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Characteristics of low back pain and its associated factors among healthcare providers at a tertiary hospital in Sylhet city: a cross-sectional study

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Abstract

Background Healthcare providers serve as the backbone of the healthcare system, yet they frequently have low back pain (LBP) due to ergonomic factors. Therefore, the objective of this research was to identify the characteristics of LBP and its associated factors among healthcare providers in Bangladesh.

Methodology In this cross-sectional study, 310 medical providers, both male and female, participated. An interviewer-administered questionnaire was used to evaluate data regarding different measures of LBP. The chi-square test and descriptive statistics were used to evaluate the data. To identify the predicted risk factor for LBP, binary logistic regression was performed.

Result A total of 51.9% of healthcare providers reported having LBP at least once a day in the past 12 months, 25.8% had chronic LBP, 18.1% had to take time off work due to LBP, and 57.89% had received combination medication and physiotherapy in the previous 12 months. The advanced age (41–59 years) adjusted odds ratio (AOR) = 1.83, 95% confidence interval (CI) = 1.04–3.22; $p = 0.034$), lifting objects ($AOR = 2.00$, 95% $CI = 1.06–3.78$; $p = 0.032$), awkward position ($AOR = 6.54$, 95% $CI = 3.04–14.10$; $p = 0.001$), physical exercise ($AOR = 3.81$, 95% $CI = 2.23–6.52$; $p = 0.001$), and comorbidities ($AOR = 1.79$, 95% $CI = 1.00–3.20$) were predictors for developing LBP at least once in the past 12 months.

Conclusion According to this study, more than half of healthcare professionals reported having LBP at least once in the previous 12 months. Good working posture, ergonomic knowledge, and safe lifting techniques are essential to getting rid of this problem. In addition, good medical attention and regular exercise are required.

Keywords Cross-sectional study, Healthcare provider, Low back pain, Tertiary level hospital, Prevalence, Bangladesh

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Introduction

Low back pain (LBP) is a major health concern that affects 70–85% of people of all ages worldwide [1, 2]. It is a primary source of work-related impairment and the second-leading cause of occupational absenteeism, as well as lower productivity globally [3, 4]. The burden of LBP is now growing in low- to middle-income nations, burdening the working population globally [5]. In the USA, LBP is the second most prevalent reason for doctor visits and the fifth most common reason for hospitalization [6]. The direct medical care expense for LBP treatment in Germany was €7,000 per patient per year [7], whereas the direct medical care expenditure for LBP in the UK was £1632 million in 1998 [8].

According to the 2010 Global Burden of Disease (GBD) Study, LBP is ranked 6th globally and 10th in South Asia in terms of overall burden (DALYs) out of 291 disease conditions [9]. Recently, the GBD study 2019 reported that LBP is the most prevalent global health problem among 25 diseases, ranking first in terms of disability (YLDs) and rapidly increasing by 47% from 1990 to 2019 [10]. Approximately, 223.5 million cases of LBP and 63.7 million DALYs associated with LBP were reported globally in 2019 [11]. Studies report that LBP is a major health issue for healthcare providers globally [12, 13]. According to the GBD Study, the weight of a disability is proportionate to the severity of one's health [14]. Every year, thousands of healthcare providers lose their working days, are absent at workstations or on sick leave, visit physicians, receive treatment, and eventually retire early because of LBP [15, 16], which is most prevalent due to biopsychosocial factors [5, 17], age, BMI, working experience [18], ergonomic hazards, awake posture at the workplace, stress, lack of physical exercise [12], professional category, knowledge, and job satisfaction [19]. For all healthcare professionals, the most exposed areas were the lower back, followed by the neck, shoulder, and hand or wrist [20]. The prevalence of LBP among medical professionals globally during the previous year was reported by one systematic review study to be 58% [13], by another to be 54.8% [12], 58% of healthcare workers in Pakistan [21], and 56.9% in Malaysia report having LBP [19].

A population-based study in Bangladesh among the general population reported 18.5% experiencing LBP [22], but very few studies are available regarding LBP among healthcare providers. Islam et al. reported that 76.1% of medical professionals (doctors and nurses) were suffering from LBP [23]. Physical therapists are commonly exposed to work-related musculoskeletal disorders [24]. The causative factors were awake posture, lengthy service time, long duty hours, a lack of physical exercise, and poor job satisfaction [23]. In another study, about 72.9% of nurses experienced LBP at least once in the last year [25]. Literature that discusses the features of LBP and its causes among healthcare professionals in Bangladesh, such as physicians, nurses, medical technologists, hospital assistants, and clerks, is rare. Therefore, the goal of this study was to find out the characteristics of LBP and its associated factors among healthcare professionals in Bangladesh.

