and health.

Our study showed that a majority, 43% of working women were in the age group 30-39 years, 84% were married, 35%

were educated upto high school and 50% of working women did moderate level of physical activity as compared to a study done in Malaysia by Aazami S, et al.,[12] where a majority 37.8% were in the age group 30-39 years, all the study participants were married, 65.5% had completed graduation and 66.2% of working women did sedentary work. Our study showed that 44.5% women, had disturbed sleep which was similar to a study done in China by Luo J, et al.,[6] where 45.8% women reported poor sleep quality.

In our study, majority 87.5% women were married and among them 92.13% had disturbed sleep, which was higher when compared to that of single women. A similar picture was seen in a study conducted in Iran by Asghari A, et al.,[19] where the mean global PSQI score was independently higher among married (5.38 ± 3.43), as compared to single subjects and the difference was statistically significant ($p = 0.04$). This may be because of increased domestic and childcare responsibilities of married women and due to high level of work-family conflict in case of married working women.

In our study, majority 95.77% working women and 83.33% non-working women with disturbed sleep were literates and this difference was statistically significant ($p = 0.008$). This shows that quality of sleep depends on the educational status, with higher level of education resulting in worse sleep quality. Our study showed that among working women with disturbed sleep, 90.14% were married and 56.34% belonged to class I SES and among non-working women with disturbed sleep, all were married and 38.89% belonged to class II SES. Disturbed sleep was more among married women because of domestic responsibilities and since working women were more economically stable and independent, they could afford domestic help for their daily household activities. Therefore disturbed sleep was less prevalent among married working women as compared to married non-working women.

In present study majority, 89.99% women with disturbed sleep worked for 4-8 hours per day, which suggests that quality of sleep worsens with increase in number of working hours.

CONCLUSION

The present study findings, suggest that the prevalence of sleep-related problems is higher among working women than non-working women and is linked with socio-demographic factors like education, marital status, socio-economic status and working pattern. Sleep related disorders are widely prevalent in India and considering its health implications and poor awareness, there is a need to sensitize and increase awareness among the women population and their counter parts. These results also emphasize the importance of screening at work place. Strategies need to be shaped in such a way so as to promote measures to improve quality of sleep and to incorporate positive psychology interventions for enhancing and maintaining well-being of working women population.

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