

ORIGINAL ARTICLE

PREVALENCE OF LOW BACK PAIN AND EVALUATION OF WORK POSTURE AMONG HEALTHCARE PROFESSIONALS OF DISTRICT HEAD QUARTER HOSPITALS OF HAZARA DIVISION: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Low Back Pain (LBP) is the muscle tension, pain and stiffness in the area beneath the ribs margins and above the gluteal folds. This pain may be radiating or not radiating to the legs. The important symptoms of LBP are pain and disability.

Material & Methods: A cross-sectional study was conducted in DHQ Haripur, Abbottabad and Mansehra of Hazara division from May 2018 to October 2018. The self-modified questionnaire was distributed among the healthcare professionals of DHQ Haripur, Abbottabad and Mansehra. Professionals of both genders aged between 25 and 60 were included while professionals with specific pathologies i.e. lumbar fracture, neoplasm, trauma, and kidney pain were excluded from the study. SPSS version 22 was used for analysis.

Results: The mean age of participants was 31.29 ± 7.75 . The overall prevalence was $n=197$ (59.7%). The prevalence of LBP was found for Physicians, Physical Therapists, Technicians and Nurses. The participants with the highest prevalence rate were technicians $n=111$ (33.4%) followed by nurses $n=103$ (31.2%). A larger population $n=222$ (67.3 %) has experienced LBP in the past. Male participants with LBP were $n = 111$ (56.3 %) while females were $n = 86$ (43.6 %). Most of the healthcare professionals experienced LBP after joining the job ($P = < 0.05$).

Conclusion: This LBP prevalence among the health care professionals of DHQ Haripur, Mansehra and Abbottabad was very high. Most healthcare professionals suffered from LBP after joining the job.

Key Words: Healthcare Professional, Low Back Pain, Prevalence, Working-Posture

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INTRODUCTION

Low Back Pain (LBP) is simply defined as the muscle tension, pain and stiffness in the area beneath the ribs margins and above the gluteal folds. This pain may be radiating or not radiating to the legs. The important symptoms of LBP are pain and disability.¹ A multi-center prospective cohort study reported that psychological stress increases the odds of LBP among healthcare workers.² According to a recent systematic review back was among the most exposed area for musculoskeletal disorders (MSDs) among health care workers.³ Another systematic review reported that LBP is highly prevalent among health workers in Saudi Arabia.⁴ The common cause of injury in healthcare workers is LBP. In work-related groups, nurses were more exposed to LBP.⁵ Work-related muscle fatigue was also a challenge to the health care system in the nursing profession, where it had been documented as a basis of opposing effects over the value of client pleasure, care and nursing staff and patient safety.⁶ Shindul Rothschild et al. reported that work-related injuries were found in orthopaedic, neurology and operating room nurses related to other units.⁷ Among Chinese nurses the lower back, neck, and shoulder were the three most susceptible body sites for MSDs and weekly working hours, gender, body mass index, age, and alcohol use were the individual characteristics that significantly affected the odd ratios of MSDs in different body sites.⁸ Usually nurses have to lift or transfer patients and perform repetitive procedures with poor or incorrect posture which may cause LBP.⁹ LBP is more prevalent in healthcare professionals as compared to the non-healthcare inhabitants because of the emotional and physical factors mixed up in their work such as anxiety.¹⁰ In different countries prevalence of LBP varied among hospital workers for instance, a reported lifetime prevalence of LBP was 51.7% in Tunisia and 46% in Nigeria.^{11,12}

According to a study nursing staff have the highest incidence rate of LBP among the health care profession.¹³ Another study reported that physical therapists also have a high occurrence rate of MSDs.¹⁴ A study in 2018 reported that the prevalence of LBP among the rehabilitation staff of various hospitals in the United States was 68.02%.¹⁵ The same study reported that there is a lack of strong evidence for the association between LBP and prolonged sitting however; there is evidence of correlation among those with LBP and prolonged sitting is reported as one of the aggravating factors.¹⁵ LBP is a reason for extensive sick leave among nurse staff in the hospitals of the public health sector in South Africa.¹⁶ Lifting and transferring patients is the most common risk factor, and usual interventions in the nursing staff include lift/transfer devices, no-lift policies, and ergonomic assessments.¹⁷ The current study was designed to estimate the prevalence of LBP as well as to evaluate the different parameters of work posture among healthcare professionals. The aim of the study was also to educate healthcare professionals about the proper and correct postures while performing different healthcare activities.

