

Prevalence, Severity, and Determinants of Low Back Pain Among Nurses at Sohar Hospital, Oman: A Cross-sectional Study

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ABSTRACT

Objectives: Low back pain (LBP) is a common occupational issue among healthcare professionals, yet data from Oman are limited. This study aimed to assess the prevalence, severity, consequences, and determinants of LBP among nurses at a tertiary hospital in Oman. **Methods:** This cross-sectional study was conducted at Sohar Hospital in September 2024 and included nurses from all departments. Participants were recruited through convenience sampling and completed a structured electronic questionnaire covering sociodemographic, medical, and work-related factors. LBP was assessed using the Nordic Musculoskeletal Questionnaire, and pain severity was measured using a numeric rating scale. The data were analyzed statistically. **Results:** Of the 385 nurses surveyed, 317 (82.3%) reported LBP. Among those with LBP, 91 (28.7%) reported severe pain, and seven (2.2%) reported the worst possible pain. More than one-third (34.1%) of affected nurses required medical consultation, and 149 (47.0%) reported that the pain prevented them from performing their work. Binary logistic regression analysis identified female gender (AOR = 3.972, 95% CI: 1.061–14.879; $p = 0.041$), Omani nationality (AOR for non-Omani nurses = 0.149, 95% CI: 0.057–0.392; $p < 0.001$), history of surgical procedures (AOR = 3.149, 95% CI: 1.518–6.533; $p = 0.002$), perceived inadequate staffing (AOR = 2.312, 95% CI: 1.160–4.624; $p = 0.017$), and assignment in the female internal medicine ward (AOR = 11.022, 95% CI: 1.570–77.383; $p = 0.016$) as factors significantly associated with LBP. **Conclusions:** LBP is highly prevalent among nurses at Sohar Hospital and is associated with several personal and occupational factors, including gender, nationality, surgical history, ward assignment, and perceived staffing inadequacy. Targeted interventions, including workplace ergonomic modifications, adequate staffing policies, and preventive occupational health programs, are warranted to mitigate the burden of LBP and enhance nurses' well-being and performance.

Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.¹ Low back pain (LBP) refers to pain localized below the 12th rib and above the gluteal folds.² Globally, LBP is among the most common musculoskeletal complaints and a major occupational health problem.³ Chronic LBP contributes significantly to disability and loss of productivity.^{4,5} It is estimated that 70–85% of people experience LBP during their

lifetime.^{6,7} Its impact on daily activities and quality of life is substantial, and the economic burden of its treatment continues to rise globally.⁸ Between 1990 and 2015, the global burden of LBP, measured in disability-adjusted life years, increased by 54%, particularly affecting low- and middle-income countries in the Middle East, Africa, and Asia, where healthcare resources are limited.⁹

Musculoskeletal disorders are common among healthcare workers, particularly nurses,¹⁰ whose work

often involves prolonged standing, patient handling, awkward postures, and repetitive physical tasks. These demands place nurses at increased risk of LBP, which often leads to work limitations and absenteeism. Nursing has been reported to rank sixth among occupations associated with missed workdays due to LBP.¹¹ International studies report LBP prevalence rates among nurses of 62% in Italy,¹² 63.6% in Africa,¹³ 80% in Saudi Arabia,¹⁴ and 54.3% in Qatar.¹⁵ Key contributing factors include sociodemographic characteristics, such as gender, age, nationality, weight, and work experience,^{16,17} as well as occupational factors including long working hours, shift work, overtime, hospital environment, manual lifting, and job stress.^{18–20}

In Oman, LBP among nurses is recognized as a national research priority. The limited available studies suggest that LBP is common among nurses and may be associated with disability, but local evidence remains sparse.^{5,21} In addition, changing hospital workflow, staffing patterns, and technologies necessitate updated data to develop context-specific preventive and management strategies.

This study aimed to assess the prevalence, severity, and determinants of LBP among nurses at Sohar Hospital, Oman, and to evaluate its occupational and functional consequences.

