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## Work related risk factors for low back pain among nurses in a tertiary level hospital, Dhaka -Bangladesh

Popy Sarkar<sup>1</sup>, Ruksana Akter<sup>2</sup>, Shameem Ahammad<sup>3</sup>, Md. Shafiulla Prodhania<sup>4</sup>, Sharmila Jahan<sup>5</sup>, Md. Zahid Hossain<sup>6</sup>, Md. Abdul Koddus<sup>7</sup>, Md. Kabir Hossain<sup>8</sup>, Shahid Afridi<sup>9</sup>, Mohammad Yaqub Al-Ansary<sup>10</sup>, Ahamadullah Hil Galeb<sup>11</sup>, Raju Ahmed<sup>12</sup>, Md. Mohiuddin<sup>13</sup>, Md Feroz Kabir\*<sup>14</sup>

- 1.Master of Disability Management and Rehabilitation(MDMR) Program,School of Science and Technology,Bangladesh Open University.
- 2.Department of Physiotherapy , Mymensingh College of Physiotherapy & Health Sciences, Mymensingh, Bangladesh,
- 3.Department of Occupational Therapy, Mymensingh College of Physiotherapy & Health Sciences, Mymensingh, Bangladesh,
- 4.Department of Physiotherapy, International Institute of Health Sciences, Dhaka, Bangladesh
- 5.Department of Physiotherapy & Rehabilitation, Jashore University of Science & Technology (JUST), Jashore, Bangladesh
- 6.Department of Physiotherapy & Rehabilitation, Jashore University of Science & Technology (JUST), Jashore, Bangladesh
- 7.Department of Physiotherapy , Mymensingh College of Physiotherapy & Health Sciences, Mymensingh, Bangladesh
- 8.Department of Physiotherapy & Rehabilitation, Jashore University of Science & Technology (JUST), Jashore, Bangladesh,
- 9.Department of Physiotherapy, Centre for the Rehabilitation of the Paralyzed (CRP), Bangladesh; ORCID: 0000-0002-9558-5640
10. Department of Physiotherapy, Bangladesh Health Professions Institute, CRP, Bangladesh
- 11.Department of Physiotherapy & Rehabilitation, Jashore University of Science & Technology (JUST), Jashore, Bangladesh,
- 12.Department of Physiotherapy, Dhaka College of Physiotherapy, Dhaka, Bangladesh,
- 13.Department of Physiotherapy, Dhaka College of Physiotherapy, Dhaka, Bangladesh
- 14.Department of Physiotherapy & Rehabilitation, Jashore University of Science & Technology (JUST), Jashore, Bangladesh

### ABSTRACT

**Background:** Low back pain, the most commonly reported musculoskeletal problem, is a major burden on individuals, health systems and social care systems with the indirect cost being predominant. This is highly recommended to reveal the information concerning LBP prevalence and its associated risk factors among the working population to develop an effective and efficient preventive approach and intervention program. Nursing professionals are at great risk of developing LBP through the world reported in different studies. However, there is scarcity of evidence regarding symptoms prevalence and associated risk factors in the context of Bangladesh.

**Objectives:** The objectives were to find out the socio – demographic information of nurses; prevalence of LBP, to find out the most commonly affected body parts, duration of lower back pain among the nurses and nurses-oriented tasks/factors associated with lower back pain in tertiary level hospital. **Methodology:** A cross-sectional study was conducted with 100 participants who were selected by using convenient sampling. The Dutch Musculoskeletal Questionnaire and Nordic Musculoskeletal questionnaire was used to determine the prevalence and association between Musculoskeletal Symptoms and socio-demographic factors and to identify physical risk factors of musculoskeletal symptoms among the nurses. **Result:** In this study, Physical factor for back pain by heavy loads (more than 5kg) were 77% and did not low back pain were 23%. Job related risk factors for back pain by heavy loads (more than 5kg) were 97% and did not low back pain were 3%. Among 100 participants 66% participant's said that they had pain in the last 12 months and 34% participant said that they had no pain during the last 12 months. There was significant association between Low back pain and how long the Nurses working in this hospital. **Conclusion:** Now a days work related musculoskeletal disorders is the greatest problem in the world among the working population. At a same time, nurses are also suffering from different musculoskeletal disorders. Subsequently, this study shows that there is a high risk of musculoskeletal symptoms among the nurses. It will be managed by reducing physical risk factors through effective ergonomic management.

