



## A CROSS-SECTIONAL STUDY ON JOB-RELATED LOW BACK PAIN (LBP) ON NURSING STAFF IN TERTIARY CARE HOSPITAL OF KARACHI, SINDH.

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### ABSTRACT

**BACKGROUND:** Low back pain (LBP) It is musculoskeletal disorder that exist in various occupation nowadays researchers had been proved through research studies in developed and developing countries that there is association of Low back Pain with occupation. This study will help to enhance productivity of nurses or health care provider that will impact of patient outcome also will support in decreasing medical expenses. This study was planned to determine the frequency of Low Back Pain among hospital nurses. **OBJECTIVE:** This research study was aimed to determine prevalence of low back pain among nurses working at Tertiary care hospitals in Karachi. **DESIGN OF STUDY:** Descriptive Cross-Sectional study. **PLACE & DURATION:** Dow University of Health Sciences (DHUS) and Civil Hospital Karachi, from May 2019 to August 2019. **MATERIALS AND METHODS:** This cross-sectional study was conducted during May-August 2019 on 324 nurses, working at tertiary care hospitals in Karachi, with minimum qualification of 3 years diploma in nursing, and who had minimum 1 year of working experience. The data collection instrument consisted of a section on demographic information and Nordic Musculoskeletal Disorder Scale. The analysis of data was done through SPSS v21, and Data scrutiny involved in the use of descriptive statistics and chi-square test were used. **RESULTS:** In this study, 59% participants were male, and 75% having bachelor degree. The lifetime frequency of low back pain was 43.5% whereas 12-month and 1-week frequency of low back pain among nurses was 56.7% and 51.5%, respectively. Pain of mild and moderate intensity was present in 134 (96.4%) nurses. **CONCLUSION:** The frequency of low back pain was high among nurses working in tertiary care hospitals, in Karachi. However, analytic studies examining trends in Low Back Pain and factors associated with it are needed.

**KEYWORDS:** Nurses, Tertiary Care Hospital, Low Back Pain, Health Care Provider

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## INTRODUCTION

Throughout the world, low back pain (LBP) is one of the leading causes of functional disability and it remains the common type of musculoskeletal disorders<sup>1</sup>. It is the main reason of disability in both males and females, and after respiratory infections, it is the second common cause for hospital visits<sup>2</sup>. It is also known as the third common reason of medical procedures, and the fifth leading reason for hospitalization<sup>3</sup>. It is also the main economic, social, clinical and public health issue<sup>4</sup>. Each year, billions of dollars are lost in medical expenditure due to increase in the prevalence of LBP and related disorders<sup>5</sup>. Evidence shows that among nurses, low back pain is a most familiar health issue in comparison to the general public and other health care providers because nurses perform more patient handling activities<sup>6</sup>. In developed and developing countries, LBP mainly influence the working people and leaving them to be disabled<sup>7</sup>.

It can affect the work performance as well as affects the quality of life<sup>6</sup>. In Bureau of Labor Statistics of United States of America, in 126 occupations, the nurses are at sixth main position with regard to lost their most functioning days from job due to LBP<sup>6</sup>. As compared to other health care providers, nursing staff face a higher exposure rate of occupational hazards. These occupational hazards may be mechanical or psychological<sup>8</sup>. Mechanical hazards may include heavy lifting, frequent patient handling, twisting and bending, standing for long hours, prolonged sitting, which may lead to LBP among nurses<sup>9</sup>. Psychological hazards refer to poor job satisfaction, poor

monotony at work; however, anger has been examined and related to happening of LBP among nurses<sup>6,9</sup>.

The lifetime frequency of LBP was as high as 56-90% among nurses<sup>10,11</sup>. Previous study which was conducted in Sudayr region found work related LBP among 53.2% of nurses<sup>12</sup>. Pakistani nursing professionals face very heavy work load and nurse-to-patient ratio is 1:50 in Tertiary care hospital. Pakistan Nursing Council (PNC) suggests that there should be one nurse for 10 (TEN) patients in General Wards and 2 (TWO) nurses for one patient in specialized units<sup>11</sup>. In comparison of normal workload, stress-related symptoms increase by approximately 1.7-2.9 times because of heavy workload among nurses<sup>13,14</sup>. The increasing demands at work and higher work stress among nurses may predispose them to LBP. Furthermore, LBP reduced productivity of workers and increased medical expenditures of both individual as well as nation. Therefore, this research study was conducted to discover the levels of LBP among nurses of institute.