The main objectives of this study were: (1) to determine the 12-month and 7-day prevalence of LBP among nurses at Sohar Hospital in 2024; (2) to assess the severity and duration of LBP episodes; (3) to identify sociodemographic, occupational, and clinical factors associated with LBP; and (4) to evaluate the impact of LBP on work performance and healthcare-seeking behavior, including functional impairment and medical consultation.

METHODS

This cross-sectional survey was conducted at Sohar Hospital, North Batinah Governorate, Oman, in September 2024. Sohar Hospital is a 408-bed tertiary referral and teaching institute and the only regional hospital in the governorate. The target population comprised all 1279 nurses employed at Sohar Hospital in 2024, based on data from the Department of Information and Statistics at the hospital.

Eligible participants were full-time registered nurses irrespective of gender or nationality who were working at Sohar Hospital during the study period, actively engaged in direct patient care, and had a minimum of

three months of professional experience. Nurses from all departments and shifts were eligible.

Exclusion criteria were pregnancy, extended leave exceeding three months, known prolapsed intervertebral disc disorders or other diagnosed musculoskeletal disorders, work experience of less than three months, internship or student status, and refusal to participate.

Sample size was calculated using the single population proportion equation: $(N = z^2 p (1-p) / d^2)$, assuming a 95% confidence level ($Z = 1.96$), an expected LBP prevalence of 65% ($p = 0.650$) based on a prior Omani study, and a 5% margin of error ($d = 0.05$). The minimum required sample size was 346, which was increased to 380 to account for an anticipated 10% non-response rate.

The study received ethical approval (43/2024) from the North Al-Batinah Governorate Research and Ethical Review and Approval Committee and followed the guidelines of the Declaration of Helsinki.

Data were collected using a structured, self-administered questionnaire adapted from the standardized Nordic Musculoskeletal Questionnaire (NMQ),²² with additional items on sociodemographic characteristics including age, gender, nationality, education level, and marital status; health-related variables including body mass index (BMI), comorbidities, and surgical history. Work-related variables included ward, shift pattern, work experience, and involvement in manual patient lifting. Perceived staffing inadequacy was also assessed based on previous evidence suggesting an association between staff shortages and LBP among nurses.²³

Pain intensity was measured using the 11-point numeric pain rating scale, where 0 indicates no pain and 10 the worst possible pain.²⁴ Pain levels were categorized as mild (1–3), moderate (4–6), severe (7–9), and worst possible (10).²⁴

The Standardized NMQ, which has previously demonstrated good test–retest reliability and validity,²² was used to evaluate the prevalence, severity, and consequences of LBP.

The electronic survey was in English and included forced-choice, multiple-choice, and binary-response formats. It covered 12-month and 7-day LBP prevalence. The 7-day prevalence of LBP was calculated among participants who reported experiencing LBP in the past 12 months. This approach was chosen to better reflect the short-term recurrence of pain in individuals with a recent history of LBP. To assess manual lifting,

a straightforward yes/no question was used, as lifting workload is difficult to assess objectively in typical workplace conditions.

LBP was defined as pain or discomfort localized below the costal margin and above the inferior gluteal folds, with or without leg pain, lasting at least one day during the past 12 months. A 12-month recall period was used to capture a broader history of symptoms, including episodes that may influence current work performance. BMI was classified as underweight ($< 18.5 \text{ kg/m}^2$), normal weight ($18.5\text{--}24.9 \text{ kg/m}^2$), and overweight or obese ($\geq 25 \text{ kg/m}^2$).

Weight and height were measured before administration of the questionnaire, and BMI was calculated. Additional items included the impact on work performance over the past year, history of lower back injury due to accidents, duration of LBP (1–7 days, 8–30 days, >30 days, or daily), and whether participants sought medical consultation for LBP in the past 12 months.

Age-groups were categorized into four: 22–30, 31–40, 41–50, and 51–60 years. Work experience was grouped as 3–11 months, 1–4 years, 5–9 years, and ≥ 10 years.

