

PREVALENCE OF LOW BACK PAIN AMONG NURSES WORKING IN THE CRITICAL CARE UNIT

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DOI: <https://doi.org/10.5281/zenodo.17015885>

Keywords

Low Back Pain, Nurses, ICU/CCU, Tertiary Care Hospital

Article History

Received on 30 May 2025

Accepted on 05 August 2025

Published on 30 August 2025

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Abstract

Background: Low back pain (LBP) is one of the most common occupational health problems among healthcare professionals, particularly nurses, due to the physically demanding nature of their work. It is defined as discomfort localized between the gluteal folds and costal boundaries, with or without leg radiation. Nurses working in intensive care units (ICUs) and coronary care units (CCUs) are at higher risk due to prolonged standing, patient handling, and awkward postures.

Aim: The purpose of this study was to assess the prevalence of low back pain among nurses working in the ICU/CCU of a tertiary care hospital.

Methodology: A descriptive cross-sectional research design was employed using purposive sampling. The study population consisted of staff nurses working in the ICU/CCU, resulting in a total sample size of 204. Data were collected using a structured questionnaire focusing on the presence and severity of low back pain. Descriptive statistics were used to analyze the findings.

Results: The study revealed a high prevalence of LBP among the participants. Out of 204 nurses, 102 (50.0%) reported a high prevalence of low back pain, 45 (22.1%) experienced a moderate prevalence, while 57 (27.9%) reported a low prevalence. The findings suggest that nearly half of the nurses are significantly affected by LBP, which may compromise their work efficiency and patient care outcomes.

Conclusion: The study concludes that low back pain is highly prevalent among ICU/CCU nurses. Preventive measures, ergonomic training, and workplace modifications are essential to reduce the occupational risk and improve nurses' health and productivity.

INTRODUCTION

One of the most common and severe health conditions is pain in the back. It can affect people of any age group and usually requires professional medical care. Furthermore, it can restrict a

person's capability to perform routine activities[1]. The back is supported and protected by the spinal cord with ligaments, discs, and muscles, and it contains bones. Back pain can occur due to injury

to any of them [2]. The term low back pain (LBP) refers to the ache or discomfort in the spinal area which is localized between the gluteal folds and the costal margins, with possible radiation to the legs [3]. It usually occurs due to a problem with the musculoskeletal system, but it can also result from inflammation, degeneration, or injury[4]. LBP is a serious problem because it significantly reduces quality of life. It is also a common issue for most healthcare workers. For instance, because of their heavy workload, nurses frequently experience LBP[5]. Nurses working within intensive care units (ICUs) endure constant exposure to heightened levels of occupational stress, which may trigger low back pain[6]. The long shifts of caring for critically ill patients, which require nurses to remain in awkward positions for long periods while lifting and transferring patients to and from beds and to other chairs, add to the physical workload of ICU nurses[7]. In addition, low staffing numbers and long shifts are also organizational reasons which may increase the likelihood of suffering from low back pain [8, 9]. Disability due to pain in the lower back region is a common health challenge globally with the annual prevalence ranging from 15% to 45% and a lifetime prevalence of 70% to 85% [10]. Nurses working in the Intensive Care Units have the highest rates of low back pain and are the most vulnerable in the nursing profession[11]. There is also variation in back pain prevalence among different regions, such as in Africa where the prevalence ranged from 44.1% to 82.7% and in Ethiopia where it was between 45.8% to 70.9% (Sultana et al., 2023). In Saudi Arabia, 18.8% of the population suffers from low back pain, but ICU nurses from China have reported prevalence rates as high as 80.1% [12]. 76.0% of nurses working in the ICU reported low back pain in 2019 [13]. The issue of low back pain is particularly common among nurses working in Intensive Care Units. The nature of the nursing profession, with its demanding physical requirements, long shifts, and inadequate ergonomics, makes it extremely challenging to render the best possible patient care. Many of the nurses also complain of difficulty in standing for prolonged durations to perform essential tasks