### KEYWORDS:

Low Back Pain, Work-related musculoskeletal disorders, physical risk factors, nursing



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## Introduction:

Musculoskeletal disorders (MSDs) are common health concerns that impact joints, ligaments, muscles, nerves, tendons, and supporting systems [1]. Sudden effort, repetitive motions, or prolonged exposure to forces, vibrations, or awkward postures might cause these illnesses [2]. MSDs can cause back discomfort, tension neck syndrome, and carpal tunnel syndrome in the back, neck, shoulders, and limbs [3]. Nurses are at risk of work-related musculoskeletal diseases (WMSDs) due to increased job intensity, altered work patterns, escalating expectations, and technological advancements. Due to patient handling and psychological stress, nurses have a high rate of lower back pain [4]. Nurses had significant rates of lower back pain in the UK, Tanzania, and Nigeria [5]. Nurses are at risk of musculoskeletal diseases, which can cause sick leave, absenteeism, and higher healthcare expenses [6]. These difficulties arise from nursing's violent movements, heavy lifting, and repetitive tasks [7]. Nursing is at significant risk for work-related musculoskeletal problems, according to epidemiological studies [8]. For nurses, musculoskeletal complaints influence their physical, psychological, economic, and social well-being [5, 8]. Musculoskeletal problems cause many cases, long-term disability, and lost workdays in Great Britain and Canada. Since the early, musculoskeletal disorder-related days lost have decreased, but nurses continue to experience a rise in work-related injuries and illnesses. In Bangladesh, where many nurses work, understanding the frequency and risk factors of musculoskeletal symptoms, especially lower back pain (LBP), is critical. Identifying these characteristics can help implement preventive measures and interventions, such as patient handling ergonomics [9,7]. This study examines work-related lower back pain risk variables in Dhaka's tertiary hospital nurses. Demographic data, prevalence and affected body areas, duration of lower back pain, and nurse-specific activities and factors are the main goals. Musculoskeletal diseases, especially lower back pain, are common in nurses due to their physical and mental workload. Understanding prevalence and risk factors is essential for enhancing quality of life and implementing treatments in Bangladesh's nursing profession.

## Method

The quantitative cross-sectional study examined the prevalence and risk factors of musculoskeletal symptoms, notably lower back pain (LBP), among nurses at a Dhaka tertiary referral hospital. The study included clinical nurses at Dhaka's top hospitals and clinics. The conventional sample size calculation was used to estimate the sample size, with P set at 50% due to the dearth of published research on musculoskeletal problems among Bangladeshi nurses. Practicality dictated a 100-person sample. All permanent hospital nurses were included [10]. Pregnant female nurses, those with LBP from accidents, deformities, pathological conditions, student nurses, people with certain medical conditions (e.g., osteoarthritis, rheumatoid arthritis, recent surgery or injury, disabilities), and those with previous spinal injuries were excluded. An Information Sheet & Consent form, paper and pen, the Dutch and Nordic Musculoskeletal Questionnaires, a tape measure for height, and a weight machine were used to gather data. The Dutch Musculoskeletal Questionnaire was translated into Bengali forward and backward to assure equivalence and cultural relevance. Participants were interviewed face-to-face after giving informed consent. Interviews were done in a quiet room using questionnaires. Descriptive statistics were used in SPSS 20 to summarise demographic data and compute prevalence. Chi-square tests examined correlations between demographics, physical risk factors, and felt musculoskeletal complaints ( $p < 0.05$ ). It was ethical to get Bangladesh Open University approval, ensure participant informed consent, protect anonymity, and inform participants about the study's aim, objectives, risks, rewards, and rights. Participants could quit the research at any time. Participants and study settings gave written consent.