The questionnaire was prepared in English, as all potential participants (both Omani and non-Omani) were proficient in the language. The questionnaire included binary, multiple-choice, and scaled-response items. The components were NMQ (six items), numeric pain rating scale (one item), and 13 additional items to collect exposure variables such as age, gender, nationality, education level, comorbidities, surgical history, BMI, ward type, work experience, shift type, manual patient lifting, and perceived staffing adequacy. The outcome variable was the self-reported presence of LBP during the past 12 months.

A pilot test was conducted among 10 nurses to assess clarity and comprehension of the questionnaire items. Based on their feedback, the instrument was finalized for the main study. All questions were marked as mandatory. Incomplete responses were excluded from analysis.

This study used convenience sampling. The research team briefed the hospital's head of nursing, who communicated the study details to charge nurses in participating wards. Eligible nurses were informed of the study objectives and assured that participation was voluntary and that all data would be anonymized, kept confidential, and not accessible to their supervisors. Nurses who agreed to participate were provided with

an electronic link to a self-administered questionnaire using Google Forms. All nurses who met the inclusion criteria were included in the study, regardless of their professional level (e.g., charge nurses, head nurses, and supervisors), while those meeting the exclusion criteria were excluded.

The estimated completion time was approximately 2–3 minutes. Responses were stored securely online in Google Drive, with access restricted to the research team for study purposes. Key variables were set as mandatory to minimize missing data, and incomplete responses were excluded from analysis. As the total number of nurses who received the survey link was not recorded, a response rate could not be calculated.

Collected data were entered, coded, and organized in Microsoft Excel. Statistical analysis was performed using IBM SPSS (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.) and Microsoft Excel. Data were collected using anonymous questionnaires, so imputation was not feasible; therefore, complete-case analysis was used. Categorical variables were summarized as frequencies and percentages. Associations were assessed using chi-squared tests and crude odds ratios (CORs). Binary logistic regression analysis was used to identify predictors of LBP, with statistical significance set at $p < 0.05$.

RESULTS

Among the 385 nurses included in the study, 317 (82.3%) reported LBP. Pain severity ranged from mild

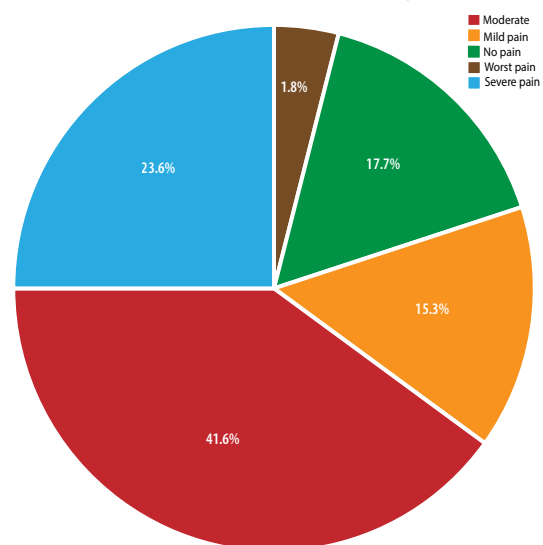


Figure 1: Low-back pain status reported by nurses at Sohar Hospital (N = 385).

Table 1: Sociodemographic variables associated with LBP among nurses at Sohar Hospital (N = 385).

