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# Low Back Pain and its Associated Factors among Health Workers of Grande International Hospital, Kathmandu: A Cross-Sectional Descriptive Study

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## ABSTRACT

**Introduction:** Low back pain (LBP) is one of the most common causes of musculoskeletal disorders related to work status and condition, leading to a major cause of disease burden across developing and developed countries. The aim of this study was to identify low back pain and its associated factors among health workers at Grande International Hospital, Kathmandu.

**Method:** We conducted a descriptive cross-sectional study among health workers of Grande International Hospital, Kathmandu. A total of 374 health workers were selected through convenient sampling techniques. The study was conducted through a semi-structured questionnaire. Data analysis was performed in SPSS version 20 for Windows using descriptive analysis.

**Results:** The prevalence of LBP was 374 (69%), with significant associations found with marital status (p=0.026), gender (p=0.006), moving and lifting (p=0.008), and repetitive movements (p=0.048). However, no significant associations were observed with age (p=0.348), BMI) (p= 0-678), professional level (p=0.678), awkward posture (p=0.087), physical workload (p=0.228), lack of chair with backrest (p=0.416), not enough support (p=0.802), and manual materials handle (p=0.461. Repetitive movements, moving, and lifting were the most commonly perceived risk factors for LBP.

**Conclusion:** LBP is a common occupational health issue among healthcare workers. Factors such as marital status, moving and lifting heavy medical equipment, and repetitive movements contribute significantly to its prevalence. Proper body mechanics and periodic job rotation are recommended to reduce LBP risk among healthcare workers.

***Keywords:*** *Healthcare Workers; Low Back Pain; Work Status; Occupational Health.*

## INTRODUCTION

Low back pain (LBP) is one of the most prevalent musculoskeletal disorders, significantly affecting work status and occupational conditions.[1] It is a multifaceted condition influenced by various factors.[2] Over the past decades, LBP has become a leading cause of disease burden worldwide.[3] With industrialization, it has emerged as a major occupational health concern, contributing to workplace disability, lost productivity, and economic costs.[4]

Work-related LBP accounts for approximately 818,000 disability-adjusted life years (DALYs) lost annually. The World Health Organization (WHO) states that LBP is a primary cause of work absenteeism and medical consultations, affecting 70–80% of individuals in

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their lifetime.[5] It is a major contributor to morbidity, especially in industrialized nations.[6] Studies highlight LBP as a common issue among healthcare professionals.[7] including obstetricians, orthopedic surgeons, nurses, and physical therapists, who are at higher risk due to job demands. Addressing LBP in workplaces is crucial to improving workforce productivity.[8]

This study aimed to identify low back pain and its associated factors among health workers at Grande International Hospital, Kathmandu.

## METHOD

A quantitative descriptive cross-sectional study was carried out among 374 health workers in Grande International Hospital**.** We obtained ethical clearance approval from the Institutional Review Board (Ref no: EPI RC344/2021) and also got official permission from the respective hospital administration. We acquired written consent from the participants. The data collection was done from 12th January 2021 to 14th February 2021 at Grande International Hospital.

Individuals who expressed unwillingness to participate and health workers (ANM, doctors, pharmacists, assistant pharmacists, etc) who were sick during data collection were excluded from the study. We conveniently selected Grande International Hospital in Kathmandu. Altogether 374 health workers participated in this study.

The sample size was determined using the formula,

$(n) = Z^2pq/d^2$

where,

n = required sample size

d = margin of error (5%)

p = 58 % = 0.58 (Globally, the prevalence of LBP among health workers.[3] The prevalence of LBP (p) was taken as 50% to calculate sample size for this study)

$z = (1.96)^2 * 0.5*0.58/ (0.05)^2 = 374$

Assuming a 10% non-respondent rate, the total sample size for the study was 411. However, we recruited 374 health workers only. Participants were selected conveniently.

