

# Assess the Quality of Sleep and Level of Stress among Nurses Engaged in Shift Duties in Selected Hospitals of Pune City

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## Abstract

A descriptive study conducted to assess the quality of sleep and level of stress among 100 nurses engaged in shift duties in selected hospitals of Pune city by using questionnaires Demographic data, Pittsburgh sleep quality index, Nursing stress scale Proportionate stratified random sampling techniques is used.

**Result:** 51% of poor and 49% of good quality of sleep, 46% of severe, 40% of moderate, 8% of very severe and 6% of mild level of stress, and also correlation seen that the nurses having more stress are prone to have poor quality of sleep. Demographic variables marital status, were found to have significant association with quality of sleep and level of stress, number of children and salary were found to have significant association with quality of sleep, Work experience and Working hours in a day/night were found to have significant association with level of stress.it is suggested that nurses having stress are prone to have poor quality of sleep.

**Keywords:** Sleep Quality; Stress Level; Nurse; Shift Work.

## INTRODUCTION

Nursing is a highly stressful occupation.<sup>1</sup> Nurses are particularly at risk for stress related problems, with high rates of turnover,

absenteeism, and burnout.<sup>2,3</sup> Stress and sleep can be described as counterparts that interact and affect each other in various ways. Sleep is suggested to be an important “anti stress” mediator that counteracts the wear and tear of stress on individuals.<sup>4</sup> According to World Health Organization 87.4% of nurses from Delhi reported occupational stress. This study proves that nurses are the high risk group to undergo stress and related problems.<sup>5</sup> Shift work is generally defined as work hours that are scheduled outside of day light. Shift work disrupts the synchronous relationship between the body’s internal clock and environment. This disruption often results in problems such as sleep disturbances.<sup>6</sup> Occupational stress is a possible risk factor for insomnia and changes in the sleep

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patterns.<sup>7</sup> Stress can have both positive and negative aspects; when it is positive it can act as a motivating force for growth and change, but when negative it can cause a wide variety of illness, ranging from sleeplessness to degenerative diseases.<sup>8</sup> As nursing is the most stressful profession investigator is interested to assess the correlation between stress and sleep quality among nurses and this study would help to understand the present status of nurse's sleep quality and stress rate.

**Objectives**

1. To assess the quality of sleep among nurses engaged in shift duties.
2. To assess the level of stress among nurses engaged in shift duties.
3. To determine the correlation between the quality of sleep and level of stress among nurses engaged in shift duties.
4. To assess the association between quality of sleep with selected demographic variables.
5. To assess the association between stress with selected demographic variables.

**Hypothesis**

- $H_0$ : There is no correlation between the quality of sleep and level of stress among nurses engaged in shift duties.
- $H_1$ : There is a significant correlation between the quality of sleep and level of stress among nurses engaged in shift duties.

**Operational Definitions**

- *Description*: In this study it refers the description of strength the relationship between quality of sleep and level of stress.
- *Assess*: In this study, it is the organized systematic continuous process of collecting data from nurses regarding their quality of sleep and level of stress.
- *Sleep Quality*: In this study the term 'sleep quality' refers the normal sound sleep.
- *Stress Level*: In this study it is a state of emotional strain level among study participants during the time of their working

hours.

- *Shift Work*: In this study it refers to the work system in which nurses work in different timings, that is, morning, evening and night shift.
- *Selected Hospitals*: In this study it refers to the hospital were the nurses working in all three shifts in all specialty area.

**Tool:**

*Section A: Demographic Data*

*Section B: Pittsburgh Sleep Quality Index*

*Section C: Nursing Stress Scale*

**Section A: Demographic Data**

1. Present working department: \_\_\_\_\_
2. Age (in years): \_\_\_\_\_
3. Gender: Male/Female
4. Marital Status: Single/Married/Divorced/separated/Widow/widower
5. Type of family: Nuclear/Joint/Extended / Single parent family.
6. Number of family members: \_\_\_\_\_
7. Number of children: \_\_\_\_\_
8. Total gross salary: \_\_\_\_\_
9. Educational qualification: ANM/GNM/B. SC/M.Sc.
10. Total number of years of work experience: \_\_
11. Working hours in a day/night: \_\_\_\_\_