Methods

Study design and setting

This was descriptive cross-sectional research done at Sylhet MAG Osmani Medical College Hospital from January to February 2020. The protocol for the research, which was carried out in accordance with the 2013 version (revised) of the Helsinki Declaration, was approved by the ethical committee at Sylhet MAG Osmani Medical College Hospital.

Sample size estimation

The sample size for this cross-sectional research was calculated using the formula for estimating proportion: $n = Z\alpha^2\ P\ (1-P)/d^2$, where $Z\alpha = 1.96$; P = the expected LBP is 73% [25] and $d = 5\%$ marginal error. As a result, the minimal sample size for the current study was calculated to be 302. With a 3% chance of incomplete forms, our analysis sets the final minimum necessary sample size at 310.

Subject recruitment criteria

Participants included physicians, nurses, medical technologists, hospital clerks, and aides from Sylhet MAG Osmani Medical College Hospital. Participants were chosen based on their age (20–59 years), at least 1 year of experience working as medical staff, and willingness to participate in the research. Participants with serious pathological problems, such as spine tumors, spinal TB, spinal surgery, scoliosis, or who are pregnant and on leave from work, were not eligible for the research.

Data collection procedure

A list of 970 employees, including 200 doctors, 405 nurses, 50 medical technologists, 60 hospital clerks, and 255 hospital aids who meet the inclusion and exclusion criteria, was recruited by using a one-stage stratified cluster sampling technique [15]. In the beginning, healthcare practitioners were categorized based on their respective professions. Following the process of stratification, a simple random sample technique was used, using Microsoft Excel software, to enlist a total of 64 physicians, 129 nurses, 16 medical technicians, 19 hospital clerks, and 82 hospital aides. This sampling approach

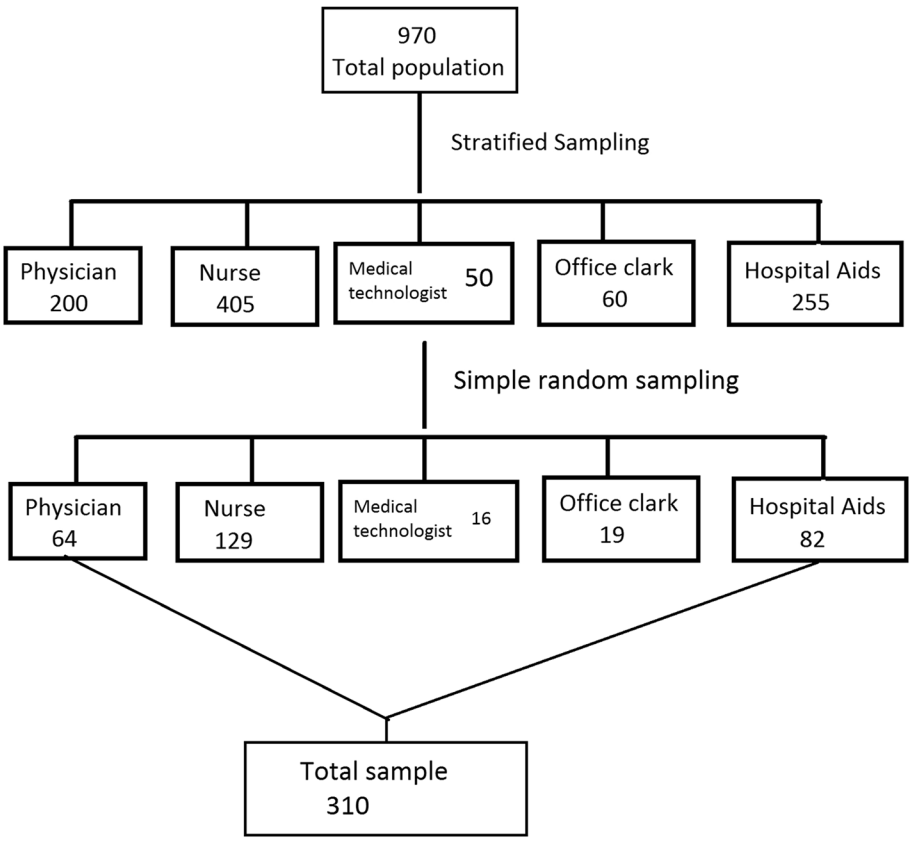

Fig. 1 Flowchart of the allocation of the participants

employed proportional allocation. A flowchart describing the technique seen in Fig. 1 has been included.