MATERIAL AND METHODS

The current study was a descriptive cross-sectional study conducted in three district headquarters hospitals (DHQs) of the Hazara Division of Khyber Pakhtunkhwa, Pakistan. Data was collected only from three of them DHQ Haripur, DHQ Abbottabad and DHQ Mansehra between May 2018 and October 2018. The source population was employees working in the different departments of the above-mentioned hospitals including physical therapists, surgeons, physicians, nurses and paramedical staff. Convenience sampling was used for data collection. The study population comprised permanently employed various healthcare professionals working at DHQ

Hariipur, DHQ Abbottabad and DHQ Mansehra, both on day and night shifts. Those employees were included in the study that were related to health care, showed willingness to participate in the study, aged between 25 and 60 years, either of male or female gender and regardless of from where they belong. All those health care professionals who were suffering or having LBP from any of these diseases i.e. kidney pain, neoplasm, TB of the spine, infectious diseases, systematic diseases were excluded from the study. Those employees were also excluded who have any trauma or road accident in the recent two months or having any diagnosed systemic disease. The sample size of the current study was online calculated on the Raosoft calculator putting the margin of error at 5% and the confidence interval (CI) at 95%. The response rate was 100 %. The total no of participants in the current study was 330.

Data collection procedure

Data was collected from the participants after permission from the head/in-charge of various departments of each above-mentioned hospital. Prior to data collection all the Participants were screened for inclusion and exclusion criteria. A consent form was signed by the eligible participants. A self-modified questionnaire was distributed among the healthcare professionals who gave consent and met the inclusion criteria. The reliability (internal consistency) of the questionnaire was checked through the Cronbach alpha which was in the acceptable range (0.8). The initial section consisted of demographic data. The second section of the questionnaire asked questions about pain and its intensity in different daily functions and various postures adopted during performing clinical duty.

Data analysis procedure

Data was analyzed by an expert in statistics using the 22.0 version of SPSS. All the collected data was entered into SPSS and descriptive statistics were used. For age calculations percentage, frequency and mean

value were calculated. Gender frequency and percentages were calculated. Data was presented in tables and graphs. Pearson's Chi Square test was used to assess the association between different variables.

Ethical Approval

The study was approved by the Advance Studies Review Board (ASRB), at Khyber Medical University (KMU). Ethical approval was obtained from the Ethical Review Committee (ERC) of KMU.

RESULTS

In the current study out of a total sample of 330, the healthcare professionals of DHQ hospitals of Hazara Division who had LBP were $n = 222$ (67.27 %) while those with no pain were $n = 108$ (32.72 %). The mean age was 31.29 ± 7.75 and the mean Body Mass Index (BMI) was 26. The participants with the highest rate included in the study were surgeons $n=20$ (83.33%) followed by physicians $n=63$ (78.75%) and nurses $n=69$ (66.99%). The lowest prevalence rate was revealed among physical therapists $n=6$ (50%).

The male participants in the study were $n=194$ (58.8%) and among them, $n=111$ (56.3 %) were suffering from LBP while the female participants were $n=136$ (41.2%) and among them, $n=86$ (43.6 %) were affected by LBP. Among the total participants, a larger proportion had experienced LBP in the past. Those who had LBP just for one day were $n=110$ (33.3 %). Those who had LBP for one week were $n=43$ (13 %). Those who had LBP for more than one week were $n=56$ (17 %). Those who couldn't recall their LBP were $n=14$ (4.2 %). While a group of participants haven't experienced $n=108$ (32.7 %) the LBP in the past year or more. In this study above 50 % of the participants $n=172$ (77.48 %) experienced LBP after starting the job while the rest of the participants experienced LBP before starting the job.

