Original Article

A Study on Relationships Amongst Insomnia, Fatigue, Anxiety and Depression in Nurses

Yogita Khade[1], Swikruti Behera[1]*, Sowmya Koraddi[2] and R. Parvathi[1]

[1] Department of Physiology
NRI Institute of Medical Sciences,
Sangivalasa, Vishakhapatnam – 531 162,
Andhra Pradesh, India.

[2] Vijaya Hospital,
Belgaum – 590 010, Karnataka, India.

Abstract

Background & Objectives:

Nurses form the corner stone of the health care and delivery service to the patients. Hectic work schedule at night results in physical illness like fatigue and mental problems like anxiety and depression, which not only affects their health and efficiency but also the work environment and the hospital's performance. Hence the aim of present study is to evaluate the relationship between insomnia, anxiety, depression and fatigue among night shift nurses.

Materials & Methods: Total one hundred and ninety nurses (42 Males and 148 females) were included from two hospitals, Anil Neerukonda hospital, Vishakhapatnam, Andhra Pradesh and Vijaya Hospital, Belgaum, Karnataka.

Regensburg Insomnia Scale (RIS), Fatigue Assessment Scale (FAS) and Hospital Anxiety and Depression Scale (HADS) along with sociodemographic questions were included in the study. Nurses signed the informed consent and answered these questionnaires which were explained to them in their local language.

Statistical analysis was done using, Mean±SD (Standard Deviation). Pearson's correlation and Kruskal Wallis H test.

Results: Insomnia, depression, fatigue and anxiety all are significantly correlated with each other. Kruskal Wallis H test showed a statistically significant difference in RIS and FAS scores between different experience groups. In the present study 40.3% of nurses are suffering from insomnia, 47.2% fatigue, 22.6% from anxiety and 8.4% from depression.

Conclusion: Sleep is important for good health and well-being and its deficit can cause chronic health problems. Insomnia increases the risk of developing anxiety, depression and fatigue. Treating insomnia might overcome fatigue and stressful problems like anxiety and depression. Better working hours with adequate staff and better nutrition might improve the psychometric performance and alertness of nurses.

*Corresponding author :

Dr. Swikruti Behera, MD, Associate Prof. Department of Physiology NRI Institute of Medical Sciences, Sangivalasa, Vishakhapatnam – 531 162, Andhra Pradesh, India; Phone No. 8332918887, Email: drswikruti@gmail.com.

(Received on June 10, 2019)

Introduction

Healthy and efficient nursing workforce is crucial in maintaining good hospital care (1). Nurses are the back bone of health care delivery system. Working hours of various Indian health care professionals are much longer compared to Western countries (2). Night shift desynchronizes the biological clock. In present times, insomnia is affecting 9% to 15% of the general population worldwide, more prevalent in women than in men (3). Consequences of insomnia are depression, reduced work performance, work related/motor vehicle accidents, and overall poor quality of life (4). Sleep plays a vital role in good health and well-being in everyone's day to day life.

Night shift workers go to sleep when their diurnal rhythm enhances signals of wakefulness, which results in chronic insomnia (5). This definitely influences the care given by them with higher levels of medication errors and occupational injuries (6). It is an easy-to-diagnose condition with many self-answerable questionnaires for aid, yet goes unrecognized in a significant number of times.

Aim of the study

The aim of present study is to evaluate the relationship of night shift with sleep problems and to assess the association of insomnia with anxiety, depression and fatigue.

Material & Methods

The present cross sectional study was conducted on the staff nurses doing night duties during the period of August – December 2016 in two hospitals, NRI Medical College, Visakhapatnam, Andhra Pradesh and Vijaya Hospital, Belgaum, Karnataka. The study was approved by the Institutional ethical committee. All participants were voluntarily enrolled and singed the informed consent after detailed explanation of the study.

Study design

A cross sectional study. The minimum sample size was calculated based on previous study where the prevalence of sleep problems was 53.8% (13). With 17% error using the formula $n=4PQ/L^2$ the sample was 183.

Total one hundred and ninety nurses (42 Males and 148 females) were interviewed using the pre-tested and validated standardized proforma. The proforma had two parts: self designed general Socio-demographic questionnaire and sleep problems related questionnaires {(Regensburg Insomnia Scale (RIS), Hospital Anxiety and Depression Scale (HADS) and Fatigue Assessment Scale (FAS)}. Data was collected by direct interaction with nurses explaining to them in their local language.

Information pertaining to demographic variables (age, gender, marital status, education and occupation), anthropometric measurements, average number of night shifts done in the preceding month, years of experience, hours of work done in one shift and general health status of subjects were enquired.