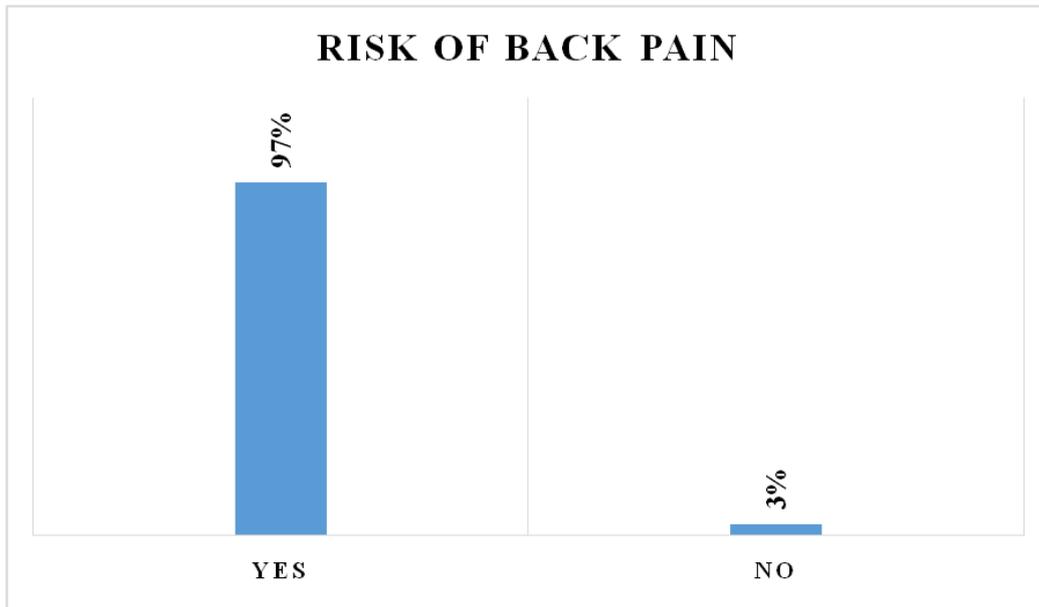
## Results

This study shows the study participants' mean age, experience, working hours, and monthly family income. The average age of participants was 37.36 years, with a  $\pm$ SD of 6.94. The average working hours were 8.08 ( $\pm$ SD = 1.20), and the average monthly family income was 43,880 BDT ( $\pm$ SD = 10,516.25). It details socio-demographic variables among research participants. Most nurses were 23–38 years old (69%), with 31% 39–57 years old. All participants were women. 65% were Muslim, 29% Hindu, and 6% Christian. 65% had completed HSC, 17% were graduates, 2% had passed SSC, and 16% had education above graduation. Participants were 89% married, 3% single, 3% separated, 3% divorced, and 2% widowed. Nuclear families accounted for 79% and joint families 21%. It shows the participant age distribution, with most aged 23–38. Religion distribution is seen in. Muslims dominate. shows that HSC was the most prevalent academic level. displays a large married population [Table 1].

Variables	Percentage (%)
<b>Age</b> Age 23 -38 years Age 39 - 57years	69 31
<b>Gender</b> Male Female	0 100
<b>Religion</b> Muslim Hindu Christian	65 29 6
<b>Education Level</b> SSC HSC Graduate Above	2 65 17 16
<b>Marital status</b> Unmarried Married Separated Divorced Widowed	3 89 3 3 2
<b>Family Type</b> Nuclear Joint	79 21

**Table 1: Demographic and topic related information**

Participants' back pain factors were also examined. Shows 77% of participants indicated work-related physical causes for heavy load back pain. shows that 63% of participants have 1 to 15 years of experience. reveals that 97% of participants indicated heavy load-related job-related back pain risk factors [Figure 1]. Participants' lower back pain prevalence was also investigated. shows that 57% of subjects had 7-day lower back pain. In the past year, 66% of participants experienced lower back pain. It shows that 62% of individuals had lower back pain that hindered usual activities in the past year.



**Figure 1: Prevalence of respondents on Job related risk factors for back pain**

It examines demographics and lower back pain. It demonstrates a strong connection between lower back discomfort and nurses' hospital job experience ( $p = 0.002$ ). Age did not significantly affect lower back pain ( $p = 0.185$ ) [Table 3].

Demographic variables	Low back pain				P value
	Yes		No		
	n	%	N	%	
Age					.185
Age 23 -38 years	48	48	21	21	
Age 39 - 57years	18	18	13	13	
How long they are working					.002
1-15Years					
16-30 Years	44	44	19	19	
31-40 Years	17	17	15	15	
	5	5	0	0	