We used self-administration techniques for data collection. A semi-structured questionnaire was prepared as the tool for collecting the data. The tool was made through extraction from the existing tools and referenced literature from earlier studies.[1,2,3] To ensure accuracy, all questions were coded, and comprehensive checks were conducted to ensure the completeness of the data collection process. The study examined low back pain (LBP) among healthcare workers as the dependent variable, while the independent variables included various socioeconomic and demographic factors such as age, religion, ethnicity, educational status, professional level, marital status, years of employment, and working hours. Low back pain-related inquiries covered various aspects, including professional characteristics, information regarding health workers' activities, and factors that contribute to increased low back pain. The factors associated with low back pain consisted of 35 points. Each correct answer received a score of 1, while an incorrect answer received a score of 0. The scores were categorized into two groups: individuals who experience low back pain (score ≥ 50%) and those who do not experience low back pain (score < 50%). Additionally, occupational factors contributing to LBP, including repetitive movements, awkward postures, and manual material handling, were also considered in the study. The questionnaire was translated into the Nepali language. For reliability, data was pretested on 10% of the sample size, which was the representative study population other than the sample. Additional editing to the questionnaire was done according to the comments and responses from the pre-test.

Data was entered and analyzed in SPSS 20.0. Descriptive analysis was done and presented using frequency and percentage to summarize the results. For the bivariate data analysis, the chi-square test was done, where p<=0.05 determines the associations between variables.

## RESULT

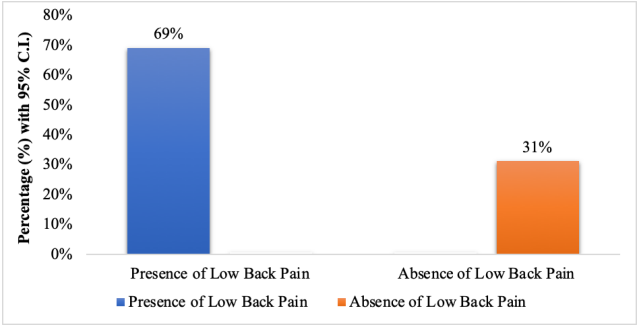


*Figure (1): Prevalence of Low Back Pain (n=374)*

Out of a total of 374 respondents, 258 individuals (69%) (95% CI: 64.32 to 73.68) reported experiencing low back pain, while 116 individuals (31%) (95% CI:22.6 to 39.4) reported no such condition. (Figure 1). These findings indicate a high prevalence of low back pain within the studied population.

**Table 1: Socio-demographic Variables (n=374)**

| Variables | Frequency (n)% |
|---|---|
| **Age** | |
| 15-30 | 334 (89.3) |
| 30-45 | 40 (10.7) |
| **Gender** | |
| Male | 40 (10.7) |
| Female | 334 (89.3) |
| **Ethnicity** | |
| Brahmin | 81 (21.7) |

| Variables | Frequency (n)% |
|---|---|
| Chhetri | 92 (24.6) |
| Thakuri | 21 (5.6) |
| Magar | 37 (9.9) |
| Newar | 73 (19.5) |
| Others | 70 (18.8) |
| **Marital Status** | |
| Married | 146 (39.0) |
| Unmarried | 228 (61.0) |
| **Professional Level** | |
| MBSS | 18 (4.8) |
| Pharmacist | 25 (6.7) |
| Nursing | 284 (75.9) |
| Lab technician | 45 (12.0) |
| Others | 2 (0.5) |
| **Working hour (per day)** | |
| 6 hours | 3 (0.8) |
| 8 hours | 183 (48.9) |
| 10 hours | 29 (7.8) |
| 12 hours | 154 (41.2) |
| Other | 5 (1.3) |

A total of 374 individuals participated in the study. The majority of the respondents (89.3%, n = 334) were between 15–30 years of age, while 10.7% (n = 40) were aged 30–45 years. In terms of gender distribution, 89.3% (n = 334) were female, and 10.7% (n = 40) were male.