Variables	Total n (%)	LBP (Yes) n (%)	COR (95% CI)	Crude p-value	AOR (95% CI)	Adjusted p-value
Age, years						
22–30	127 (33.0)	107 (84.3)	Ref		Ref	
31–40	199 (51.7)	162 (81.4)	0.820 (0.450–1.490)	0.510	1.938 (0.676–5.558)	0.219
41–50	44 (11.4)	37 (84.1)	0.990 (0.390–2.530)	0.980	2.985 (0.673–13.250)	0.150
51–60	15 (3.9)	11 (73.3)	0.510 (0.150–1.780)	0.293	2.301 (0.356–14.881)	0.382
Gender						
Male	25 (6.5)	19 (76.0)	Ref		Ref	
Female	360 (93.5)	298 (82.8)	1.520 (0.580–3.960)	0.393	3.972 (1.061–14.879)	0.041*
Nationality						
Omani	202 (52.5)	182 (90.1)	Ref		Ref	
Non-Omani citizen	183 (47.5)	135 (73.8)	0.310 (0.180–0.550)	0.001*	0.149 (0.057–0.392)	< 0.001*
Education						
Diploma	151 (39.2)	121 (80.1)	Ref		Ref	
Bachelor	210 (54.5)	179 (85.2)	1.430 (0.830–2.490)	0.203	1.667 (0.773–3.597)	0.193
Postgraduate	24 (6.2)	17 (70.8)	0.600 (0.230–1.580)	0.304	0.709 (0.230–2.184)	0.550
Marital status						
Married	332 (86.2)	275 (82.8)	Ref		Ref	
Single	53 (13.8)	42 (79.2)	0.790 (0.380–1.630)	0.526	0.545 (0.215–1.383)	0.201

LBP: low back pain; COR: crude odds ratio; AOR: adjusted odds ratio. Percentages in the 'Total' column are based on the overall sample (N = 385), while percentages in the 'LBP (Yes)' column represent the proportion with low back pain within each category. *Significant.

to worst possible, with moderate pain being the most common category [Figure 1].

Most participants were aged 31–40 years (51.7%), female (93.5%), Omani citizens (52.5%), married (86.2%), and held bachelor's degrees (54.5%). In crude analysis, nationality was significantly associated with LBP, whereas age, gender, education level, and marital status were not. In adjusted analysis, non-Omani nurses had lower odds of LBP than Omani nurses (adjusted odds ratio (AOR) = 0.149, 95% CI: 0.057–0.392; $p < 0.001$). Although women had higher odds of LBP than men (AOR = 3.972, 95% CI: 1.061–14.879; $p = 0.041$), this finding should be interpreted cautiously because the male subgroup was small. [Table 1].

Most nurses ($n = 317$; 82.3%) reported experiencing LBP during the previous 12 months, while 215 (55.8%) reported pain during the past seven days. Among those with 12-month LBP ($n = 317$), most episodes lasted 1–7 days during the previous year (53.6%), although 21.5% reported daily pain and 10.7% reported pain lasting > 30 days. Moderate pain was the most common (50.5%), followed by severe pain (28.7%), while 2.2% had the worst possible pain. LBP had an important functional impact, with 149 (47.0%) nurses with back pain reporting that it had prevented them from performing routine occupational tasks. [Table 2].

Comorbidities were reported by 40/385 (10.4%)

Table 2: Duration, severity, and consequences of low back pain (LBP) among nurses at Sohar Hospital (N = 385).

Particulars	Frequency, %
12-month prevalence (N = 385)	317 (82.3)
7-day LBP prevalence (N = 385)	215 (55.8)
Duration of LBP during the past 12 months (n = 317)	
1–7 days	170 (53.6)
8–30 days	45 (14.2)
> 30 days	34 (10.7)
Daily	68 (21.5)
Severity of LBP (n = 317)	
Mild	59 (18.6)
Moderate	160 (50.5)
Severe	91 (28.7)
Worst possible	7 (2.2)
Consequences of LBP (n = 317)	
Required medical consultation	108 (34.1)
Inability to perform normal work	149 (47.0)
Prior accidental low back injury (n = 317)	
Yes	39 (12.3)
No	278 (87.7)

nurses, 82.5% of whom had LBP. Surgical history was significantly associated with LBP (131/147; 89.1%; $p = 0.002$). Crude analysis indicated that having a history of surgical procedures was significantly associated with LBP (COR = 2.29, 95% CI: 1.25–

Table 3: Medical variables associated with LBP among nurses at Sohar Hospital (N = 385).