Nursing profession is considered as third principal cause of back injury and suffering<sup>14</sup>. Among the worker groups back injuries is major cause of disability in nurses<sup>14</sup>. From the judgment of prevalence, nurses are at third position among the working people<sup>15</sup>. Globally, nurses have 40 to 90% low back pain prevalence whereas 35 to 90% of all professions low back pain is prevalent work-related hazard<sup>2</sup>. Nurses make large part of health care workers, and their annual prevalence of back pain ranging from 43-70%. Low back pain is main problem affecting 38 to 67% of American

nurses of institutie<sup>1</sup>. The prevalence of LBP during twelve month in German nurses is 73-76%, 86% in Italian nurses, and 80.9% in nurses of HongKong<sup>15</sup>. In nursing staff of United Kingdom, the annual LBP prevalence is 43.1%. Moreover, a study of Tanzania revealed the higher rate of prevalence of LBP in nurses i.e. 74%. Also, another study conducted in rural hospitals of Nigeria estimated that low back pain prevalence rate is 69% in Nigerian nurses<sup>16</sup>. A German study revealed the 61.2% of LBP incidence among 2176 nurses. In Taiwan, a nationwide study done that showed in hospital nurses, the low back pain prevalence was nearly 70%<sup>14</sup>. However, a Japanese study showed that 30% of nurses had the LBP complaints in the recent month before survey<sup>14</sup>.

Among Italian hospitals employees, the frequency of LBP was 58.8% and 64% nurses of Denmark also experienced low back pain<sup>17</sup>. Among nurses in some European countries, the one year low back pain prevalence rate ranged from 41-75%<sup>18</sup>. incidence of high back ache was reported in the USA and 40–60% in Asian countries<sup>18</sup>. Among workers of hospitals, prevalence rate of LBP varies in different nations, the lifetime LBP prevalence is estimated in Hong Kong as 39%, in Ireland (46%), in Tunisia (57.7%), in Kuwait (70.9%), and in Netherlands (76%)<sup>22</sup>.

Nurse work rate is important approximately 17% in United States due to there is increased demand for Intensive Care Unit (ICU) beds. Furthermore, 114,000 nurses are available for delivered quality of care to the population in United States by 2015. On an ICU component, nursing become shorter and they migrate because of quality care delivery can tend to more stress. National telephone survey registered 700 nurses because common reason for nursing leaving their jobs to want less stressful status<sup>24</sup>. Compared with rest of UK working population there is

physical and psychological health care and related diseases level are higher amongst health care workers<sup>19</sup>.

Health organization frequently experience stress among different component, and working conditions and employees work ability which usually found in hospitals. And the most affected employee by these issues, who is the nurse, hospitals give highly stressful work setting to their employees as compared to others workers on their work environment. Nurses of institutie are the foundation o tertiary care hospitals. Quality care toward patients are linked when nursing staff is satisfied or happy with his/her work<sup>20</sup>. Many big and small hospitals are set upped in relatively every small and big cities which offer the opportunity for employee in various components but at the same time could not fulfill the requirement of hospitals to give quality care services to the general population. Every day there is a large quantity of patients found in hospital from morning till late night with various illnesses. These patients belong from the different demographic background and economic status. This gives a task to nurses of institute to manage patients and fulfill patients health needs at that time<sup>21</sup>. Commonly nursing is a nerve-wracking and challenging job. It take both psychologically and physically challenges as they manage individual who are effected from major or minor health issue and critical situations<sup>21</sup>. Job performance of nurses is defined as the level of success of a nurse is completing his or her responsibilities and roles linked with nursing care and excellence of healthcare services toward the patients<sup>22</sup>. Quality healthcare depend on the support of adequate qualified health care workforce ,involving nurses they shape second largest working things in hospitals<sup>22</sup>