An interviewer-administered questionnaire was split into two parts to obtain information on LBP and associated risk factors. The first portion comprises questions about socio-demographics and occupations. Age, gender, height and weight, body mass index (BMI), marital status, monthly wages, and smoking habit are all sociodemographic questions. The participant's profession, years of experience, type of occupation, daily working hours, prolonged standing and sitting time at work, lifting objects, transferring patients, working in awkward positions, exercise habits, history of comorbidity, perceived stress level at work, and job satisfaction were among the occupational questions.

The second section includes the duration of LBP (at least 1 day or daily pain for at least 3 months during the past 12 months), pain intensity, seeking medical care, receiving treatment for LBP, and type of treatment. The modified Nordic musculoskeletal questionnaire was used for collecting LBP-related information [18, 25, 26]. A body diagram with a designated location on the lower back is shown on the questionnaire. To assess LBP, the questionnaire has acceptable validity and reliability [27]. The first question about LBP (primarily pain, numbness, tingling, aching, stiffness, or burning of the lower back area) considers the pain that has lasted for at least 1 day during the past 12 months. The other questions about LBP measures are chronic pain (daily pain for at least 3 months), intense pain (0 = no pain and 10 = most severe pain), seeking medical care (visiting a doctor or physiotherapist because of LBP during the last 12 months), receiving treatment for LBP, and type of treatment.

Perceived stress level during duty hours was assessed by a 5-point Likert scale, where 1 = no stress and 5 = very severe stress [28], and job satisfaction was assessed by a question: "Considering everything (co-workers, supervisor, and availability of equipment and resources) in your department, how satisfied are you with your job?" The question was rated on a 5-point Likert scale, ranging from 1 strongly agree to 5 strongly disagree [25].

In order to address language challenges, enhance the data collection process, and ensure questionnaire uniformity, we undertook the first step of translating the complete questionnaire into Bangla. Additionally, we ensured the availability of both the Bangla-translated version and the original English version of the questionnaire during data collection. In order to assess cross-cultural

adaptation, an initial sample of 16 healthcare professionals from external institutions underwent testing using the questionnaire. However, it is important to note that the data obtained from this sample were not included in the final analysis. Each question took no more than 20 min to complete.

Management of variables

Independent variables

Age and BMI were initially gathered as continuous variables, which were then classified; age was split into two groups: < 40 years and > 40 years, and BMI was classified as underweight, normal, overweight, and obese by the Asian classification. Additionally, the following factors were coded: educational level (undergraduate or graduate and above), monthly family income (≤ 30,000 taka or > 30,000 taka), job experience (≤ 5 years or > 5 years), daily duty hours (≤ 8 h or > 8 h), prolonged sitting time while working (≤ 2 h or > 2 h), prolonged standing time while working (≤ 2 h or > 2 h), need to lift objects or patients at work (yes or no), need to transfer patients at work (yes or no), have to work in an awkward position (yes or no), have any comorbidity (yes or no), have a smoking habit (yes or no), and perform regular physical exercise (yes + occasionally = yes or no) as binary variables.

Data analysis

In the beginning, data was logically ordered using Microsoft Excel for Windows. The SPSS 25.0 (IBM Corporation, New York, USA) program for Windows was used to analyze the data. The mean and 95% confidence interval are shown for the continuous variables. Categorical variables are shown as percentages and integers. The Pearson chi-square test or Fisher's exact test was used to find out whether there was an association between the variables. In binary logistic regression, odds ratios (OR) and a 95% confidence interval were used to determine the predicted risk factor for LBP (CI). The significance threshold was set at < 0.05.