Apparently healthy nurses with personal or family history of sleep disorder and those on medication and pregnant /breast feeding women were excluded from the study.

a.   Regensburg Insomnia Scale (RIS)

Except first 5 questions which has no scoring, next 8 questions are scored from 0 (never) to 4 (always). ≥11 is considered to be abnormal. It is a short rating scale for psychological symptoms and sleep in insomnia (7).

b.   Hospital anxiety and Depression scale (HADS)

HADS was used to screen for the presence of symptoms of depression and anxiety (psychological distress). Questionnaire contains, seven items reflecting anxiety symptoms (HADS-A) and seven depression symptoms (HADS – D) experienced last week (8, 9). Each question is scored on Likert scale (0-3), yielding a maximum score of 21 on both anxiety and depression scale. A score of 0-7 is normal; 8-14 is borderline and ≥14 is abnormal in respective scales.

c. Fatigue Assessment Scale (FAS)

Includes 10 questions having five ratings ranging from 1 (never) to 5 (always). Questions 3, 6, 7, 8 and 9 represent mental fatigue & questions 1, 2, 4, 5 and 10 indicate physical fatigue. Scoring ranges from 10-50. A score of ≥22 indicates substantial fatigue (10, 11).

Statistical analysis

SPSS software version 21 was used to analyze the data. P value of less than 0.05 was considered significant. Numbers and frequencies or Mean±Standard deviation was used to describe the sociodemographic characteristics of the sample. A correlation coefficient between the numbers of night shift with the total scores of the four scales was done. The Kruskal Wallis H test was done, to allow the comparison of more than two independent groups.

Results

Mean age of the participants was 25.28±5.4. The largest percentage of the sample consisted of females (77.7%) and (22.1%) are males. Among them 78(41.05%) are married and 112(58.94%) are unmarried. Most employees reported night shift experience of 1-3 years (88/190), followed 3-6 years (36/190),< 1 years (36/190) and > 6 (30/90) (Table I).

There is a significant positive correlation between insomnia and age, experience and depression, where as negative significant with fatigue and insignificant with anxiety. Anxiety is significantly and positively correlated with fatigue and depression. There is negative correlation between (the age and experience) with number of nights worked in the previous month (Table II).

In the present study 40.3% of nurses are suffering from insomnia, 47.2% from fatigue, 22.6% from anxiety and 8.4% from depression (Table III).

The Kruskal Wallis H test showed that there was a statistically significant difference in RIS score between the different experience groups, $x^2(3)=12.29$, p=0.006. Further the test showed that there was a statistically significant difference in FAS score between the different experience groups, $x^2(3)=8.34$, p=0.039. Anxiety and depression are not varying among different experience groups (Table IV).

TABLE I : Sociodemographic characteristics of the sample (N=190).

Characteristics	Mean±Standard deviation or n (%)
Age	25.28±5.4
Gender	
Male	42(22.1%)
Female	148(77.89%)
Marital status	
Married	78(41.05%
Un married	112(58.9%)
Experience in months	35.1± 45.7
Night shifts in last month	8.13± 3.54
Night experience	
<1 year	36(18.9%)
1-3 years	88(46.3%)
3-6 years	36(18.9%)
>6 years	30(15.7%)

Data are presented Mean±SD and percentage.

TABLE II : Correlation between night shift work and levels of anxiety, depression, fatigue and insomnia (N=190).

Variables	Total anxiety score	Total depression score	Total fatigue score	Total insomnia score	Age	Experience in months
Number of night duties in last month	NS	NS	NS	NS	-0.34***	-0.24***
Total anxiety score	1	0.40***	0.18**	NS	NS	NS
Total depression score		1	-0.14*	0.34***	NS	NS
Total fatigue score			1	-0.26***	-0.16*	-0.16*
Total insomnia score				1	0.26***	0.30***
Age					1	0.83***
Months of experience						1

*Indicates the level of significance, NS: Not Significant (p>0.05). *p: <0.05: Significant, ** p: <0.01: Highly significant, *** p: <0.001: Very highly significant.

TABLE III : Distribution of cases among nurses pertaining to sleep (insomnia & fatigue) and mental health (anxiety & depression) parameters.

Parameters	Sample sizen (190)	Percentage (%)
Insomnia		
Normal	113	59.4%
Case	77	40.6%
Fatigue		
Normal	100	52.6%
Case	90	47.4%
Anxiety		
Normal	61	32.1%
Borderline	86	45.2%
Case	43	22.6%
Depression		
Normal	89	46.8%
Borderline	85	44.7%
Case	16(8.41%)	

Data are presented as percentage.

TABLE IV : Kruskal Wallis test statistics among total sleep parameters scores among different years of experience groups.