## **MATERIALS AND METHODS**

The Descriptive cross-sectional study was conducted on working nurses of institutie at

Dow University of Health sciences and Dr. Ruth KM Pfau Civil Hospital Karachi, total 324 female nurses were participated in study. The duration of study started from May 2019 to August 2019. Data collected after approval of synopsis and permission of Ethical approval was taken from Institutional Review Committee (IRC) of the Institute of Nursing, DUHS and Civil hospital Karachi. Permission was taken from both head of the institutes. The proforma were anonymously administered to the nurses. Before administering the questionnaires, informed consent was taken from the participants. Participants were free to refuse to participate in this study. Data were kept confidential, and anonymous. The participants were identified with special identification codes, which were made known only to the research team. Following were study instruments were used during data collection. 1. The Standardized Nordic Questionnaire was used to determine Low Back Pain (LBP). It consists of 28 multiple-choice questions, divided into two fine-described portions. The initial portion is common and related to the signs in nine body areas such as neck, shoulders, elbows, hands/wrists, upper back, hip/thighs, lower back, knees, and feet/ ankles, between one year or last weeks. The last portion consist of 8 questions concern to the signs in lower back portion of the body whole time the participant's life of working /week previously. For the current study, only last 8 questions related to low back were used.

#### **STATISTICAL ANALYSIS**

Data collected were checked for completeness and consistency. SPSS version 21.0 was used for analysis. Descriptive

statistics such as mean, standard deviation and percentage were used. Chi-square test was employed for test of significance and comparison of qualitative variables and a  $P < 0.05$  was taken as statistically significant.

The ethical approval for this study was sought from the institutional review committee of the Dow Institute of Nursing and Midwifery, Dow University of Health Sciences, Karachi, Sindh, Pakistan (Letter No: Ref: ION/MSN/2019-06/-18/-342).

#### **RESULTS**

The results of this research show that, A total 324 participants were included in study, 191 (59%) were males, 50% were each married and single, 245 (75.6%) had a bachelor's degree, and 172 (53.1%) were appointed on a regular-basis job. The average age of the target enrolled participants were  $29.93 \pm 6.340$  years, with the weekly workload of  $51.10 \pm 14.151$  hours.

#### **Table 2: Proportion and intensity of Low Back Pain (LBP) in study participants (n=324)**

The lifetime Low Back Pain (LBP) frequency was 43.5% which stayed for 1-7 days in 80 (56.7%) of the nurses in the last one year. The presence of low back pain caused 77 (54.6%) of the nurses to change their job of duties. Out of 101 (31.17%) participants with Low Back Pain in the last 12 months, work activity reduction was observed in 37 (36.64%) and activity reduction in 14 (0.6%) nurses, and 58 (57.4%) of them did not see a health care professional regarding the low back pain management.

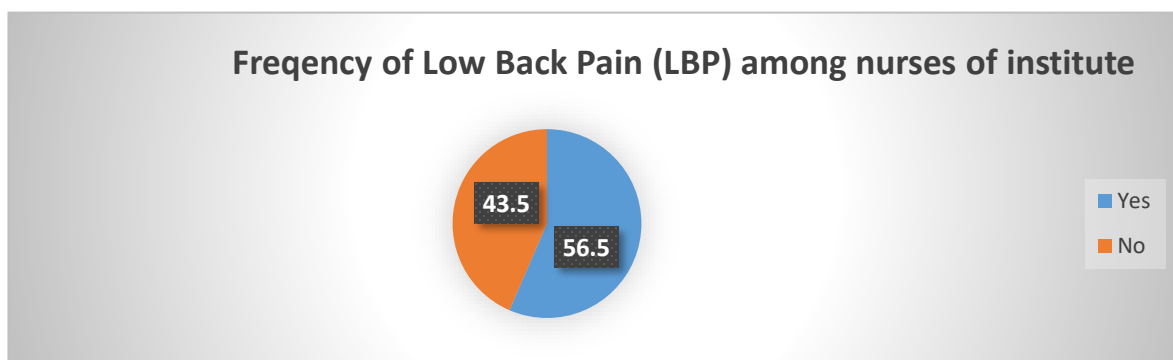
**Table-1 Socio-economic and Demographic factor of Target Population (n=324).**