Variables	Total (N = 385) n (%)	LBP (Yes) n (%)	COR (95% CI)	Crude <i>p</i> -value	AOR (95% CI)	Adjusted <i>p</i> -value
Comorbidities						
Yes	40 (10.4)	33 (82.5)	1.010 (0.430–2.400)	0.977	0.782 (0.268–2.280)	0.653
No	345 (89.6)	284 (82.3)	Ref		Ref	
Surgical history						
Yes	147 (38.2)	131 (89.1)	2.290 (1.250–4.180)	0.007*	3.149 (1.518–6.533)	0.002*
No	238 (61.8)	186 (78.2)	Ref		Ref	
BMI						
Underweight	19 (4.9)	17 (89.5)	Ref		Ref	
Normal weight	240 (62.3)	187 (77.9)	0.420 (0.090–1.850)	0.250	0.388 (0.075–2.008)	0.259
Overweight or obese	126 (32.7)	113 (89.7)	1.020 (0.210–4.930)	0.978	0.904 (0.160–5.103)	0.909

LBP: low back pain; COR: crude odds ratio; AOR: adjusted odds ratio; BMI: body mass index (underweight: < 18.5 kg/m²; normal weight: 18.5–24.9 kg/m²; overweight or obese: ≥ 25 kg/m²). *Significant.

4.18, $p = 0.007$). The majority had a normal weight (62.3%). BMI status was not significantly associated with LBP. [Table 3.]

Most nurses were engaged in direct patient care across rotating shifts (353/385; 91.7%), while 86.2% reported that their work involved manual patient handling. The largest work groups were in the coronary care unit (14.5%), labor room (14.0%), and obstetrics/gynecology (12.2%). More than half (204/385; 53.0%) of the nurses perceived staffing inadequacy. LBP was most frequent in the female surgical ward (26/28; 92.9%) and the male internal medicine ward (11/12; 91.7%). In adjusted analysis, nurses who reported inadequate staffing had higher odds of LBP (AOR = 2.316, 95% CI: 1.160–4.624; $p = 0.017$), as shown in Table 4.

Table 4 also shows that, based on crude analysis other variables such as ward type, work shifts, years of experience, and manual patient lifting were not significantly associated with LBP among nurses at Sohar Hospital.

DISCUSSION

This study found a high 12-month prevalence of LBP among nurses at Sohar Hospital (82.3%). In the adjusted analysis, LBP was significantly associated with female gender, Omani nationality, surgical history, perceived staffing inadequacy, and assignment to the female internal medicine ward. Although higher proportions of LBP were also observed in some other subgroups—including younger nurses, married nurses, those with bachelor's degrees, those who were overweight or obese, those who worked morning shifts only, and those

involved in manual patient handling—these were not statistically significant in the adjusted analysis.

This rate aligns with global reports from several studies,^{2,25} indicating that LBP is a common occupational health problem among nurses, attributable to the physical demands of the profession. It is slightly lower than the rate reported from Slovenia (85.9%)²⁶ and the Czech Republic (84.7%),²⁷ but higher than those reported in Italy (62%),¹² Africa (63.6%),¹³ and Qatar (54.3%).¹⁵ These variations may be attributed to occupational conditions, institutional practices, or societal factors specific to each region.

LBP was most prevalent among nurses aged 22–30 years (84.3%), a finding consistent with studies from Saudi Arabia.^{28,29} This age group may be more engaged in physically demanding tasks, such as lifting heavy patients or prolonged standing.

LBP had a higher prevalence among female nurses (82.8%), as reported in other studies as well.^{30,31} Female gender was significantly associated with LBP in this study. This may be attributable to both biological factors—such as differences in musculoskeletal structure and hormonal influences—and sociocultural expectations that increase workload burden.³²

The prevalence of LBP in this study was significantly higher among Omani nurses (90.1%), in both crude and adjusted analysis. This is consistent with the findings of a previous Omani study.³³ However, a study among nurses in Saudi Arabia reported the opposite trend, although the difference was not statistically significant.²⁹ The association observed in our study may reflect differences in workload, ward assignments, the influence of cultural norms in pain perception, lifestyle, or perceived job security, rather than nationality alone.

Table 4: Work related variables associated with LBP among nurses at Sohar Hospital (N = 385).