94 (28.5%) participants were involved in rotating their torso with weight lifting. 136

(41.2%) participants were involved in Bending with weight lifting. 98 (29.7%) were transferring patients to bed or chair. 67 (20.3%) participants, when involved in ambulating the patient.

Out of a total of 69 nurses with LBP 59 (85.5%) nurses experienced LBP after joining the job. Similarly, 48 (75%) technologists and technicians, 42 (66%) physicians, 05 (83%) physical therapists and 18 (90%) surgeons experienced LBP after joining the job. Table 1 shows demographics of participants and characteristics of LBP. Table 2 shows Health care professional working posture in hospital. Table 3 shows Occurrence of LBP in different Professionals

DISCUSSION

The prevalence rate of LBP in healthcare professionals of DHQ hospitals of Hazara Division was 67.27%. In a study conducted in Nigeria, the rate of prevalence of LBP was 46% among hospital employees.¹¹ There is a very high variance in the prevalence of LBP among healthcare workers. These variations might be because of the high variations in tasks and duties in the hospitals. Those who are involved in transferring the patients or mostly are in standing positions during their duty have shown high prevalence. A study revealed that nurses and physical therapists have the highest prevalence of LBP and secretaries and hospital aids have the lowest prevalence.¹⁸ Surgeons during surgical procedures are mostly in the standing position and our study out of 24 surgeons 20 had LBP and among these 20 Surgeons with LBP 18 had LBP after joining the clinical practice. Similar findings were revealed in a study conducted in Saudi Arabia which reported a high prevalence of LBP (74.2%) among staff of operation theater which was significantly associated with factors like lifting weights above waist level, rotation of trunk while having some weight in hands, pulling a patient up in the bed, transferring patients from bed to chair or vice versa and repositioning of the

patients in their beds.¹⁹ In our study 90% of surgeons experienced LBP after joining the job. Similarly, nurses are mostly involved in transferring weights from bed to wheelchair and from wheelchair to bed. In our study out of a total of 69 nurses with LBP 59 had LBP after joining the duty as a nurse. In research studies the prevalence was either almost equal to the findings of the current study or was lower than it like in a study conducted by Ando et al. In Japan, the LBP was 51 % and in Tunisia, it was 30 %.^{6,12} On the other hand a very high prevalence of LBP (90%) was reported in the Korean nurses working in intensive care units (ICUs).⁷ As compared to other ICUs prevalence was lower among nurses working in neonatal ICUs. Especially the nurses working in neurology and cardiology ICUs have a greater prevalence of LBP.⁷ These findings indicate a link between weight transferring and LBP as adult patients are far more heavier than neonatal patients.

The total participants of in the study was 330 of which the male gender was more than half. Male participants suffered from LBP 56.3 % while females were 43.6 %. Several studies reported results association between the prevalence rate of LBP and gender. A study conducted in Turkey revealed that the male gender was 69%.⁹ In contrast LBP was more common in women than men.¹² The mean age affected with LBP was 31.29 ± 7.75 . Young adults were found to have an elevated prevalence rate of LBP than older populations. These findings may be because of younger adults having less experience and also their allocation to more efforts demanding tasks. According to Yassi et al., younger nurses had a higher prevalence of LBP than older nurses.²⁰ Another study also revealed that there was a high prevalence among young nurses who worked for 2 to 4 years.⁷

In the current study among 12, Physical Therapists having LBP after starting their job were $n = 05$ i.e. 41 % of all the Physical Therapists participated in the study. While in

another study conducted by Azize Karahan et al. in Turkey revealed that Physical Therapists had the second highest prevalence (72.7 %) of LBP after the nursing staff.⁹ A study by Rugelj in 2003, reported LBP to be the main occupational health problem in Physical Therapists.²¹

In the current study, the researcher found the LBP amongst healthcare professionals of various disciplines while other studies reported the prevalence rate of MSK disorder among nursing staff.^{6,9,22} Earlier many studies were mainly on single professionals, especially many conducted on nurses and physical therapists were the population of interest in very few studies.

