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Prevalence of Low Back Pain and Related Disability among Nurses of Private and Government Hospitals of Patiala District: A Cross-sectional Study**Jaspreet Singh¹, Keerthi Rao², Ruchi Kukkar³, Mridul Jyotsna⁴, Jagmeet Kaur⁵, Jayaraman G⁶**^{1,3,4}Assistant Professor, Department of Physiotherapy, UIAHS, Chandigarh University, Mohali, Punjab, India.²Professor, Department of Physiotherapy, UIAHS, Chandigarh University, Mohali, Punjab, India.⁵Assistant Professor, Department of Physiotherapy, RIMT University, Mandi Gobindgarh, Punjab, India.⁶Assistant Professor, Department of Physiotherapy, Punjabi University Patiala, Punjab, India.**Email: jaspreetghuman786@gmail.com****Article Information**

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Keywords*Low Back Pain,
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Nursing staff, Ergonomics.***ABSTRACT**

Low back pain is a widespread issue among nurses, driven by physically demanding tasks and challenging work conditions. Given the large number of nursing professionals in India, addressing these risk factors through better support systems, training and ergonomic practices is essential to safeguard their health and enhance their ability to deliver quality care. This study followed an observational cross-sectional design and included a total of 200 nurses, aged between 21 and 45 years comprising 100 nurses from private hospitals and 100 from government hospitals in the Patiala district. The use of the Modified Oswestry Low Back Pain Disability Questionnaire provided a reliable and standardized method for assessing the functional impact of low back pain, ensuring accurate evaluation of disability levels among the nurses studied. According to past experience and recent reports, low back pain was more prevalent among nurses in private hospitals (55%) compared to those in government hospitals (44%). However, when looking at cases reported within the last three months, a slightly higher percentage of government hospital nurses (25%) reported low back pain than those in private hospitals (23%). The mean disability score was higher among private hospital nurses at 10.48 ± 0.10 , while government hospital nurses had a lower average score of 8.98 ± 0.10 . Low back pain is a common issue among nurses across both private and government hospitals, driven by multiple work-related factors. Promoting early awareness, ergonomic training and collaborative support along with preventive measures like exercise and proper work schedules can effectively reduce its occurrence..

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INTRODUCTION:

Nursing is recognized as the largest profession within the healthcare sector and is predominantly comprised of women²¹. As per the Indian Nursing Council, India has more than 3.3 million registered nursing professionals¹⁴. Nurses make up approximately one-third of a hospital's workforce and face a significant risk of developing work-related musculoskeletal disorders. Among adults, occupational low back pain stands out as the most

prevalent health issue¹⁹. Researchers estimate that between 60% and 80% of individuals worldwide will experience low back pain at some point in their lives^[20]. Many studies have highlighted that female nurses make up the majority of the workforce, emphasizing the importance of involving more male nurses in tasks and procedures that demand greater physical strength and endurance. This could help alleviate the musculoskeletal issues commonly experienced by female nurses²³. Nurses often prefer employment in government hospitals, as these positions typically offer better salaries and more comprehensive benefits. After gaining experience in private healthcare settings, many nurses seek to transition to government roles. A contributing factor to the higher incidence of low back pain among nurses in private hospitals may be the additional workload they frequently take on in these settings³.

Although the precise cause of back pain remains unclear, there is substantial evidence suggesting that extended periods of heavy workload can worsen existing conditions. Work-related musculoskeletal disorders among nurses are often linked to factors such as lifting loads beyond their physical capacity, handling patients without support, maintaining improper posture, staff shortages, extended work hours and frequent night shifts¹⁰. According to a research study conducted among nurses at a Medical College in Bharatpur, prolonged standing is also a contributing factor to increased low back pain. This is because extended periods of standing place significant mechanical stress and compressive force on the lower lumbar discs, particularly at the L4-L5 and L5-S1 levels⁵. Several contributing factors are associated with back injuries, including tasks that place stress on the joints, excessive trunk flexion, repeated heavy lifting, prolonged awkward or fixed postures as well as movements like twisting and bending. Intense physical labor and psychological stress also play a significant role⁸.