Variable	Category	Frequency	Percentage
Gender	Male	191	59.0
	Female	133	41.0
Marital Status	Single	162	50.0
	Married	162	50.0
Educational level	Diploma	74	22.8
	Bachelors	245	75.6
	MSN	4	1.2
	MPH	1	0.3
Specialty	Anesthesia	1	0.3
	Bone marrow transplant	2	0.6
	Cath Lab	2	0.6
	CCU	45	13.9
	Emergency	71	21.9
	Gastro	8	2.5
	General	2	0.6
	Gynecology	29	9.0
	ICU	53	16.4
	Medicine	71	21.9
	Pediatrics	22	6.8
	Surgery	18	5.6
Job nature	Regular	172	53.1
	Contract	151	46.6
Age (years)	18-56	29.93	6.340
Monthly income (PKR)	13000-200000	54101.85	20791.285
Weekly workload (hours)	32-72	51.10	14.151

Prevalence of LBP within the last week was observed in 52 (51.5%) of the participant who had the 1-year pain prevalence. Pain of mild and moderate intensity was present in 78 (56.1%) and 56 (40.3%) nurses.

Variable	Category	Frequency	Percentage
Lifetime prevalence of LBP	No	183	56.5
	Yes	141	43.5
Hospitalized due to LBP	No	97	68.8
	Yes	44	31.2
Change job due to LBP	No	64	45.4
	Yes	77	54.6
Length of time for LBP in last 12 months	0 days	40	28.4
	1-7 days	80	56.7
	8-30 days	10	7.1
	>30 days	9	6.4
	Everyday	2	1.4
Work activity reduction due to LBP in last 12 months	No	64	63.4
	Yes	37	36.6
Leisure activity reduction due to LBP in last 12 months	No	60	59.4
	Yes	41	40.6
Length of time for activity reduction due to LBP in last 12 months	0 days	16	15.8
	1-7 days	75	74.3
	8-30 days	5	5.0

	>30 days	5	5.0
Visited a HCP for LBP in last 12 months	No	58	57.4
	Yes	43	42.6
LBP in last 7 days	No	48	47.5
	Yes	52	51.5
	Missing	1	.3
Pain intensity for low back pain	2	15	10.8
	3	63	45.3
	4	27	19.4
	5	24	17.3
	6	5	3.6
	7	5	3.6
		Mild pain	78
	Moderate pain	56	40.3
	Severe pain	5	3.6



**Table-3: Gender Comparison in the Prevalence of Low Back Pain (LBP)**

Table-3: shows the difference for the frequency of low back pain across the genders. Overall, there was a statistical significance difference for lifetime frequency of Low Back Pain ( $p=0.001$ ) and pain intensity for Low back Pain ( $p=0.019$ ) across gender.

Variable	Total	Male	Female	<i>p</i> value
<b>Lifetime prevalence of LBP</b>				
No	183	122	61	<b>0.001</b>
Yes	141	69	72	
Total	324	191	133	
<b>12-months prevalence of LBP</b>				
0 days	40	19	21	0.105
1-7 days	80	45	35	
8-30 days	10	3	7	
>30 days	9	2	7	
Everyday	2	0	2	
Total	141	69	72	
<b>1-week prevalence of LBP</b>				
No	48	26	22	0.365
Yes	52	23	29	
Missing	1	1	0	
Total	101	50	51	
<b>Pain intensity for low back pain</b>				
Mild pain	78	44	34	<b>0.019</b>
Moderate pain	56	23	33	
Severe pain	5	0	5	
Total	139	67	72	