The investigators didn't find the associated risk factors for LBP in healthcare professionals of DHQ hospitals of Hazara Division. Recall bias may be present as the participants were instructed to report actions that occurred over a prolonged span of more than 1 year. Due to the nature of the study, the researchers were unable to determine both the temporal relationship and incidence of the LBP among healthcare professionals.

CONCLUSION

The current study concluded that LBP prevalence among the healthcare professionals of DHQ Haripur and Abbottabad was very high. Technicians were the healthcare professionals with the highest prevalence rate of LBP. Most healthcare professionals experienced LBP in their first ten years of the job. Lifting heavy weights with forward bending was the most common working posture present in the participants.

REFERENCES

1. Koes B, Van Tulder M, Thomas S. Diagnosis and treatment of low back pain. *Bmj*. 2006; 332(7555):1430-4.
2. Vinstrup J, Jakobsen MD, Andersen LL. Perceived stress and low-back pain among healthcare workers: a multi-center prospective cohort study. *Frontiers in public health*. 2020;8:297.

3. Jacquier-Bret J, Gorce P. Prevalence of Body Area Work-Related Musculoskeletal Disorders among Healthcare Professionals: A Systematic Review. *International Journal of Environmental Research and Public Health*. 2023;20(1):841.
4. Al Amer HS. Low back pain prevalence and risk factors among health workers in Saudi Arabia: A systematic review and meta-analysis. *Journal of occupational health*. 2020;62(1):12155.
5. Sikiru L, Hanifa S. Prevalence and risk factors of low back pain among nurses in a typical Nigerian hospital. *African health sciences*. 2010;10(1):26.
6. Rahman HA, Abdul-Mumin K, Naing L. Psychosocial work stressors, work fatigue, and musculoskeletal disorders: comparison between emergency and critical care nurses in Brunei Public Hospitals. *Asian nursing research*. 2017;11(1):13-8.
7. June KJ, Cho SH. Low back pain and work-related factors among nurses in intensive care units. *Journal of clinical nursing*. 2011;20(3-4):479-87.
8. Tang L, Wang G, Zhang W, Zhou J. The prevalence of MSDs and the associated risk factors in nurses of China. *International Journal of Industrial Ergonomics*. 2022;87:103239.
9. Karahan A, Kav S, Abbasoglu A, Dogan N. Low back pain: prevalence and associated risk factors among hospital staff. *Journal of advanced nursing*. 2009;65(3):516-24.
10. Kromark K, Dulon M, Beck B-B, Nienhaus A. Back disorders and lumbar load in nursing staff in geriatric care: a comparison of home-based care and nursing homes. *Journal of Occupational Medicine and Toxicology*. 2009;4(1):33.
11. Omokhodion F, Umar U, Ogunnowo B. Prevalence of low back pain among staff in a rural hospital in Nigeria. *Occupational Medicine*. 2000;50(2):107-10.
12. Bejia I, Younes M, Jamila HB, Khalfallah T, Salem KB, Touzi M, et al. Prevalence and

- factors associated to low back pain among hospital staff. *Joint Bone Spine*. 2005;72(3):254-9.
13. Ando Y, Saka H, Ando M, Sawa T, Muro K, Ueoka H, et al. Polymorphisms of UDP-glucuronosyltransferase gene and irinotecan toxicity: a pharmacogenetic analysis. *Cancer Research*. 2000;60(24):6921-6.
14. Anyfantis I, Biska A. Musculoskeletal disorders among Greek physiotherapists: Traditional and emerging risk factors. *Safety and health at work*. 2018;9(3):314-8.
15. Smart KJ. Prevalence, Severity and Career Specific Characteristics Associated with Low Back Pain in Rehabilitation Staff: Florida Gulf Coast University; 2018.
16. Olivier I, Kruger W, de la Querra A, Joubert G. Low back pain resulting in temporary incapacity leave among South African nurses in the public health sector. *Occupational Health Southern Africa*. 2018;24(1):9-12.
17. Shaw W. 1622b Low back pain in health care workers: a growing focus on secondary prevention. *BMJ Publishing Group Ltd*; 2018.
18. Karahan A, Kav S, Abbasoglu A, Dogan N. Low back pain: prevalence and associated risk factors among hospital staff. *Journal of advanced nursing*. 2009;65(3):516-24.
19. Bin Homaid M, Abdelmoety D, Alshareef W, Alghamdi A, Alhozali F, Alfahmi N, et al. Prevalence and risk factors of low back pain among operation room staff at a Tertiary Care Center, Makkah, Saudi Arabia: a cross-sectional study. *Annals of occupational and environmental medicine*. 2016;28(1):1-8.
20. Lin P-H, Tsai Y-A, Chen W-C, Huang S-F. Prevalence, characteristics, and work-related risk factors of low back pain among hospital nurses in Taiwan: a cross-sectional survey. *International journal of occupational medicine and environmental health*. 2012;25(1):41-50.
21. Jellad A, Lajili H, Boudokhane S, Migaou H, Maatallah S, Frih ZBS. Musculoskeletal disorders among Tunisian hospital staff: Prevalence and risk factors. *The Egyptian Rheumatologist*. 2013;35(2):59-63.
22. Szeto GP, Ho P, Ting AC, Poon JT, Cheng SW, Tsang RC. Work-related musculoskeletal symptoms in surgeons. *Journal of occupational rehabilitation*. 2009;19(2):175-84.