Occupational Disability among Nurses

Low back pain is widely recognized as the leading cause of functional disability in both developed and developing nations¹⁷. Nurses in both private and government hospitals are exposed to various ergonomics-related risks and hazards. To minimize strain on the lower back, it is essential to enhance ergonomic practices and improve patient handling techniques¹⁶. Nurses frequently need to lift and move patients under challenging conditions, especially in developing countries where lifting equipment is often unavailable or impractical, which can worsen their risk of injury and disability¹¹. Improving ergonomic practices through the use of movable beds, elevators and sensor technologies

to minimize constant monitoring is necessary to help decrease stress on the lower back⁹. Work-related musculoskeletal disorders affect quality of life by leading to absenteeism, increased work limitations, job transfers or even disability²². Staffing patterns are crucial not only for ensuring high-quality patient care but also for reducing work-related stress and preventing burnout among nurses in both public and private healthcare settings⁷. Employee job satisfaction is essential for maintaining a good health-related quality of life. Key factors such as income, autonomy and professional status are directly linked to overall quality of life.

Additionally, there is a connection between musculoskeletal disorders and quality of life with nurses experiencing fewer such health issues generally reporting a higher quality of life¹⁵. A review of multiple articles on nursing indicates that the incidence of work-related musculoskeletal disorders can be lowered by improving nurses' quality of life. This can be achieved by ensuring adequate staffing based on hospital needs, creating a supportive and safe working environment and boosting job satisfaction levels. The high rate of musculoskeletal disorders among nurses is largely attributed to limited awareness of their causes and a lack of regular physical activity¹⁰. Several strategies can help reduce work-related musculoskeletal disorders, including establishing proper work-rest cycles, incorporating stretching routines, engaging in regular exercises to strengthen back muscles, lowering job demands and reorganizing tasks to minimize physical strain². Physical exercise is also a key component and is considered one of the most effective strategies for both the prevention and rehabilitation of lower back pain⁴. In addition to these strategies, one of the most crucial approaches is providing training in manual patient handling. This training should cover key aspects such as maintaining proper posture when lifting or moving heavy patients and applying ergonomic principles. Educating nurses on these practices can significantly enhance their ergonomic safety and help prevent lower back pain⁶.

METHODOLOGY:

This research was designed as an observational cross-sectional study, involving a total of 200 nurses aged between 21 and 45 years. Data was collected from four hospitals located in the Patiala district. The sample included 50 nurses each from two private hospitals (Columbia Asia Hospital and Amar Hospital) and two government hospitals (Rajindra Hospital and Mata Kaushalya Hospital). Ethical approval for the study was obtained from the Departmental Committee of the Physiotherapy Department, Punjabi University, Patiala (Ref. No.

PT/MPT/2017-19-15). To assess disability related to low back pain, the Modified Oswestry Low Back Pain Disability Questionnaire was employed, which is widely regarded as the gold standard tool for evaluating functional outcomes in individuals with low back pain.

RESULTS AND DISCUSSION:

A total of 200 female nurses participated in the study, with 100 from private hospitals and 100 from government hospitals. The average age of nurses in private hospitals was 26.76 ± 2.78 years, while those in government hospitals had a mean age of 24.94 ± 4.28 years. The average Body Mass Index (BMI) was slightly higher among private hospital nurses at 21.87 ± 1.46 , compared to 21.2 ± 1.81 in government hospital nurses. Based on prior experience and current reports of low back pain, a higher prevalence was observed among private hospital nurses (55%) than among their counterparts in government hospitals (44%) (Table 1). However, when considering the history of low back pain over the past three months, a slightly higher percentage was reported by nurses in government hospitals (25%) compared to those in private hospitals (23%). Based on the past history of low back pain, nurses working in private hospitals reported the highest occurrence of symptoms lasting less than one month (32%), followed by pain lasting 1–6 months (12%), 7–12 months (7%) and the lowest incidence reported for pain persisting longer than one year (4%). In contrast, among nurses from government hospitals, the highest percentage also reported symptoms within the past month (20%), followed by 1–6 months (12%), more than one year (9%), and the lowest prevalence was for pain lasting 7–12 months (3%) (Figure 1). Evidence from the Thai Nurse Cohort Study, which included 17,686 registered nurses, revealed that the overall 12-month prevalence of musculoskeletal disorders was 47.8%¹⁸.