Results

Initially, 332 people were evaluated, of which 5 had undergone prior spinal surgery, 8 were pregnant, 1 had spinal TB, 2 had serious sickness, and 7 were unwilling to participate. As there were no incomplete forms, this research included 310 people, with 59.7% being males and 40% being women. The mean age of the participants was 41.44 ± 8.31 years, the majority were married (91.3%), and the mean BMI was 24.93 ± 3.42 kg/m^2. A total of 59.4% of the participants have more than 10 years of work experience. A total of 73.5% of the participants work for fewer than 8 h each day. Table 1 represents the sociodemographic information of the study participants. In the last 12 months, 51.9% of individuals suffered LBP on at least 1 day, and 25.8% reported persistent LBP. A total of 14.90% of the subjects who reported discomfort had severe, intense LBP. The features of LBP among the research participants are shown in Table 2.

Association between low back pain and biopsychosocial factors

Both the 1-day ($p = 0.005$) and chronic ($p = 0.028$) durations of LBP were strongly correlated with the participants' age groups. In this investigation, there was no evidence of a connection between low back discomfort and BMI. Chronic LBP was substantially correlated with marital status ($p = 0.035$). LBP with chronic diseases and employment experience were significantly associated ($p = 0.014$). In this study, there was no correlation between chronic LBP and job stress; however, there was a substantial correlation between perceived job stress and acute LBP. Table 3 is a list of the variables' specifics.

Risk factors for back pain

According to binary logistic regression analysis, among people who experienced at least 1 day of discomfort in the previous year, the subgroup of participants with the highest odds of pain was those who were 41–59 years of age ($AOR = 1.83$, 95% $CI = 1.04$–3.22; $p = 0.034$). Females were more likely to develop pain ($AOR = 1.47$, 95% $CI = 0.86$–2.52; $p = 0.159$), people who have to lift weights at work are twice as likely to develop back pain ($AOR = 2.00$, 95% $CI = 1.06$–3.78; $p = 0.032$), and those involved in patient transfer are more likely to develop LBP ($AOR = 1.68$, 95% $CI = 0.87$–3.24; $p = 0.119$). People who work in awkward postures are more likely to develop LBP ($AOR = 6.54$, 95% $CI = 3.04$–14.10; $p < 0.001$). People who do not exercise regularly are almost four times more likely to develop LBP than those who do ($AOR = 3.81$, 95% $CI = 2.23$–6.52; $p < 0.001$), and those with other comorbidities are also more likely to develop LBP ($AOR = 1.79$, 95% $CI = 1.00$–3.20; $p = 0.048$). Table 4 displays the results of the binary logistic regression analysis.

Discussion

This study found that 51.9% of healthcare workers had LBP at least once in the previous year, which was lower than the 76.1% reported by Islam et al. among Bangladeshi doctors and nurses [23] and higher than the 18.5% of the general population in Bangladesh. Also, the prevalence of LBP in our neighboring countries is about 45.7% in India [29] and 58% in Pakistan [21]. The 1-year prevalence of LBP in developing countries such as Malaysia and Saudi Arabia is approximately 56.9% [19] and 73.9% [15]. The prevalence in Turkey is about 39% at a tertiary

Table 1 Baseline characteristics of the respondents ($n=310$)

Variable		Frequency	Percentage
Gender	Male	185	59.7
	Female	125	40.3
Marital status	Single	27	8.7
	Married	283	91.3
Age category	< 40 years	149	48.1
	> 40 years	161	51.9
BMI	Underweight	5	1.6
	Normal	80	25.8
	Overweight	169	54.5
	Obese	56	18.1
Education level	Undergraduate	156	50.3
	Graduate and above	154	49.7
Occupation	Physician	64	20.6
	Nurse	129	41.6
	Medical technologist	16	5.2
	Hospital clerk	19	6.1
	Hospital aids	82	26.5
Monthly family income	≤ 30,000 taka	154	49.7
	> 30,000 taka	156	50.3
Job experience	< 5 years	64	20.6
	5–10 years	62	20
	> 10 years	184	59.4
Daily duty hours	≤ 8 h	228	73.5
	> 8 h	82	26.5
Prolong sitting	≤ 2 h	241	77.7
	> 2 h	69	22.3
Prolong standing time while working	≤ 2 h	232	74.8
	> 2 h	78	25.2
Lifting objects/patients	Yes	97	31.3
	No	213	68.7
Transferring patient	Yes	85	27.4
	No	225	72.6
Working in awkward position	Yes	62	20
	No	248	80
Comorbidity	Yes	120	38.7
	No	190	61.3
Perceived stress during duty	No	5	1.6
	Mild	11	3.5
	Moderate	105	33.9
	Severe	90	29
	Very severe	99	31.9
Job satisfaction	Highly satisfied	30	9.7
	Satisfied	237	76.5
	Neutral	33	10.6
	Dissatisfied	10	3.2
Smoking habit	Yes	48	15.5
	No	262	84.5