Regarding ethnicity, the highest proportion of respondents belonged to the Chhetri group (24.6%, n = 92), followed by Brahmin (21.7%, n = 81), Newar (19.5%, n = 73), Magar (9.9%, n = 37), and Thakuri (5.6%, n = 21), while 18.8% (n = 70) belonged to other ethnic groups. Concerning marital status, a majority (61.0%, n = 228) were unmarried, while 39.0% (n = 146) were married.

In terms of professional background, the majority of respondents were from the nursing profession (75.9%, n = 284), followed by lab technicians (12.0%, n = 45), pharmacists (6.7%, n = 25), and MBBS professionals (4.8%, n = 18). A small proportion (0.5%, n = 2) belonged to other professions.

Concerning daily working hours, nearly half of the respondents (48.9%, n = 183) worked 8 hours per day, while 41.2% (n = 154) worked 12 hours per day. Additionally, 7.8% (n = 29) worked 10 hours, 0.8% (n = 3) worked 6 hours, and 1.3% (n = 5) had other working schedules.

**Bivariate Analysis**

**Table 2: Bivariate analysis of LBP with sociodemographic variables (n=258)**

| Variables | | Low Back Pain | | P-value |
|---|---|---|---|---|
| | | Yes (%) | No (%) | |
| Age | 15-30 | 233 (69.8) | 101 (30.2) | 0.348 |
| | 30-45 | 25 (62.5) | 15 (37.5) | |
| Gender | Male | 20 (50.0) | 20 (50.0) | 0.006** |
| | Female | 238 (71.3) | 96 (28.7) | |
| Marital Status | Married | 91 (62.3) | 55 (37.7) | 0.026** |
| | Unmarried | 167 (73.2) | 96 (28.7) | |
| BMI | Less than 18.5 | 28 (75.7) | 9 (24.3) | 0.678 |
| | 18.5-24.5 | 171 (67.9) | 81 (32.1) | |
| | 25-25.9 | 5 (83.3) | 25 (16.7) | |
| Professional Level | MBBS | 5 (27.8) | 13 (72.2) | 18.607 |
| | Pharmacist | 14 (56.0) | 11 (44.0) | |
| | Nursing | 205 (72.2) | 79 (27.8) | |
| | Lab technician | 32 (71.1) | 13 (28.9) | |
| | Others | 2 (100) | 0 (0.0) | |
| Moving and lifting | Never | 33 (52.4) | 300 (47.6) | 0.008** |
| | Sometimes | 161 (72.2) | 62 (27.8) | |
| | Often | 52 (76.5) | 16 (23.5) | |
| | Always | 12 (60.0) | 8 (40.0) | |
| Working hour (per day) | 6 hours | 3 (100) | 2 (0.00) | 0.397 |
| | 8 hours | 127 (69.4) | 56 (30.6) | |
| | 10 hours | 18 (62.1) | 11 (37.9) | |
| | 12 hours | 108 (70.1) | 46 (29.9) | |
| | Others | 2 (40.0) | 3 (60.0) | |

**P value less than 0.05 significant*

The bivariate analysis identified gender and marital status as significant factors associated with low back pain (LBP). Gender showed a significant association with LBP (p = 0.006). A higher proportion of females (71.3%) experienced LBP compared to males (50.0%). Marital status was also significantly associated with LBP (p = 0.026). A greater proportion of unmarried individuals (73.2%) reported LBP compared to married individuals (62.3%). Additionally, moving and lifting also showed a significant association with LBP (p=0.008). These findings suggest that females, unmarried individuals, and health workers who frequently do lifting work are at a higher risk of experiencing low back pain.