Variables	Total n (%)	LBP (Yes) n (%)	COR (95% CI)	Crude p-value	AOR (95% CI)	Adjusted p-value
Wards						
Accident and emergency	27 (7.0)	20 (74.1)	Ref		Ref	
Coronary care unit	56 (14.5)	48 (85.7)	2.100 (0.671–6.570)	0.202	3.520 (0.941–13.163)	0.061
Day care	17 (4.4)	15 (88.2)	2.625 (0.476–14.486)	0.268	0.995 (0.129–7.678)	0.996
Female internal medicine	23 (6.0)	21 (91.3)	3.675 (0.680–19.848)	0.130	11.022 (1.570–77.383)	0.016*
Female surgical	28 (7.3)	26 (92.9)	4.550 (0.851–24.318)	0.076	4.301 (0.692–26.718)	0.117
Intensive care unit	14 (3.6)	11 (78.6)	1.283 (0.275–5.984)	0.751	2.057 (0.333–12.704)	0.438
Labor room	54 (14.0)	37 (68.5)	0.762 (0.271–2.144)	0.606	1.165 (0.349–3.881)	0.804
Male internal medicine	12 (3.1)	11 (91.7)	3.850 (0.418–35.473)	0.234	6.214 (0.572–67.564)	0.133
Male surgical	27 (7.0)	20 (74.1)	1.000 (0.296–3.378)	1.000	1.110 (0.256–4.815)	0.889
Maternal	29 (7.5)	24 (82.8)	1.680 (0.462–6.115)	0.431	1.005 (0.214–4.720)	0.995
Obstetrics and gynecology	47 (12.2)	38 (80.9)	1.478 (0.479–4.558)	0.497	1.486 (0.401–5.501)	0.553
Operation theater	15 (3.9)	13 (86.7)	2.275 (0.408–12.700)	0.349	2.362 (0.357–15.644)	0.373
Pediatric	36 (9.4)	33 (91.7)	3.850 (0.892–16.613)	0.071	3.507 (0.643–19.114)	0.147
Fixed morning shift						
Yes	32 (8.3)	27 (84.4)	Ref		Ref	
No	353 (91.7)	290 (82.2)	0.850 (0.320–2.300)	0.753	1.562 (0.474–5.144)	0.463
Years of Experience						
3 months–1 year	15 (3.9)	12 (80.0)	Ref		Ref	
1–5 years	107 (27.8)	91 (85.0)	1.420 (0.360–5.610)	0.615	0.741 (0.146–3.753)	0.717
5–10 years	99 (25.7)	82 (82.8)	1.210 (0.310–4.740)	0.789	1.154 (0.214–6.219)	0.868
≥ 10 years	164 (42.6)	132 (80.5)	1.030 (0.280–3.870)	0.964	1.162 (0.200–6.761)	0.867
Manual lifting						
Yes	332 (86.2)	275 (82.8)	Ref		Ref	
No	53 (13.8)	42 (79.2)	0.790 (0.380–1.630)	0.526	1.240 (0.519–2.962)	0.629
Perception of staff strength						
Sufficient	181 (47.0)	137 (75.7)	Ref		Ref	
Insufficient	204 (53.0)	180 (88.2)	2.410 (1.400–4.150)	0.002*	2.316 (1.160–4.624)	0.017*

LBP: low back pain; COR: crude odds ratio; AOR: adjusted odds ratio; ICU: intensive care unit. *Significant.

These possibilities cannot be resolved within the present study and requires further research.

The prevalence of LBP was also high among married nurses (82.8%), which is consistent with findings from other studies.^{31,34,35} This may be explained by the fact that this specific group has stronger family connections and more social obligations, which may contribute to reduced physical activity, increased weight, and, as a result, a higher risk of LBP.

Among our participants, bachelor's degree holders reported the highest prevalence of LBP (85.2%), a finding that aligns with results from another study.²⁵ Nurses with higher academic qualifications often engage in office and administrative work, which is likely to increase the risk of LBP due to prolonged sitting and suboptimal ergonomics.

In the present cohort, LBP had a higher prevalence among overweight or obese nurses (89.7%), which is consistent with an Ethiopian study.¹⁶ This may be

explained by the fact that excess weight increases strain on the spine, contributing to pain. However, this finding was not statistically significant.