**Table 3: Association between demographic and Low Back Pain**

## Discussion

This cross-sectional study provides insight into the widespread problem of musculoskeletal diseases (MSDs) among nurses in a developing nation such as Bangladesh. The research encompassed a sample size of 100 nurses employed at a tertiary-level hospital, with the objective of evaluating the occurrence of musculoskeletal symptoms within the previous 7-day and 12-month periods, with specific emphasis on lower back pain [11]. The results indicate that healthcare experts consider lower back pain to be a notable issue. The present study had a sample predominantly consisting of individuals aged between 23 and 38 years, with an absence of male nurses. The majority of individuals had attained schooling up to the Higher Secondary Certificate (HSC) level. A considerable proportion of the participants indicated the occurrence of lumbar pain over the previous seven-day period (57%) and twelve-month period (66%), with 62% of those individuals saying that the pain had impeded their regular activities [12,15]. This observation is consistent with prevailing global patterns, as healthcare workers frequently experience musculoskeletal diseases, particularly lower back discomfort. The comparison of these findings with research conducted in other countries, such as Thailand and Mexico, serves to underscore the widespread occurrence of lower back pain among nurses on a global scale. In Thailand, a significant proportion of nurses, namely 61.5%, indicated the occurrence of low back pain. Conversely, in Mexico, nurses reported elevated prevalence rates of musculoskeletal discomfort throughout many body locations, notably affecting both legs, the neck, and the lower back [13]. The investigation additionally examined the correlation between lumbar discomfort and demographic variables. Significantly, a correlation was seen between the length of nurses' tenure at the hospital and the occurrence of lower back discomfort [14, 11]. There was a positive correlation observed between nurses' longer work experience and a higher likelihood of experiencing lower back discomfort. Nevertheless, there was no substantial correlation observed between age and lower back pain [15].

Notwithstanding the provision of significant insights, this study is not without its limits. The limited sample size and the utilization of convenience sampling methods give rise to concerns regarding the extent to which the findings may be applied to the broader nursing population in Bangladesh. Furthermore, it is worth noting that the study has a deficiency in conducting a thorough contextual analysis of musculoskeletal complaints. This oversight has the potential to limit the depth of learning regarding the various elements that contribute to these symptoms. Given the aforementioned constraints, it is advisable that forthcoming investigations in this domain incorporate more extensive and heterogeneous samples to augment the representativeness of the results. Furthermore, a comprehensive examination of postural risk factors and psychological determinants in relation to musculoskeletal symptoms among nursing workers has the potential to offer a more comprehensive viewpoint and contribute to the development of focused therapies.

## Conclusion

Nurses often experience low back pain and LBP consequences. Regular LBP screening can identify nurses at risk and avoid catastrophic injuries. In-service training on body postures, fitness, and mechanics may help nurses take measures. Nursing is a fantastic career. Nursing is physically demanding due to patient handling, lengthy periods of standing, and repetitive arm, hand, and finger movements. This makes musculoskeletal discomfort their most prevalent physical issue. Hospital nurses' musculoskeletal pain may be linked to work postures, control, and organisation. Musculoskeletal complaints were found in nine body regions: neck, upper back, lower back, shoulder, elbow, hips, knee, ankles. Height was associated with lower back. No study has examined musculoskeletal problems and physical risk factors in Bangladeshi nurses. This study examines work-related LBP risk variables in Dhaka's tertiary hospital nurses. It was found through this study.

**Corresponding author (\*):**

**Md Feroz Kabir**

Department of Physiotherapy and Rehabilitation, Faculty of Health Science, Jashore University of Science & Technology, Jashore, Bangladesh, Telephone: 01765932545, Email: [feroz@just.edu.bd](mailto:feroz@just.edu.bd)

**Author Contributions:**

**Popy Sarkar**

GROUP 1: Conception of the work, Acquisition and Analysis of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

**Ruksana Akter**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

**Shameem Ahammad**

GROUP 1: Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Md. Shafiulla Prodhania**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

**Sharmila Jahan**

GROUP 1: Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Md. Zahid Hossain**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

**Md. Abdul Koddus**

GROUP 1: Analysis of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published.

**Md. Kabir Hossain**

GROUP 1: Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Shahid Afridi**

GROUP 1: Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

**Mohammad Yaqub Al-Ansary**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

**Ahamadullah Hil Galeb**

GROUP 1: Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Raju Ahmed**

GROUP 1: Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

**Md. Shafiulla Prodhania**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

**Md Feroz Kabir**

GROUP 1: Design of the work, Analysis and Interpretation of data

GROUP 2: Revising the work critically for important intellectual content

GROUP 3: Final approval of the version to be published

GROUP 4: Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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