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Sleep Quality, Physical, and Psychological Outcomes in Nurses with Low Back Pain from a Tertiary Hospital, South India

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Abstract:
Background:*Low back pain (LBP) affects 80% of the population globally. In India, the prevalence of LBP among nurses is reported to be 66%[1]. Evidence suggests that chronic LBP is associated with functional disability, anxiety, and depression. Poor sleep quality also significantly contributes to functional disability, anxiety, and depression.*
Purpose/Aim:*The purpose of the study was to assess the sleep quality of nurses with low back pain in a tertiary care setting, South India and to determine the relationship of sleep quality with the physical and psychological parameters such as pain intensity, functional disability, anxiety, and depression.*
Materials and Methods:*A descriptive cross-sectional study design was adopted. All the nurses working in main hospital, willing to participate in the study, and available during the data collection period were screened for LBP. Among the nurses with LBP, 193 subjects were selected using systematic random sampling technique. Study was approved by the Institutional Review Board, permissions were obtained from the Nursing Superintendent of the hospital, and informed written consent was obtained from the subjects. Subjects were asked to complete the following questionnaires: Pittsburgh Sleep Quality Index (PSQI), Short-form McGill Pain Questionnaire (SFMP), Oswestry Low Back Pain Disability Questionnaire (ODI), Zung Self-rating Anxiety (ZSA) and Depression (ZSD) scales. Descriptive and inferential statistics such as frequency, mean, standard deviation, and Pearson's correlation were used for data analysis.*
Results:*Among 1284 nurses screened, 686 (53.4%) had LBP. Of the 193 nurses included in the study 68.4% of the nurses had good quality of sleep. Majority of the subjects had minimal disability (68.4%), mild pain (81.8%), and no anxiety (56%) or depression (91.7%). There was a significant positive correlation between sleep quality and pain intensity (r=.355, p<.01), disability (r=.376, p<.01), anxiety (r=.297, p<.01), and depression (r=.233, p<.001) indicating that poor sleep quality will increase the pain perception, level of disability, anxiety, and depression. Improving sleep quality will decrease the physical and psychological manifestations of patients with low back pain and hence improve the quality of life of nurses with LBP.*
Conclusion: *Further research is required to study the effectiveness of good sleep quality on the physical and psychological outcomes. Sleep quality should be considered as one of the outcome measures while treating patients with LBP.*
Keywords:*Low back pain, nurses, sleep quality, pain, disability, anxiety, depression*

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I. Introduction

Low back pain (LBP) affects 80% of the population globally[1]. In the middle eastern countries LBP among health care workers is reported to be 73.9%[2]. In Nigeria the prevalence rate is reported as 53%[3]. Among nurses, it is reported to be between 40 and 97.9%.[4] In India, the prevalence of LBP among nurses is reported to be 66%[5]. Low back pain affects both the physical and psychological outcomes of an individual. Presence of pain interferes with the day to day activity by causing disturbance in the emotional component. Evidence suggests that chronic LBP is associated with functional disability, anxiety, and depression[6]. Poor sleep quality significantly contributes to functional disability, anxiety, and depression.[7]

II. Material and Methods

The study was carried out on nurses working in a tertiary setting in Southern India to determine the relationship between sleep quality ad physical and psychological outcomes of nurses with LBP. Physical outcomes included pain and functional disability. Psychological outcomes were anxiety and depression.
Design: Cross-sectional study design

Sample size:The estimated sample size was 304. The self reporting instruments were distributed to 304 nurses and 193 fully completed forms were received.
Sampling: Systematic random sampling technique was used to choose the participants.
Inclusion criteria

- Female nurses between the age group of 20-65 years
- Can understand written and spoken English
- Has LBP which is reported as discomfort in the lumbosacral region of the back that may or may not radiate to the legs, hips, and buttocks

Exclusion criteria

- Nurses suffering from any psychiatric, or neurological disorders
- Unable to or unwilling to give consent
- Have any diagnosed sleep disorders like obstructive sleep apnoea
- Working night shifts during the study period