such as writing patient notes or giving medications, and these routine tasks add to their pain[13, 14]. The primary focus of this study is to determine the prevalence of low back pain among intensive care and critical care unit nurses. As a part of this study, the participants will be evaluated on how well they focus on their duties amidst pain. The study outcomes will facilitate modification of nursing practices and policies in the hospital, thereby increasing satisfaction among nurses and ensuring improved care for patients through efficient occupational health management. Healthcare professionals like nurses tend to suffer from low back pain (LBP) more than many other professionals, and in particular, nurses are highly susceptible to this ailment. Nursing work, particularly in the intensive care units, is physically demanding and increases the probability of low back pain[15]. This condition is not just common but also highly impactful and can lead to reduced productivity and a reduced quality of life among afflicted individuals[16]. There is literature on the prevalence and causes of low back pain among ICU nurses. [17] conducted a study in Ethiopia which reported a staggering 76% low back pain prevalence among ICU nurses. The study pointed out a number of contributing factors, which comprised being a woman, lack of ergonomic/friendly patient handling equipment, inadequate critical care training, low levels of physical exercises, and high levels of occupational stress. In the same line, [13] reported a 76% prevalence of low back pain among ICU nurses in China and found it to be significantly associated with patient handling, heavy lifting, and work-related stress. According to a study conducted by [18], 88.2% of ICU nurses in Turkey reported experiencing lower back pain. The study noted that certain nursing activities, including bed making and assisting patients to move, contributed the most to lower back pain. The authors reported that the most severe pain was reported by nurses in the emergency medicine and general surgery ICU's. [12, 19] reported that ICU nurses in Saudi Arabia, in general, face difficulties with lower back pain. A substantial number of nurses also reported problems with prolonged

standing, disrupted sleep routines, and reduced physical activity, reflecting a downward physical spiral. Years of service, gender, designation, and several other factors appeared important but were not significant in their study. A more recent study by Lee and Song in 2023 in China reported that 69% of ICU nurses suffer from low back pain. Moreover, more than 65% of them reported persistent pain for more than three months. This study noted some important risk factors including but not limited to heavy lifting, assisting patients, and wearing poorly designed shoes. The authors suggested that strategic organizational and national policy shifts are warranted to effectively curb the low back pain issue ICU nurses are facing[16]. ICU nurses experience low back pain at alarming rates, yet no effective approaches to help prevent or manage the condition exist. Improving ergonomic practices, providing patient handling assistive devices, altering the work environment to reduce stress, and implementing more supportive work policies could help mitigate the risk of low back pain [20]. Moreover, we need to focus more on the pain's intensity, type, and location, along with treatment and nursing care, to truly understand the implications of this condition.

METHODS

A descriptive cross-sectional research study was performed to determine the prevalence of low back pain among nurses working in the Intensive Care Units (ICU) and Critical Care Units (CCU) of a Tertiary Care Hospital in Lahore, Pakistan. The study participants were nurses suffering from low back pain and working in the ICU and CCU of the hospital. Participants were selected from the total population of nurses using purposive sampling. The study is projected to take a total of six months to complete, from data collection, analysis, to report writing. The sample size was calculated to be 204 participants using Slovin's formula, estimating a population size of 500, a margin of error of 8%, and a confidence interval of 95%. Eligibility criteria included the nurses having an employed position in the critical care units and a documented case of low back pain.

The inclusion criteria specified that participants be veterans of the ICU or CCU for a minimum of one year. The research participants were restricted to registered nurses; head nurses, student nurses, and interns were excluded. An adapted version of the questionnaire aimed at evaluating the prevalence of low back pain among nursing staff in the intensive care and coronary care units will be utilized as the data collection tool. The data collection will be conducted at three tertiary care hospitals in Lahore. Version 21 of the Statistical Package for the Social Sciences (SPSS) software was used for data analysis. The descriptive statistics applied to analyze the demographic data and to evaluate the prevalence of low back pain in the nursing staff.