**Section: Pittsburgh Sleep Quality Index**

During the past month,

1. When have you usually gone to bed? \_\_\_\_\_
2. How long (in minutes) has it taken you to fall asleep each night? \_\_\_\_\_
3. When have you usually gotten up in the morning? \_\_\_\_\_
4. How many hours of actual sleep do you get at night? (This may be different than the number of hours you spend in bed) \_\_\_\_\_

5. During the past month, how often have you had trouble sleeping because you...	Not during the past month (0)	Less than once a week (1)	Once or twice a week (2)	Three or more times a week (3)
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				

table cont.....

- c. Have to get up to use the bathroom
- d. Cannot breathe comfortably
- e. Cough or snore loudly
- f. Feel too cold
- g. Feel too hot
- h. Have bad dreams
- i. Have pain
- j. Other reason (s), please describe, including how often you have had trouble sleeping because of this reason(s):

6. During the past month, how often have you taken medicine (prescribed or "over the counter") to help you sleep?

7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?

9. During the past month, how would you rate your sleep quality overall?

Component 1 #9 Score .....C1\_\_\_\_\_

Component 2 #2 Score (2-15min=0; 16-30 min=1; 31-60 min=2, >60 min=3) + #5a Score (if sum is equal 0=0; 1-2=1; 3-4=2; 5-6=3) ..... C2\_\_\_\_\_

Component 3 #4 Score (>7=0; 6-7=1; 5-6=2; <5=3) .....C3\_\_\_\_\_

Component 4 (total # of hours asleep)/(total # of hours in bed) x 100 >85%=0, 75%-84%=1, 65%-74%=2, <65%=3 .....C4\_\_\_\_\_

Component 5 Sum of Scores #5b to #5j (0=0; 1-9=1; 10-18=2; 19-27=3).....C5\_\_\_\_\_

Component 6 #6 Score .....C6\_\_\_\_\_

Component 7 #7 Score + #8 Score (0=0; 1-2=1; 3-4=2; 5-6=3) .....C7\_\_\_\_\_

Add the seven component scores together \_\_\_\_\_ Global PSQI Score \_\_\_\_\_

≤ 5 associated with good sleep quality

> 5 associated with poor sleep quality

**Section C: Nursing Stress Scale**

This questionnaire is designed to collect relevant data from the nurses working in a selected hospital to assess their level of stress.

The tool comprised of 30 items and 3 sections.

*Section 1:* stress related to physical manifestations, consists of six questions.

*Section 2:* stress related to psychological manifestations, consists of eight questions.

*Section 3:* Stress related to interpersonal or social manifestations, consists of sixteen questions.

**Instructions:**

- In each statements, there are levels of

response. kindly indicate how frequently you experience, by placing a (√) in the

It is 5 point scale with following dimensions.

Items	score
Always	4
Some times	3
Once a while	2
Rarely	1
Never	0

space provided for the answer you think is appropriate.

- Read every item carefully.
- Please answer all questions.