The prevalence of LBP was significantly higher among nurses working in the female internal medicine ward (91.3%), and this was identified as a statistically significant associated factor. Nursing care in this ward requires manual patient handling and prolonged standing, both of which increase the risk of LBP. The prevalence was lower in a previous study conducted in Saudi Arabia (18.8%).² The differences may be due to variations in facilities at each healthcare institution, differences in staff-to-patient ratios, and the specific demands of each ward.

Nurses who worked exclusively on morning shifts reported a higher prevalence of LBP (84.4%). A similar finding was reported from Malaysia.³⁶ This may be due to the increased number of patients admitted to hospital wards during the morning shift, placing

more physical demands on nurses.

The prevalence of LBP was higher among nurses who handle patients manually (82.8%), which has also been reported in studies in Pakistan and Bangladesh.^{20,37} This can be explained by the repetitive lifting, poor posture, and physical strain associated with patient transfers.

The prevalence of LBP was also higher among nurses with surgical history (89.1%). A similar result has been reported in a Saudi Arabian study.³⁸ This was identified as a significant predictor of LBP. This may be because nurses with a surgical history have reduced muscular strength and physical activity, making them susceptible to LBP. Further studies are needed to explore the underlying causes.

Perceived staffing inadequacy was also significantly associated with LBP reporting (88.2%), as found among female nurses in Bangladesh.²⁰ Staff shortages may increase individual workload, leading to greater physical strain and back-related injuries. Additionally, psychological pressure of higher workload can trigger muscular tension and postural rigidity, contributing to poor ergonomics, shoulder pain, and LBP.³⁹

This study has several limitations. First, it is a single-center study with convenience sampling, which may limit generalizability. Second, the cross-sectional design does not allow causal inference. Third, recall bias is possible because LBP was self-reported over a 12-month period. Fourth, excluding participants with known musculoskeletal disorders or disc disease may have led to underestimation of LBP prevalence. Fifth, overweight and obese participants were combined, which may have limited the dose-response relationship between BMI and LBP. Finally, unmeasured factors such as psychosocial stress, physical fitness, home responsibilities, ergonomic practices, professional seniority, and previous episodes of LBP may also have influenced the findings. Finally, unmeasured variables such as psychosocial factors, physical fitness, family size, home responsibilities and exact ergonomic practices, professional seniority, and previous episodes of LBP may also have influenced the findings.

Based on the findings of this study, the following measures are recommended to address the high prevalence of LBP among nurses at Sohar Hospital:

1. Optimize staffing levels to maintain adequate nurse-to-patient ratios to reduce workload-related musculoskeletal strain, given the association between perceived staffing inadequacy and LBP.
2. Implement ergonomic interventions: provide

targeted training in safe patient-handling techniques and correct posture, especially in wards with high prevalence of LBP, such as the female internal medicine ward in this hospital.

3. Strengthen health screening and rehabilitation by conducting regular occupational health assessments and providing timely support for nurses with a history of surgery or musculoskeletal conditions to prevent worsening of LBP.
4. Develop gender- and culture-sensitive programs by designing culturally appropriate health-promotion initiatives that account for the observed differences between Omani and non-Omani nurses, and the higher risk among female staff.
5. Increase awareness and education by promoting knowledge of LBP risk factors and self-care strategies among nurses, emphasizing early reporting of symptoms and timely medical consultation to reduce chronicity and functional impairment.
6. Conduct longitudinal and intervention studies to assess preventive measures and explore additional risk factors, including psychosocial stress, shift patterns, and physical activity.

CONCLUSION

This study found a high prevalence of LBP among nurses at Sohar Hospital, highlighting its importance as an occupational health concern within this population. In adjusted analysis, female gender, Omani nationality, surgical history, perceived inadequate staffing, and employment in specific clinical wards were independently associated with reporting LBP. These results suggest that LBP among nurses is influenced by a combination of personal, medical, and workplace-related factors.

Disclosure

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