Sleep parameters	X^2	Df	p-value
Insomnia	12.29	3	.006**
Anxiety	7.36	3	.061
Depression	3.75	3	0.28
Fatigue	8.34	3	0.39*

Data are presented as chi square. *Indicates the level of significance, p>0.05: Not Significant, *p: <0.05: Significant, ** p: <0.01: Highly significant, *** p: <0.001: Very highly significant.

Discussion

Besides lifestyle changes like odd-working hours, personal obligations and relationship worries, anxiety, tension and nervousness which develop due to work pressure, household issues or personal relationships also affect sleep. Sleep is a physiological process but when disturbed causes psychological problems. Most of us pay lot of attention to our diet and workout regime, but often forget the rest and recovery part of our bodies. Sleep plays a vital role in good health and well-being. Its deficiency apart from causing chronic health problems also affects the way one thinks, reacts, works or learns.

The results of our study reveal that among nurses doing night duty, 40.3% are suffering from insomnia, 47.2% from fatigue, 22.6% from anxiety and 8.4%

from depression. Our findings are consistent with previous studies suggesting that anxiety is typically higher than rates of depression among students (12). According to Kruskal Wallis test insomnia and fatigue are significantly higher among nurses with less years of experience. Previous studies also reveal that fatigue is more common in female nurses compared to male nurses, the reason being their responsibility is not just limited to work but, the responsibility of home, birth, care of children and spousal roles. This might explain why female nurses have more fatigue compared to male nurses (13).

In the present study, there is a significant positive correlation between insomnia and depression.

Findings of our study corroborate with findings of previous studies which also shows significant positive association between insomnia and depression (14). Insomnia is associated with increased psychiatric illness, with depression being the most common (15). Hence investigating the relationship between insomnia and depression is important due to their co-occurrence as per the studies. Studies by Morawetz et al found that 70% of individuals with insomnia and depression who received treatment for their insomnia experienced a decrease in their depression. Morawetz concluded that these results were suggestive of depression being secondary to insomnia (16).

We also found a significant positive correlation of insomnia with age and years of experience.

Insomnia has been to increase with age as per the studies; Prevalence is highest in middle age and decreases thereafter (17).

Also there is a significant but negative correlation between insomnia and fatigue in our study. Findings are consistent with previous studies suggesting that work load is a contributing factor to increase the emotional stress and trigger different illness including fatigue (18). Our findings also corroborate with studies suggesting that insomnia is related to fatigue (13). Studies also suggest that improvement in insomnia contributes to a reduction in fatigue outcomes over and above the effects of improvements in depression and anxiety (19).

However, there is insignificant correlation between insomnia and anxiety which is in contrast to the studies, suggesting that anxiety plays a more integral role in the development of insomnia than depression (20) and there is robust association between emotional functioning and insomnia involve anxiety (21). Anxiety in present study is significantly and positively correlated with depression and fatigue.

Another interesting finding in this study is the negative relationship between the (age, years of experience) and number of night shifts. This result is consistent with the findings of previous studies (22, 23) commenting that nurses working at night were younger than day workers and have shorter years of experience. In the present study majority of nurses are unmarried and have less responsibility compared to experienced nurses and those nurses with longer years of experience will shift to the administrative section, which might lead to decrease in the number of night shift work if not totally preventing it.

Our study showed that insomnia is significantly correlated with depression, fatigue, age and years of experience. Correlation is found to be insignificant with anxiety. Hence appropriate management of insomnia might result in better outcomes. Nursing profession comprises mostly of females, who usually have more responsibilities. Good mental and physical health of nurses is crucial for patient's welfare as well, hence shifts should be meticulously planned.

Conclusion

Sleep is a natural periodic state of rest for the mind and body. Work ability relies heavily on human cognition, conation, executive function and communication. These are affected by insomnia, fatigue, anxiety and depression that result due to exhaustive work hours and inadequate resting periods.

Night shift disturbs nurses physiologically and psychologically which affects their mental and physical health which might have an impact on their professional and personal lives. Lack of health-seeking behavior coupled with a lack of awareness could have possibly understated various sleep disorders. A key component should include educating healthcare providers.

This study reveals the prevalence of sleep-related problems to be higher than expected in apparently healthy nurses on night duty. Lack of awareness might be one of the major influencing factors, which along with proper diet and rest might help the nurses to improve their health.

Limitations

Cause and effect relationship could not be established because of the cross sectional design of the study. In this study, we did not use any objective measures of sleep (like polysomnography) which might enhance the reliability of the present study.

More male staff should have been included to compare sleep problems between female and male nurses. Including large sample size might give wider variation of results. Detailed information regarding their habits, use of gadgets to stay awake at night or consumption of tea or coffee should have been evaluated.

Acknowledgements

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