Statements	Always (4)	Sometimes (3)	Once a while (2)	Rarely (1)	Never (0)
<i>Physical Manifestations</i>					
I feel exhausted after the duty.					
I experience appetite disturbances.					
I experience physical problems (head ache, leg pain etc.) because of heavy duty schedule.					
I found difficulty in my sleeping pattern.					
My concentration level decreased.					
I am not punctual in arriving to duty.					
<i>Psychological Manifestations</i>					
I experienced tension due to heavy work load.					
I feel worried when I didn't have enough time to complete a task.					
I feel my self-esteem is lowered when a doctor/health team members criticizes me.					
It's annoying when am been assigned to many non-nursing jobs. (ex: collecting the items from other department)					
It's distressing to perform a risky procedure. ex: administering injection to HIV infected patient.					
I have fear of making a mistake when caring a patient.					
Lack of experience makes me nervous in handling a ward without seniors supervision.					
I feel anxious, when asked to handle and operate a specialized instrument, which I don't know.					
<i>Interpersonal or Social Manifestations</i>					
Argument with a doctor/health team members makes me upset.					
Working with an unfamiliar colleagues makes me uncomfortable.					
Lack of support from the nursing supervisor disappoints me.					
I get disturbed when ward in charge fails to provide necessary support.					
Criticism by a ward in charge makes me tensed.					
Malfunctioning equipment's makes me stressed.					
Shortage of essential drugs and equipment's irritates me.					
Lack of essential services in ward (water, electricity etc.) for providing patient care gets irritates me.					
Shortage of staffs in shift duty over burdens for me.					
I feel annoyed when there is inadequate cooperation with paramedical staff.					
When patients family members makes extra demands, it irritates me.					
I feel dissatisfied even with personal accomplishment (getting the desired jobs).					
I am unable to communicate work frustrations with family, friends and colleagues.					
I neglect my family obligations like caring of children, festival celebrations ets.					
I neglect social obligations like attending marriages, birthday parties etc.					
There are conflict with in my family/friends due to work stress.					

**Scoring**

- Mild level of stress 0-30
- Moderate level of stress 30-60
- Severe level of stress 60-90
- Very severe level of stress 90-120

**METHODOLOGY**

Non experimental descriptive research design is adopted for the present study. The study was conducted in various wards, OPDs, ICUs at selected hospitals of Pune city on 100 shift duty working

nurses, proportionate stratified random sampling technique was used. The tool used by researcher is *Section A: Demographic data Section B: Pittsburgh sleep quality index [Reliability (test retest method) = 0.87], Section C: Nursing stress scale [reliability (Split half method)= 0.8]*. Study was conducted from 9th march 2014 to 23rd march 2014 at two different hospitals of Pune city.

**RESULT**

*Section I: Analysis of data related to personal characteristics of samples (nurses engaged in shift duties) in terms of frequency and percentages.*

**Table 1:** Distribution of samples according to their personal characteristics (N=100)

Demographic variable	Frequency	Percentage %	Total gross salary		
<i>Present working department</i>			Rs. 5001-10000	48	48%
Casualty	14	14%	Rs. 10001-15000	29	48%
ICU	22	22%	Rs. 15001-20000	18	48%
Medicine ward	19	19%	Rs. 20001-25000	1	47%
Ortho ward	9	9%	Rs. 25001-30000	4	5%
Private ward	15	15%	<i>Educational qualification</i>		
Surgical ward	21	21%	ANM	18	18%
<i>Age</i>			B.Sc.	26	26%
21-25 years	33	33%	GNM	56	56%
26-30 years	48	48%	<i>Total years of work experience</i>		
31-35 years	16	16%	Up to 5 years	68	68%
36-40 years	3	3%	6 to 10 years	23	23%
<i>Gender</i>			11 to 15 years	7	7%
Female	75	75%	More than 15 years	2	2%
Male	25	25%	<i>Working hours in a day/night</i>		
<i>Marital status</i>			6 hours	14	14%
Married	46	46%	7hours	6	6%
Single	51	51%	8 hours	72	72%
Widow	3	3%	9 hours	3	3%
<i>Type of family</i>			10 hours	1	1%
Extended	1	1%	12 hours	4	4%
Joint	29	29%	<i>Section II: Analysis of data related to assessment of quality of sleep among nurses engaged in shift duties</i>		
Nuclear	70	70%	51% of the nurses had poor quality of sleep (Score >5) and 49% of them had good quality of sleep (Score <=5). (N=100)		
<i>Number of family members</i>			<i>Section III: Analysis of data related to assessment of level of stress among nurses engaged in shift duties</i>		
Up to 5	77	77%	46% of the nurses engaged in shift duties had severe stress (Score 60-90), 40% of them had moderate stress (Score 30-60), 8% of them had very severe stress (Score 90-120) and 6% of them had		
6 to 10	20	20%			
More than 10	3	3%			
<i>Number of children</i>					
0	55	55%			
1	21	21%			
2	21	21%			
3	3	3%			