RESULTS

The demographic information of 204 ICU and CCU nurses that participated in the study is presented in Table 1. The age distribution shows that the most common age group was 26-30 years (56.4%), reflecting a younger workforce. This was followed by the 31-35 years (24.0%) and 36-40 years (19.6%) age groups. The nursing profession continues to be a female-dominated occupation as 92.2% of respondents were female and 7.8% were male. The respondents who were single accounted for 73.5% of the sample showing that professionally active, younger women in nursing are not married yet, and along with 36.5% married respondents, contribute to the demanding lifestyle of ICU nursing. When the working experience was considered, 66.7% of participants had 6-10 years of experience, while 33.3% had 1-5 years, suggesting that the sample was moderately experienced. Post-RN Diploma holders made the largest group with 44.6%, followed by Diploma in nursing with 28.9% and BSN (G) holders with 26.5% showing a diverse level of education. Lastly, it was found that 58.8% of survey participants were employed in Intensive Care Units while 41.2% were in Coronary Care Units which are two of the most challenging areas in critical care.

Table 1: Demographic Profile of Participants (N = 204)

Variable	Category	Frequency (%)
Age	26–30 years	115 (56.4%)
	31–35 years	49 (24.0%)
	36–40 years	40 (19.6%)
Gender	Female	188 (92.2%)
	Male	16 (7.8%)
Marital Status	Single	150 (73.5%)
	Married	54 (26.5%)
Experience	1–5 years	68 (33.3%)
	6–10 years	136 (66.7%)
Qualification	Diploma in Nursing	59 (28.9%)
	Post-RN	91 (44.6%)
	BSN (Generic)	54 (26.5%)
Department	ICU	120 (58.8%)
	CCU	84 (41.2%)

Table 2 showcases the extent and specifics of low back pain (LBP) encountered by ICU nurses. A substantial part of the sample, 76.0%, acknowledged suffering from LBP within the last year, highlighting the prevalence of musculoskeletal concerns in critical care nursing. Nearly all (82.4%) of the respondents experienced some form of extremity pain which suggests either nerve damage or long-term pain. Similarly, when asked to estimate the LBP's intensity, 52.9%

reported it as moderate, 27.0% as severe, while only 20.1% described it as mild pain. In terms of prevalence, 54.4% reported LBP on 3 to 5 days a week, 18.1% reported it daily, while 27.5% infrequently reported it (<3 days/week). These findings show that nurses not only encounter LBP but also experience it as a long-lasting and debilitating condition.

Table 2: Low Back Pain Prevalence and Characteristics

Question	Response	Frequency (%)
Had low back pain in the last 12 months?	Yes	155 (76.0%)
	No	49 (24.0%)
Pain radiated to extremities?	Yes	168 (82.4%)
	No	36 (17.6%)
Rate your average pain intensity	Mild	41 (20.1%)
	Moderate	108 (52.9%)
	Severe	55 (27.0%)
How often do you feel LBP?	Infrequent (<3 days/week)	56 (27.5%)
	Frequent (3–5 days/week)	111 (54.4%)
	Daily (6–7 days/week)	37 (18.1%)

Table 3 investigates the impact of LBP on the behavior and career-related choices of nurses. Regarding the use of medication, 70.6% of the participants admitted to using medication to manage their LBP, indicating a high reliance on

medications. Among this group, 52.5% were informally categorized as using pain medications and 47.5% were categorized as using muscle relaxants, which suggests varied degrees of severity and management. A substantial number of

respondents, 68.1% and 66.7% from two repeated questions, reported they were contemplating changing their job because of LBP. This highlights LBP's potential bio psychological and socio occupational impact. In terms of overall prevalence rates, 50% of participants were

classified as high prevalence, truly a worrying level of symptom severity. 22.1% moderate, and 27.9% low prevalence, which despite remaining functional, is still a significant portion of their activities of daily living.