Table 1 (continued)

Variable		Frequency	Percentage
Regular physical exercise	Yes	102	32.9
	Occasionally	78	25.2
	No	130	41.9

Table 2 Prevalence of LBP with different LBP-related measure during last 12 months ($n=310$)

LBP measures	Frequency	Percentage
LBP at least 1 day	161	51.9
Chronic LBP	80	25.8
Visit to clinician/physiotherapist	114	36.8
Sick leave	56	18.1
Pain intensity (VAS scale)	Mild (1–3) = 67	41.62
	Moderate (4–6) = 70	43.48
	Severe (7–10) = 24	14.90
Receiving treatment for LBP	Yes = 114	70.80
	No = 47	29.20
Type of treatment	Only medicine = 40	35.08
	Only physiotherapy = 8	7.01
	Medicine with physiotherapy = 66	57.89

level hospital [18] and 61.3% in a multicenter study among 1600 healthcare providers [28]. The prevalence of LBP in a lower-income country like Uganda is about 39.6% at a tertiary-level hospital. A systematic review study in Iran reported a global 1-year prevalence of 58% for LBP [13], while another study reported 54.8% [12]. The discrepancies in the results can be brought on by the varying sample size, various working circumstances, participant perceptions of pain, or the workload of healthcare professionals at work.

This study revealed the highest prevalence was in hospital aids (57.3%) and the lowest in medical technologists (37.5%) among the five healthcare provider groups, which was a higher prevalence rate than in India (43.8%) [30] and in Turkey (53.5%) among hospital aids. Hospital aids are class-4 workers responsible for manually lifting and transporting patients or objects and assisting other healthcare providers in various hospital settings [30]. This current study also reported that 52.7% of nurses, 48.4% of physicians, and 47.4% of hospital clerks reported experiencing LBP for at least 1 day in the past 12 months. Whereas in Saudi Arabia, 72.9% of nurses and 73.2% of physicians were affected [15]; in Turkey, 77.1% of nurses, 63.3% of physicians, 69.6% of medical technologists, and 54.1% of hospital clerks were affected [28].

In this study, 48.4% of physicians reported having LBP at least once in the past 12 months. In the hospital context, doctors play a crucial role in patient evaluation, drug prescription, and surgical intervention—tasks that frequently put them at risk for LBP. According to systematic review research, 36 to 68% of doctors have LBP annually [31]. On the other hand, 52.7% of nurses experienced LBP; however, Sanjoy et al. reported that in their earlier study, 72.9% of nurses had LBP, while another study in Taiwan revealed 66.0% of nurses had LBP [26]. The discrepancy in these findings might be attributed to the hospital's newly hired nurses, who decreased the workload (about 200 nurses were hired in 2018) [32]. Another survey in the quarter, however, had a similar result (54.3%) to our study [16].

In our survey, 25.8% of healthcare professionals reported having chronic LBP, 14.90% of them reported having severe pain, 36.8% had seen a doctor or physiotherapist, and 18.1% had missed work as a result of LBP. Those who had LBP received medical treatment in the sum of 70.80%, with a combination of medicine and physical therapy being the most common form of care (57.89%). Similar outcomes were also shown in Turkey, where 25.8% of patients reported having severe lower back pain, 33.3% consulted with a doctor, and 72.2% received medical care and physiotherapy [28]. In another study, 30.5% of individuals reported having sever intense pain, of which 32.6% sought medical advice and 84.6% received both medical care and physiotherapy [18].

Table 3 Association between biopsychosocial factors and low back pain ($n=310$)