Instruments

- Pittsburgh sleep quality index (PSQI)– to measure the sleep quality over a period of one month. This scale contains 19 self-rated questions which will be used to assess 7 components such as the sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and day time dysfunction. The total score of the 7 components yield the Global PSQI score which reflects the overall sleep quality of the individual[5].
- Oswestry low back pain disability questionnaire – to measure the level of functional disability in relation to low back pain[6].
- Short form Mc Gill pain questionnaire- to measure the quality and intensity of the pain. It contains 15 descriptors of the pain quality and 2 questions to assess the intensity of the pain[7].
- Zung Self-rating Anxiety Scale – measures anxiety level based on reflections over a week. It contains 20 statements on physical and psychological manifestations of anxiety graded over a 4 point likert scale, with a maximum score of 80[8].
- Zung Self-rating Depression Scale – measures depression based on reflections over several days. It contains statements on 20 physical and psychological manifestations of depression. The total score measuring 80[9].

Procedure methodology

The tertiary setting has nearly 3000 nurses of different levels working on the various clinical units. With the approval of the institutional review board, a prevalence of low back pain among the nurses was done. Among the nurses identified with low back pain, every second sample was chosen to study the relationship between LBP and the physical and psychological parameters. After obtaining the written consent the nurses were asked to fill in different scales on functional ability, anxiety and depression. The forms were distributed to 304 nurses, 193 complete forms were received.

Statistical analysis

Data was analyzed using SPSS version 17 (SPSS Inc., Chicago, IL). Pearson's correlation co-efficient was used to assess the relationship and Chi-square test was used to assess the association between variables. The level of p value was <.05.

III. Results and Discussion

Table 1 reveals that among the study participants majority were in the age group of 20 – 35years (61.7%), were general staff nurses (78.8), had experience less than 10 years (55.9%), and belonged to the healthy and low risk category (47.2%).Studies done across the globe shows moderate to high prevalence of low backache among nurses. A study from zagazig university reported prevalence of 79.3%[11],whereas another study from Taiwan[12]showed 69.7% and England showed 45%[13]

Table 1.
Demographic profile of the Nurses (N = 193)

Variables	n	%			
Age			*Place of work*		
20 – 35years	119	61.7	General Surgical	27	14.0
>35 – 50 years	61	31.6	General Medical	33	17.1
50 - 60 years	13	6.7	Semi Private	17	8.8
			Paediatric	16	8.3
Designation			Maternity	14	7.3
Multipurpose Health Worker	21	10.9	Private block	19	9.8
Hospital Auxilliary			Speciality	27	14.0
Staff nurse	14	7.3	Outpatient block	8	4.1
Charge Nurse	152	78.8	Emergency	3	1.6
	6	3.1	Operating room	29	15.0
Years of experience					
< 1 year			*Body Mass index*		
< 5 years	13	6.7	Underweight	17	8.8
5-10 years	52	26.9	Healthy and Low Risk	91	47.2
10-20 years	43	22.3	Overweight	69	35.8
>20years	58	30.1	Obese	11	5.7
	27	14.0	Very Obese	5	2.6

The findings reveal that 68.4% of the nurses had good quality sleep and 81.8% of them had mild pain (see Figure 1 & 2).