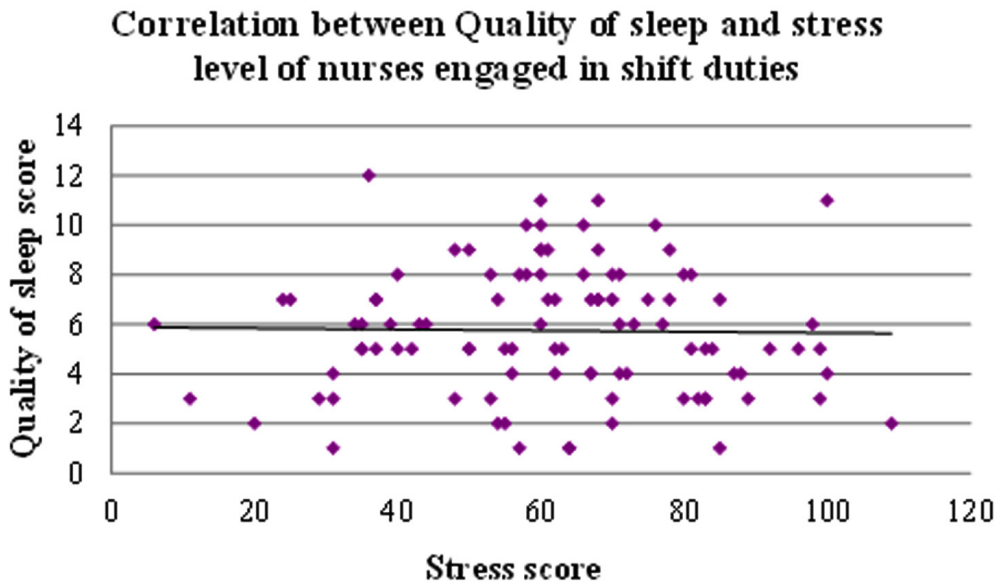
mild stress (Score 0-30).(N=100)

**Section IV:** Analysis of data related to correlation between the quality of sleep and level of stress among nurses engaged in shift duties

**Table 2:** Correlation between the quality of sleep and level of stress among nurses engaged in shift duties (N=100)

Statistic	Value
Pearson's correlation coefficient	-0.02
t	-0.19
p-value	0.577

Pearson’s correlation coefficient was found to be -0.02. This indicates that there is a slight negative correlation between sleep quality and stress. This means that the nurses having more stress, are prone to have poor quality of sleep. The strength of this relationship was tested using t-test for testing the correlation coefficient. The T-value was found to be 0.19. The corresponding p-value was found to be 0.577. Since p-value is large, we fail to reject the null hypothesis. The correlation between the quality of sleep and level of stress though found negative is not statistically significant. Following the scatter plot shows the visual display of this relationship.



**Section V:** Analysis of data related to association between quality of sleep with selected demographic variables

This assessment was done using Fisher’s exact test. The summary of the results of Fisher’s exact test is tabulated below (N=100):

Demographic variable	Sleep Quality		p-value
	Poor	Good	
Marital Status	M	12	0.014
	Married	13	
	Single	27	
	Widow	19	
Number of children	6 to 10	3	0.006
	More than 10	10	
	0	3	
	1	33	0.006
	2	22	
	3	8	
		5	
		16	
		0	
		3	

table cont.....

Salary	Rs. 5001-10000	22	7	0.005
	Rs. 10001-15000	9	9	
	Rs. 15001-20000	1	0	
	Rs. 20001-25000	1	3	
	Rs. 25001-30000	18	10	

Since p-values corresponding to marital status, number of children and salary are small (less than 0.05), the null hypothesis is rejected. Demographic variables marital status, number of children and salary were found to have significant association

with quality of sleep among nurses engaged in shift duties.