Variable ($n=310$)	LBP for ≥ 1 day		*p*-value	Chronic LBP		*p*-value
	Yes	No		Yes	No	
Age category						
20–40 (149)	64 (43.0)	85 (57.0)	0.002*	30 (20.1)	119 (79.9)	0.028*
41–59 (161)	97 (60.2)	64 (39.8)		50 (31.1)	111 (68.9)	
Gender						
Male (185)	87 (47.0)	98 (53.0)	0.035*	42 (22.7)	143 (77.3)	0.129
Female (125)	74 (59.2)	51 (40.8)		38 (30.4)	87 (69.6)	
BMI						
Underweight (5)	2 (40)	3 (60)	0.073	1 (20.0)	4 (80.0)	**0.056
Normal (80)	43 (53.8)	37 (46.3)		15 (18.8)	65 (81.3)	
Overweight (169)	79 (46.7)	90 (53.3)		42 (24.9)	127 (75.1)	
Obese (56)	37 (66.1)	19 (33.9)		22 (39.3)	34 (60.7)	
Marital status						
Single (27)	11 (40.7)	16 (59.3)	0.223	2 (7.4)	25 (92.6)	0.022*
Married (283)	150 (53.0)	133 (47.0)		78 (27.6)	205 (72.4)	
Educational qualification						
Undergraduate (156)	86 (55.1)	70 (44.9)	0.257	49 (31.4)	107 (68.6)	0.021*
≥ graduate (154)	75 (48.7)	79 (51.3)		31 (20.1)	123 (79.9)	
Occupation						
Physician (64)	31 (48.4)	33 (51.6)	0.593	9 (14.1)	55 (48.4)	0.065
Nurse (129)	68 (52.7)	61 (47.3)		32 (24.8)	97 (75.2)	
Medical technologist (16)	6 (37.5)	10 (62.5)		5 (31.3)	11(68.8)	
Hospital clerk (19)	9 (47.4)	10 (52.6)		5 (26.3)	14 (73.7)	
Hospital aids (82)	47 (57.3)	35 (42.7)		29 (35.4)	53 (64.6)	
Job experience						
< 5 years (64)	26 (40.6)	38 (59.5)	0.121	8 (12.5)	56 (87.5)	0.014*
5–10 yeas (62)	33 (53.2)	29 (46.8)		15 (24.2)	47 (75.8)	
> 10 years (184)	102 (55.4)	82 (44.6)		57 (31.0)	127 (69.0)	
Daily duty hours						
≤ 8 h (228)	121 (46.9)	107 (46.9)	0.505	63 (27.6)	165 (72.4)	0.221
> 8 h (82)	40(48.8)	42(51.2)		17 (20.7)	65 (79.3)	
Prolong standing time while working						
< 2 h (232)	120 (51.7)	112 (48.3)	0.898	61 (26.3)	171 (73.7)	0.736
> 2 h (78)	41 (52.6)	37 (47.4)		19 (24.4)	59 (75.6)	
Prolong sitting time						
< 2 h (241)	125 (51.9)	116 (48.1)	0.964	67 (27.8)	174 (72.2)	0.134
> 2 h (69)	36 (52.2)	33 (47.8)		13 (18.8)	56 (81.2)	
Lifting objects/patients						
Yes (97)	65 (67.0)	32 (33.0)	0.000*	34 (31.1)	63 (64.9)	0.012*
No (213)	96 (45.1)	117 (54.9)		46 (21.6)	167 (78.4)	
Transferring patients						
Yes (85)	57 (67.1)	28 (32.9)	0.001*	30 (35.3)	55 (64.7)	0.019*
No (225)	104 (46.2)	121 (53.8)		50 (22.2)	175 (77.8)	
Working in awkward position						
Yes (63)	53 (84.1)	10(15.9)	0.000*	32(50.8)	31 (49.2)	< 0.001*
No (247)	108 (43.7)	139(56.3)		49 (19.8)	198 (80.2)	
Comorbidity						
Yes (120)	75 (62.5)	45 (37.5)	0.003*	41 (34.2)	79 (65.8)	0.008*
No (190)	85 (44.7)	105 (55.3)		39 (20.5)	151 (79.5)	

Table 3 (continued)