Nursing is one of the largest healthcare professions. A descriptive-analytical study involving 940 staff nurses found that low back pain was the most common condition, affecting 60.9% of the participants^[13]. Low back pain among nurses is often caused by factors such as lifting heavy loads beyond their capacity, moving patients without help, maintaining poor posture, insufficient staffing, extended working hours, and night shifts. Additionally, prolonged standing can worsen low back pain. Various occupational risk factors contribute to back injuries, including tasks that involve joint loading, excessive trunk bending, frequent heavy lifting, awkward or static postures, twisting, bending, strenuous physical labor and psychological stress. Low back pain is a leading

cause of functional disability in nurses, but implementing ergonomic practices can help prevent it. It was found that 6% of nurses from both private and government hospitals reported low back pain related to a traumatic history. Regarding the intensity of low back pain among nurses in private hospitals, the majority experienced mild pain (41%), followed by moderate pain (12%), with severe pain being the least common (2%). In government hospitals, most nurses reported mild pain (31%), while moderate pain was less common (13%). In terms of frequency, nurses from private hospitals mostly experienced low back pain 1–2 days per week (44%), followed by 3–5 days per week (8%), with daily pain reported by the fewest (3%). Among government hospital nurses, the most common frequency was also 1–2 days per week (31%), followed by 3–5 days per week (11%) and daily pain was least reported (2%).

Regarding the location of low back pain, most nurses in private hospitals reported pain in the lower back area above the buttocks (40%), compared to 15% who experienced pain radiating to the lower limbs. Similarly, among nurses in government hospitals, the majority had pain localized to the lower back above the buttocks (27%) while 17% reported pain extending to the lower limbs (Table 2). Several postural factors can either worsen or alleviate low back pain. Among nurses in private hospitals, standing was identified as the most common activity that aggravated pain (27%), followed by bending (24%), sitting (3%) and walking was the least common aggravating factor (1%). Similarly, for nurses in government hospitals, standing (22%) was the leading cause of increased pain, followed by bending (17%), sitting (4%), with walking again being the least common factor (1%) (Figure 2). According to Manandhar and Subedi, a majority of nurses (75.47%) developed low back pain after standing for 6-8 hours. Regarding the timing of pain occurrence, 32.08% of nurses reported experiencing pain at night, 30.19% in the afternoon, 20.75% in the evening, and 16.98% in the morning^[12]. Regarding postural factors that relieve low back pain, the most frequently reported relief method among nurses in private hospitals was lying down (50%), while sitting was the least common relief position (5%). Similarly, for nurses in government hospitals, lying down was the most common way to alleviate pain (36%), with sitting being the least common (8%).

It was observed that a higher percentage of nurses from private hospitals (55%) sought treatment for low back pain compared to those from government hospitals (40%). Among nurses in private hospitals, the most common treatment was medication (29%), followed by physiotherapy (10%), while 16%

received both types of treatment. In government hospitals, medication was also the most frequently used treatment (16%), with physiotherapy utilized by 10%, and 14% of nurses received both forms of treatment.