**Section VI:** Analysis of data related to association between quality of sleep with selected demographic variables

**Table 6:** Association between stresses with selected demographic variables

Demographic Variable		Stress			p-value
		Mild	Moderate	Severe	
Marital Status	Married	6	16	19	0.044
	Single	0	24	24	
	Widow	0	0	3	
Number of Children	0	0	26	28	0
	1	5	4	11	
	2	1	10	7	
	3	0	0	0	
Salary	Rs. 5001-10000	1	16	27	0.048
	Rs. 10001-15000	2	11	14	
	Rs. 15001-20000	3	9	5	
	Rs. 20001-25000	0	0	0	
	Rs. 25001-30000	0	4	0	
Work Experience	Up to 5 years	1	29	36	0.001
	6 to 10 years	4	9	6	
	11 to 15 years	1	1	4	
	More than 15 years	0	1	0	
Working hours in a Day/Night	6 hours	2	9	3	0.009
	7 hours	0	3	2	
	8 hours	4	27	37	
	9 hours	0	0	3	
	10 hours	0	0	1	
	12 hours	0	1	0	

Since p-values corresponding to marital status, number of children, Work experience, salary and Working hours in a day/night are small (less than 0.05), the null hypothesis is rejected. Demographic variables marital status, number of children, Work experience, salary and Working hours in a day/night were found to have significant association with quality of sleep among nurses engaged in shift duties.

**DISCUSSION**

The finding of present study has been discussed

with reference to the objectives and hypothesis. The finding of the study shows that the nurses having more stress are prone to have poor quality of sleep.

A cross sectional study conducted by B. Pikó on Work related stress among nurses: a challenge for health care institutions. The participants of the survey were female nurses (n=218). The result showed that nurses with only primary education had the highest stress levels, while those with baccalaureate level education had the lowest stress level. Furthermore, nurses aged 51-60 years and those on rotating night shift proved to be

vulnerable to stress the most frequently. However, no significant differences were found between nurses working in-theatre and those non-theatres; nor were job satisfaction found to have a significant impact on the levels of stress experienced. In this present study result shows that GNM nurses have severe stress than B.Sc. and ANMs. Furthermore, in this study the most of the participants are comes under 26-30 yrs of age so the stress level more in this age group. However, nurses working in ICU have severe stress than other ward/departments. 76 A study to determine if different types of work strain experienced by nurses, particularly those of an essentially psychological nature, such as emotional demand, mental effort and problems with peers and/or supervisors, have a differential impact on sleep quality and overall recovery from work strain, compared with physical work strains, and lead to higher maladaptive chronic fatigue outcomes conducted by Peter C. Winwood, Kurt Lushington. A large sample (n = 760) of Australian nurses working in a large metropolitan hospital completed questionnaires on their work demands, sleep quality, fatigue, and recovery between shifts Result shown that a high work pace exacerbates the psychological rather than the physical strain demands of nursing. Psychological strain affects sleep quality and impairs recovery from overall work strain between shifts. Similarly in this present study researcher found that nurses having more stress are prone to have poor quality of sleep. 77A cross-sectional study design to investigate behavioural and psychological factors that influence neurophysiological regulation of sleep in shift workers by Chung, Min-Huey; et al. with a sample of 338 female nurses working rotating shifts at an urban regional hospital. The Pittsburgh Sleep Quality Index (PSQI) measured participant's self-reported sleep quality. The results revealed that sleep hygiene practices and mood states mediated the effects of morningness eveningness and menstrual distress on sleep quality.<sup>78</sup> However in this present study also researcher used Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality of nurses it was found that 51% of nurses are prone to poor sleep quality and 46% of nurses are prone to severe stress level.

So it is important that nurses working consistently either in the morning, evening or at night shifts having more stress ad prone to have poor quality of sleep. Further studies are still needed to develop interventions that improve sleep quality and decrease burnout in nurses working shifts.

## CONCLUSION

From the above study, it can be concluded that that the nurses having more stress are prone to have poor quality of sleep. The result was found that there is slight negative correlation between sleep quality and stress level.

## Recommendations

- The similar study can be replicated in different setting and large sample size and on interns, doctors and other health care personnel to strengthen the findings.
- A study to assess the knowledge and attitude towards the coping strategy regards to level of stress and quality of sleep among nurses engaged on shift duty.
- Same study can be conducted by giving interventions like yoga, meditation, behavioral therapy etc.

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