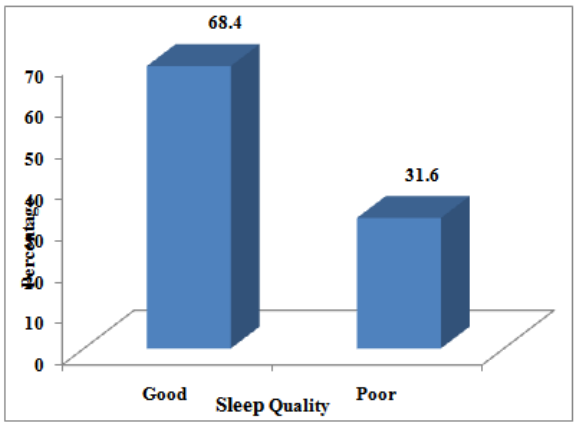

Figure 1. Sleep quality among nurses

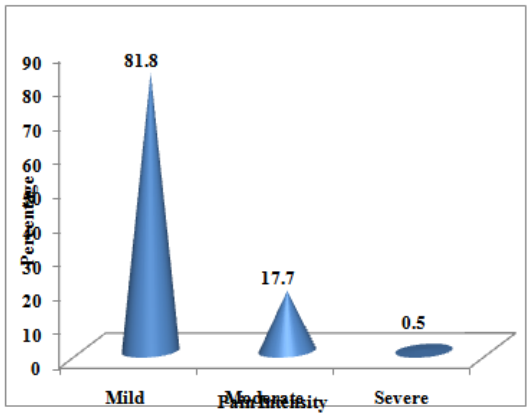

Figure 2. Pain intensity of LBP among nurses

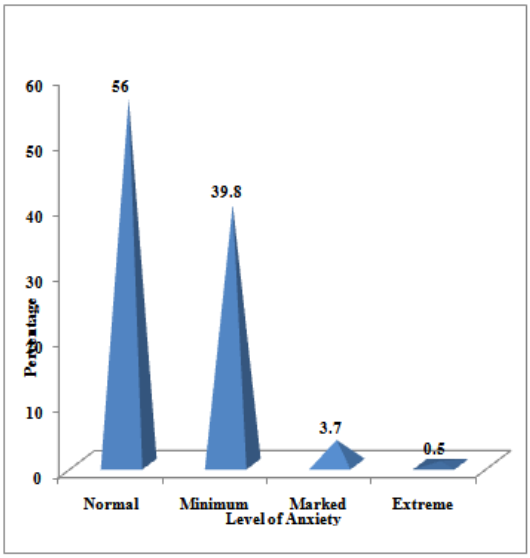

Figure 4.Level of anxiety among nurses

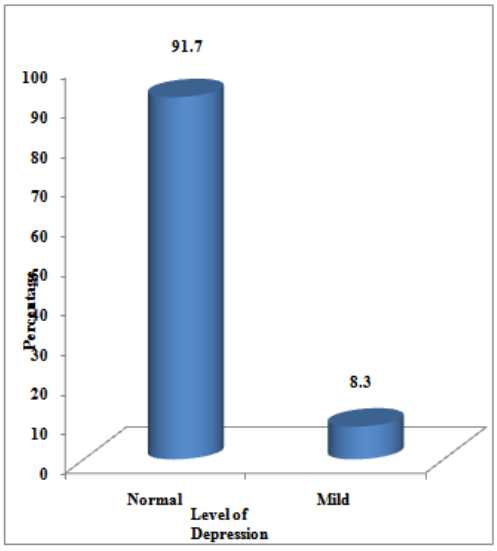

Figure 5. Level of depression among nurses

Figure 4 and 5 reveal that majority of the participants had no anxiety or minimal anxiety (95.8%) and no depression (91.7%). Table 2 reveals that there was a significant positive correlation between sleep quality and pain intensity (r=.355, p<.001), disability (r=.376, p<.001), anxiety (r=.297, p<.05), and depression (r=.233, p<.001). According to Franca etal sleep quality among population with chronic low back pain reveal that they had high levels of functional disability (mean, 16.71 ± 4.16 score points) and 82.35% of patients had poor sleep quality[14]. Mok and Lee report that there was average anxiety and depression level of the participants with chronic LBP and the level of anxiety and depression was significantly positively correlated with pain intensity (r = 0.471, p < 0.0005) and was also a significant predictor of pain intensity[15].

Table 2
Relationship between sleep quality and pain intensity, functional disability, anxiety and depression among nurses

Outcomes	Mean	SD	r value	p value
Pain intensity	1.6	1.2	.355	.000
Functional Disability	8.0	7.0	.376	.000
Anxiety	34.7	7.7	.297	.032
Depression	36.5	9.6	.233	.001

IV. Conclusion

The study reveals that there is a significant relationship between sleep quality and the physical and psychological parameters of patients with low back pain. As nurses suffer LBP due to their nature of work, adequate measures have to be taken to prevent LBP among nurses and also to ensure quality of life is maintained among those with LBP. Further research is required to establish the relationship among sleep quality and physical and psychological outcomes of patients.

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