Table 3: Medication Use and Occupational Impact of Low Back Pain

Question	Response	Frequency (%)
Used medication for LBP?	Yes	144 (70.6%)
	No	60 (29.4%)
Type of medication used	Painkiller	107 (52.5%)
	Muscle relaxant	97 (47.5%)
Thought about changing jobs due to LBP (Q1)	Yes	139 (68.1%)
	No	65 (31.9%)
Thought about changing job due to LBP (Q2)	Yes	136 (66.7%)
	No	68 (33.3%)
Overall prevalence of LBP	High	102 (50.0%)
	Moderate	45 (22.1%)
	Low	57 (27.9%)

DISCUSSION

The focus of this study was to assess the prevalence and occupational consequences of low back pain (LBP) among nursing professionals in the Intensive Care Unit (ICU) and Cardiac Care Unit (CCU) departments. The results indicated a substantial burden of musculoskeletal discomfort. Participating nursing professionals indicated a three-quarters prevalence in reporting LBP within the previous 12 months. This is in alignment with the existing body of nursing literature, which considers nursing, and more specifically, critical care nursing, as a highly problematic occupational group plagued by work-related musculoskeletal disorders. [11]. The sample population was predominantly female (92.2%), aged 26–30 years (56.4%), and mostly unmarried (73.5%). This population demographic group reflects a young and active nursing workforce. One would expect this demographic to experience a higher level of resilience. [12]. The lower back pain incidence in this age group suggests that there are significant physical and ergonomic strains in the ICU and CCU workplace environments. Most nurses reported symptoms of radiating pain (82.4%), indicating the likelihood of some form of nerve

damage or repetitive stress. Furthermore, over half of the respondents (52.9%) rated their pain as moderately intense while 27% rated it as severe. [13,14]. There were also 54.4% of nurses who indicated to experience pain frequently (3-5 days a week) and 18.1% reported daily pain, indicating widespread and persistent LBP. These findings support the findings from other works, which highlight the enduring consequences of standing for long periods of time, patient lifting, and persistent awkward postures contributing to LBP among nurses. A large proportion of nurses (70.6%) reported LBP discomfort, and many relied on painkillers and muscle relaxants for treatment. This demonstrates the level of symptoms faced and indicates limited resources to physiotherapy or work post ergonomic evaluations. [18]. More than two-thirds of the participants, 68.1%, reported having thoughts to change their work because of the pain. This indicates the impact of chronic pain on a person's work and raises the challenge of retaining nurses who work in ICU/CCU units which are already understaffed. Earlier research connecting work-related discontent and burnout further supports these findings. Fifty percent of the nurses fell

within the high prevalence range for LBP. [20]. Given the functional and psychological ramifications coupled with LBP, there is a pressing need to implement LBP preventative strategies, particularly within healthcare. Offering regular ergonomic evaluations and counseling, and implementing staff rotation and targeted physical training, would lower LBP prevalence and enhance occupational satisfaction and retention.

CONCLUSION

The present study stated that most participants reported high prevalence rates of low back pain among nurses working in ICU and CCU in a tertiary care hospital. To aid in the recovery of nurses suffering from low back pain, sick leave should be provided. To retain staff in a particular ward, management should design an optimal timetable that balances convenience when scheduling shifts. To optimally manage low back pain, educational training programs are urgently needed.

RECOMMENDATIONS

1. **Ergonomic Training Programs:** Provide regular workshops on body mechanics, safe lifting techniques, and proper posture to reduce musculoskeletal strain during patient care.
2. **Provision of Assistive Devices:** Ensure the availability of lifting aids, transfer belts, and adjustable beds in ICU/CCU to minimize manual handling of patients.
3. **Workplace Modifications:** Redesign nursing workstations and patient-care areas ergonomically to support safe working postures and reduce repetitive strain.
4. **Staff Rotation and Breaks:** Implement duty rotation and scheduled rest breaks to prevent prolonged standing, repetitive bending, and continuous physical strain.
5. **Physical Fitness and Exercise Programs:** Encourage nurses to engage in stretching exercises, strengthening activities, and wellness programs to improve musculoskeletal health.

6. **Regular Health Screening:** Conduct periodic medical check-ups to identify early symptoms of low back pain and provide timely interventions.
7. **Policy Implementation:** Hospital administration should develop and enforce occupational health policies that prioritize nurses' safety and well-being.
8. **Awareness and Counseling:** Organize health awareness sessions and counseling programs to help nurses manage stress and adopt preventive strategies against low back pain.
9. **Further Research:** Conduct longitudinal and interventional studies to evaluate the effectiveness of ergonomic interventions and to explore additional risk factors in ICU/CCU nursing practice.

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