### Frequency of LBP Male vs Female



## DISCUSSION

The prevalence of Low Back Pain among the nurses was the lifetime frequency of LBP was 43.5% whereas 12-month and 1-week frequency of Low Back Pain in nurses was 56.7% and 51.5%, respectively. Pain of mild and moderate intensity was present in 134 (96.4%) nurses. A striking finding was that 57.4% of nurses never visited a health care professional regarding the treatment of Low Back Pain.,also, presence of Low back pain for 12 months was positively correlated with conflict with physicians. Significant gender differences were observed for frequency of Low Back Pain and pain intensity, with higher rate of Low back ache and pain intensity reported by female nurses. In our neighboring country in India that is 53.4%<sup>(12)</sup>, and Iran studies had 63% prevalence<sup>(23)</sup>. Low back pain is growing public health issue and has been studied in different countries of the world. This study showed a high proportion of LBP ailment among nursing population ranging from 43.5% 56.7%. These findings are similar with the previous studies that were conducted in Ethiopia (41.4%-- 63.6%)<sup>(6)</sup> Nigeria studies are also supporting this frequency that is 33.3%<sup>(24)</sup>, if we will review studies on same topic in Tunisia they found prevalence of Low Back Pain is 58.1%<sup>(25)</sup>. A study was conducted in Tunisia reported that 58.1% nurses had 12-month LBP prevalence which was higher to the results of this study<sup>(25)</sup>. A study from Korea showed that 21.9% nurses had prevalence of low back pain of 12-month while 1-week prevalence among nurses was 41%<sup>(10)</sup>.The annual Low Back Pain prevalence in nurses of Hong Kong showed 40.6% was also lower to the results of this study. A study conducted in Pakistan reported that 65.1% nurses suffered from LBP once in their life span while 88.1% nurses have 12 month prevalence of LBP and last 7 day prevalence was 56.25%

<sup>(21)</sup>.However, these findings were lower than the reports from Turkey (77.1%),<sup>(17)</sup> Nepal (75.7%)<sup>(26)</sup>, Nigeria (73.53%)<sup>(24)</sup>, Bahrain (70.8%)<sup>(27)</sup>, South Africa (84%)<sup>(17)</sup>, and Sudan (87.5%)<sup>(28)</sup>.The disparity for the low back pain prevalence may be attributed to the differences in injury prevention and reporting procedures, variations in the study methodologies, participant characteristics, and perceiving disability and the severity of Low back Pain across countries. Only 42.6% nurses sought healthcare for the cure of their low back pain, which was similar to previous studies Thus, further studies about this issue are need. In this study, it was found that there are significant gender differences for the lifetime LBP prevalence ( $p=0.001$ ) and pain intensity for low back pain ( $p=0.019$ ). These gender-based differences were also reported by a organized assessment on Low Back ache in Iranian nurses and the review added that other demographic variables, such as marital status, are also associated with low back pain<sup>(23)</sup>. Parallel findings were reported in previous study conducted in Turkey<sup>(26)</sup>. The sample size of the current study was comparable to the studies conducted earlier. However, the study participants were recruited from only one city and through a non-randomized sampling approach. Nevertheless, this study is a multicenter study covering a large sample of nurses of either gender. To the best of possible knowledge, it is one the first study which determines the prevalence of LBP, and their association among nurses in Karachi. It is recommended that future studies should include large scale sample size from diverse settings. Appropriate work illness and injury prevention and reporting strategies at workplace are required to be in place. Nurses should be encouraged to have proper posture, ergonomics and biomechanical techniques at their work place. Nurse

training programs that cover all above said criteria should be run to maximize improvement in work related techniques and minimize work stress.

### LIMITATIONS

The study was based on self-reported data and hence is Subjective in nature. Another limitation is that the study was of cross-sectional design and a causal relationship cannot be established.

### CONCLUSION

The frequency of Low Back Pain was high among nurses from Karachi. However, it was not clear whether there is an association between LBP and work stress or not. Therefore, future studies are needed to examine this relationship. In addition, there is a gender difference for frequency of Low Back Pain and pain intensity in nursing professionals of Karachi. This Study proved that Low Back Pain is present in nurses who are serving in hospital and other health institutes. They should care their physical health. Preventive strategies need to be implemented to reduce the prevalence of LBP and its effects. Relaxation and stress reduction techniques are highly recommended at workplace.

**ETHICS APPROVAL:** The ERC gave ethical review approval

**CONSENT TO PARTICIPATE:** written and verbal consent was taken from subjects and next of kin

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