Factors associated with low back pain among Nursing staff:

The impact of clinical practice on low back pain was found to be greater among nurses in private hospitals (48%) compared to those in government hospitals (38%). Among private hospital nurses, the majority experienced a mild effect (40%), followed by a moderate effect (8%). Similarly, in government hospitals, most nurses reported a mild effect (34%), with fewer experiencing a moderate effect (4%). Several occupational risk factors contribute to the worsening of low back pain among nurses in both private and government hospitals. Among private hospital nurses, the most common risk factor was working while physically fatigued (47%), followed by bending the back awkwardly (44%), maintaining prolonged positions such as standing or sitting (37%), lifting or transferring patients (28%), working with limited staff on duty (26%), overtime and irregular shifts (26%), assisting patients during gait activities (23%), performing repetitive tasks (19%), inadequate injury prevention training (14%), insufficient rest breaks during the day (12%) and the least common risk factor was administering medication (5%). In government hospitals, the

leading risk factor was also working when physically fatigued (35%), followed by awkward back bending (33%), prolonged postures (31%), insufficient rest breaks (17%), overtime and irregular shifts (16%), assisting with patient gait (15%), repetitive tasks (14%), lifting or transferring patients (10%), limited staffing (7%), medication administration (7%) and the least frequent risk factor was lack of adequate injury prevention training (6%) (Table 3).

Disability experienced by Nursing staff due to low back pain:

The average disability score among nurses in private hospitals was recorded as 10.48 ± 0.10 , while for nurses in government hospitals it was 8.98 ± 0.10 (Figure 3). Additionally, the cross-sectional survey revealed that nurses generally had limited knowledge of ergonomics ^[1]. Nurses in both private and government hospitals frequently need to lift and move patients under challenging conditions, especially in developing countries where lifting aids are often lacking. To alleviate the strain on the lower back, there is a need for equipment such as adjustable beds, elevators and the use of sensors to minimize the necessity for constant monitoring. Nurses in these settings are exposed to various ergonomic hazards and risk factors, making it essential to improve ergonomic practices and patient handling techniques to reduce lower back stress.

Table 1: Distribution of Nursing staff according to present history of low back pain

Present history of low back pain	Private Frequency (N = 100)	Government Frequency (N = 100)	Total Frequency (N) (%)
YES	55	44	99 (49.5 %)
NO	45	56	101 (50.5 %)
Total	100	100	200 (100 %)

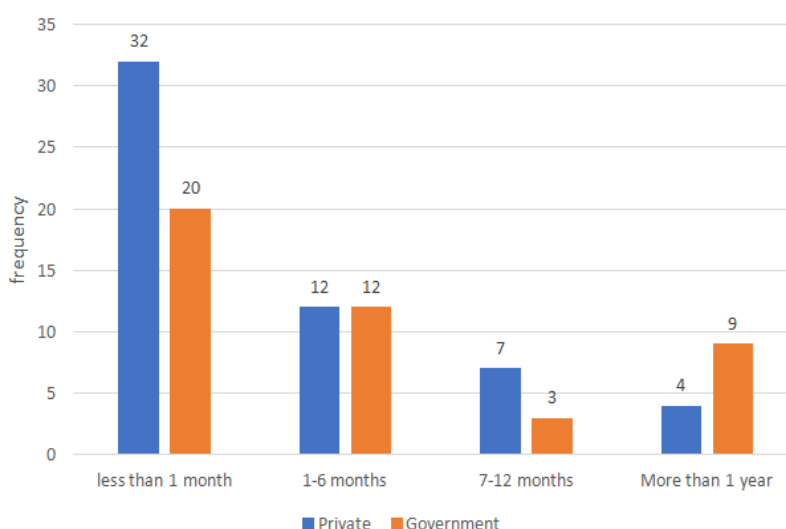


Figure 1: Distribution of Nursing staff according to past history of low back pain

Table 2: Distribution of Nursing staff according to location of low back pain

Location	Private	Government	Total
	Frequency(N = 100)	Frequency(N = 100)	Frequency(N) (%)
1. Lower back (above buttocks)	40	27	67 (33.5 %)
2. Radiating to lower limb	15	17	32 (16 %)
3. Not applicable	45	56	101 (50.5 %)
Total	100	100	200 (100 %)