**Table 3: Bivariate analysis of Low Back Pain with factors that increases LBP**

| Factors that increases LBP | Low Back Pain | | P-value |
|---|---|---|---|
| | No (%) | Yes (%) | |
| **Repetitive movement** | | | |
| No | 1 (1.9) | 52 (98.1) | 0.048** |
| Yes | 0 (0) | 206 (100) | |
| **Awkward Posture** | | | |
| No | 1 (1.5) | 65 (98.5) | 0.087 |
| Yes | 0 (0) | 193 (100) | |
| **Physical workload** | | | |
| No | 0 (0) | 48 (100) | 0.228 |
| Yes | 1 (0.5) | 210 (99.5) | |
| **Lack of chair with backrest** | | | |
| No | 0 (0) | 103 (100) | 0.416 |
| Yes | 1 (0.64) | 155 (99.36) | |
| **Manual material handle** | | | |
| No | 1 (0.60) | 168 (99.40) | 0.461 |
| Yes | 0 (0) | 90 (100) | |
| **Not enough support** | | | |
| No | 1 (0.56) | 179 (99.44) | 0.802 |
| Yes | 0 (0.0) | 79 (100) | |

**P value less than 0.05 significant*

Table :3 The analysis revealed that repetitive movement was significantly associated with low back pain (LBP) ($p = 0.048$). Among those who reported no repetitive movement, 98.1% experienced LBP. Among those who engaged in repetitive movements, 100% experienced LBP.

Other factors, including awkward posture, physical workload, lack of chair with backrest, manual material handling, and insufficient support, were not significantly associated with LBP ($p > 0.05$). These findings suggest that repetitive movement is a key occupational factor contributing to the increased prevalence of low back pain.

## DISCUSSION

Several studies have reported varying prevalence rates of low back pain (LBP) among healthcare workers across different regions. A study conducted by Alnaami et al. (2019) in Saudi Arabia found an overall LBP prevalence of 73.9% in the past 12 months, with 40.5% of cases requiring medication or physiotherapy and 20% seeking medical consultation. Regular physical exercise was identified as a significant protective factor. In comparison, the present study reported an LBP prevalence of 69.0%, with higher proportions of respondents (64.7%) using medications and (73.3%) undergoing physiotherapy, possibly due to differences in sample size. [9]

A study conducted by Tehran University of Medical Sciences (2019) estimated the global 1-year LBP prevalence among workers at 25%, identifying LBP as the most common occupational health issue among healthcare workers. However, no significant association was found between LBP prevalence and job classification. In contrast, our study reported a higher prevalence (69.0%), though the association with job classification was consistent, likely due to demographic differences. [3]

Similarly, a study by Johnson (2015) reported a 12-month LBP prevalence of 28% among healthcare professionals, with common risk factors including prolonged standing (25.0–38.9%), heavy lifting (35.7%), and frequent bending (33.3%). In the present study, these risk factors were more pronounced, with prolonged standing (95.3%), lifting heavy objects (73.6%), and frequent bending (83.7%), suggesting that variations in sampling techniques may explain these differences.[1]

Research conducted by Johnson and Edward (2017) in Nigeria found lifetime, annual, and point prevalence rates of LBP at 83.9%, with prolonged standing (57.2%), awkward postures (22.2%), and lifting heavy objects (20.6%) being key contributing factors. Unlike their findings, our study established significant associations between LBP and factors such as gender, lifting and movement except age, and awkward postures which may be attributed to differences in working hours.[10]

Further, research in Lebanon by Ghoussoub et al. (2016) reported an LBP prevalence of 54%, which was lower than the 69.0% observed in this study, likely due to differences in sample size. Similarly, a study in Makkah, Saudi Arabia, by Bin Homaid et al. (2016) found an LBP prevalence of 74.2%, closely aligning with our findings (69.0%).[7]

## CONCLUSION

This study identified significant associations between LBP and factors such as marital status, gender, years of employment, and repetitive movements. However, no significant association was found with age, workplace setting, working hours, or body mass index (BMI). The most commonly perceived risk factors for LBP included repetitive movements and prolonged static postures. Psychological factors were not significantly linked to LBP. The condition had a negative impact on job performance, hindering healthcare workers' ability to perform their duties effectively. To mitigate LBP, healthcare workers should adopt proper body mechanics during patient care, while healthcare organizations should implement regular job rotations to minimize strain and prevent musculoskeletal disorders.

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None

**CONFLICT OF INTEREST**

None

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