Table 1: Demographics of participants and characteristics of LBP

		Frequency	Percentage
Gender	Male	194	58.8
	Female	136	41.2
Prevalence of LBP	Yes	197	59.7
	No	133	40.3
Profession	Technician	111	33.4
	Nurses	103	31.2
	Physician	80	24.2
	Physical Therapist	12	3.6
	Other	24	7.3
Occurrence of pain	Before starting the job	50	15.2
	After starting the job	172	52.1
Severity of LBP	No pain	108	32.1
	Moderate	197	59.7
	Severe	40	12.1
Medical care taken	Very severe	06	1.8
	Yes	155	47
Smoking	No	175	53
	Yes	64	19.4
Participation in sports activities	No	266	80.6
	Yes	211	63.9
Standing per day in hours	No	119	36.1
	1-4 hours	77	23.3
	5-8 hours	215	65.2
Stress level	Over 8 hours	38	11.5
	Mild	163	49.4
	Moderate	141	42.7
	Severe	22	6.7
History of pain	Very severe	04	1.2
	One year	128	38.8
	Two years	61	18.5
	Three years	26	7.9
	Four years	05	1.5
Aggravating factors	Above four	22	6.7
	No pain	88	26.7
	Prolong sitting	65	19.7
	Prolong standing	71	21.5
	Weight lifting	87	26.4
	Others	21	6.4
	No factors	86	26.1

Table 2: Health care professional working posture in hospital

		Frequency	Percentage
Lifting heavy objects	Yes	133	40.3
	No	197	59.7
Torso rotating with weight lifting	Yes	94	28.5
	No	236	71.5
Bending with weight lifting	Yes	136	41.2
	No	194	58.2
Patient transferring to bed/chair	Yes	98	29.7
	No	232	70.3
Ambulating the patient	Yes	67	20.3

Table 3: Occurrence of LBP in different Professionals

Profession	Occurrence of LBP			No Pain n (%)	Total	Association of LBP prevalence with Job joining <i>P</i> = < 0.05
	Prevalence of LBP n (%)	Time of pain occurrence				
		Before Job n (%)	After Job n (%)			
Nurse	69 (66.99)	10 (14.49)	59 (85.51)	34 (30.01)	103	<i>P</i> = < 0.05
Technician	64 (57.66)	16 (25)	48 (75)	47 (42.34)	111	<i>P</i> = < 0.05
Physician	63 (78.75)	21 (33.33)	42 (66.67)	17 (21.25)	80	<i>P</i> = < 0.05
Physical Therapist	06 (50)	01 (16.67)	05 (83.33)	06 (50)	12	<i>P</i> = < 0.05
Surgeon	20 (83.33)	2 (10)	18 (90)	04 (16.67)	24	<i>P</i> = < 0.05
Total	222 (67.27)	50 (22.52)	172 (77.48)	108 (32.73)	330	<i>P</i> = < 0.05