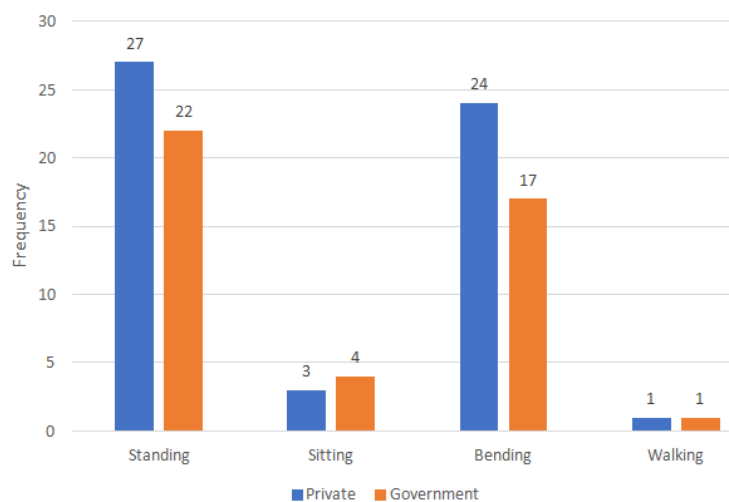


Figure 2: Distribution of Nursing staff according to postural aggravating factors of low back pain

Table 3: Distribution of Nursing staff according to Job risk factors of low back pain

Job risk factors	Private	Government	Total
	Frequency (N = 100)	Frequency (N = 100)	Frequency(N) (%)
1. Giving Medication	5	7	12 (6 %)
2. Maintaining a position for a prolonged period of time. E.g. standing or sitting	37	31	68 (34 %)
3. Performing repetitive tasks	19	14	33 (16.5 %)
4. Working when physically fatigued	47	35	82 (41 %)
5. Working a shift with few staff on duty	26	7	33 (16.5 %)
6. Bending or twisting your back in an awkward way	44	33	77 (38.5 %)
7. Lifting or transferring dependant patients	28	10	38 (19 %)
8. Not enough rest breaks during the day	12	17	29 (14.5 %)
9. Assisting patient during gait activities	23	15	38 (19 %)
10. Work schedule (e.g. overtime, on-call, irregular shifts)	26	16	42 (21 %)
11. Inadequate training in injury prevention	14	6	20 (10 %)
12. Not applicable	45	56	101 (50.5 %)
Total	100	100	200 (100 %)

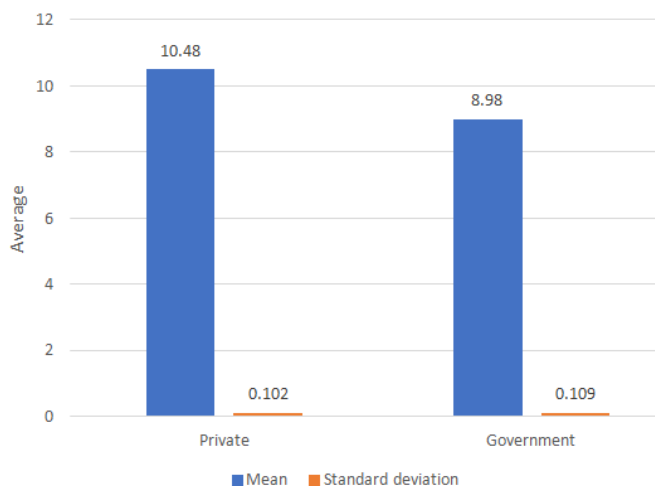


Figure 3: Mean and standard deviation scores of disability among Nursing staff

CONCLUSION:

The findings highlight a significant prevalence of low back pain among nurses in both private and government hospitals, with various occupational and ergonomic factors contributing to the issue. Early awareness, proper training and support from male colleagues for physically demanding tasks can help reduce the burden on female nurses. Improving ergonomic practices, implementing preventive strategies such as regular exercise, proper work-rest cycles, and task reorganization are crucial steps. With timely intervention and a proactive approach by both nurses and hospital management, the incidence of occupational low back pain can be significantly reduced.

CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

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