Variable ($n=310$)	LBP for ≥ 1 day		*p*-value	Chronic LBP		*p*-value
	Yes	No		Yes	No	
Perceived stress during work						
No (5)	0 (0.0)	5 (100)	0.033**	0 (0.0)	5 (100)	0.452
Mild (11)	4 (36.4)	7 (63.6)		1 (9.1)	10 (90)	
Moderate (105)	50 (47.6)	55 (52.4)		25 (23.8)	80 (76.2)	
Severe (90)	47 (52.2)	43 (47.8)		25 (27.8)	65 (72.2)	
Very severe (99)	60 (60.6)	39 (39.4)		29 (29.3)	70 (70.7)	
Job satisfaction						
Highly satisfied (30)	12 (40.0)	18 (60.0)	0.492	9 (30.0)	21 (70.0)	0.917
Satisfied (237)	124 (52.3)	113 (47.7)		59 (24.9)	178 (75.1)	
Neutral (33)	19 (57.6)	14 (42.4)		9 (27.3)	24 (72.7)	
Dissatisfied (10)	6 (60.0)	4 (40.0)		3 (30.0)	7 (70.0)	
Regular physical exercise						
Yes (102)	39 (38.2)	63 (61.8)	0.000*	19 (18.6)	83 (81.4)	0.010*
Occasionally (78)	35 (44.9)	43 (55.1)		16 (20.5)	62 (79.5)	
No (130)	87(66.9)	43 (33.1)		45 (34.6)	85 (65.4)	
Smoking habit						
Yes (48)	28 (58.3)	20 (41.7)	0.335	14 (29.2)	34 (70.8)	0.563
No (262)	133 (50.8)	129 (49.2)		66 (25.2)	196 (74.8)	
Receive treatment for LBP						
Yes (114)	114 (100)	0 (0.0)	0.000**	71 (62.3)	43 (37.7)	< 0.001*
No (196)	47 (24.0)	149 (76.0)		9 (4.6)	187 (95.4)	
Treatment type						
None (196)	47 (24.0)	149 (76.0)	0.000**	9 (4.6)	187 (95.4)	< 0.001*
Medication only (40)	40 (100)	0 (0)		25 (62.5)	15 (37.5)	
Physiotherapy only (6)	8 (100.)	0 (0)		3(37.5)	5 (62.5)	
Both (66)	66 (100)	0 (0)		43 (65.2)	23 (34.8)	

* Statically significant ($p = \leq 0.05$)

** Fisher's exact test

This current study found a significant association between individual and work-related factors for at least 1 day of LBP in the past 12 months among the healthcare providers, including age category, gender, comorbidity, perceived stress during work, physical exercise, working in an awkward position, lifting objects, and patients' transfers. Previous studies in Turkey among healthcare providers revealed a significant association with their age category, gender, perceived stress at work, physical exercise, lifting objects, and patient transferring [18, 28]; age category, comorbidity, physical exercise, and lifting objects in Pakistan [21]; and age category, lifting objects, and physical exercise in Saudi Arabia [15]. A meta-analysis conducted in Iran found that age, stress on the job, physical activity, and awkward posture are all significant risk factors for LBP in healthcare providers [12]. In the current study, advanced age (60.2% of respondents were between the ages of 41 and 59) was substantially linked to the development of LBP. An Iranian meta-analysis research, a cross-sectional study in Pakistan, and a Turkish study all corroborate this conclusion [12, 21, 28].

According to this study, female respondents reported having greater LBP than male respondents. This study validated prior research from Turkey, Saudi Arabia, and Ethiopia [15, 28, 33]. It may be due to physiological factors (menstruation and pregnancy) and anatomical differences between males and females [34–37]. One of the main indicators of developing LBP is an awkward posture. Throughout their shifts, healthcare professionals, particularly nurses, doctors, and hospital assistants, frequently bend and twist. Moreover, research in Iran found that excessive posture flexion is the main cause of LBP among nurses [38]. Physical activity improves one's health and well-being [39]. Physical activity improves one's health and well-being [35]. This research found a link between physical activity and LBP for at least 1 day, persistent LBP, seeing the doctor, and taking time off

Table 4 Multivariable binary logistic regression analysis of risk factors and different LBP-related measure ($n = 310$)

LBP measure	Risk factors	OR (95% *CI*)	*p*-value
LBP for at least 1 day	Age		
	20–40 years	Ref.	0.034*
	41–59 years	1.83 (1.04–3.22)	
	Gender		
	Male	Ref.	0.159
	Female	1.47 (0.86–2.52)	
	Lifting objects/patients		
	No	Ref.	0.032*
	Yes	2.00 (1.06–3.78)	
	Transferring patients		
	No	Ref.	0.119
	Yes	1.68 (0.87–3.24)	
	Working in awkward positions		
	No	Ref.	< 0.001*
	Yes	6.54 (3.04–14.10)	
	Comorbidity		
	No	Ref.	0.048*
	Yes	1.79 (1.00–3.20)	
	Regular physical exercise		
	Yes	Ref.	< 0.001*
	No	3.81 (2.23–6.52)	
Chronic LBP	Age		
	20–40 years	Ref.	0.720
	41–59 years	1.14 (0.54–2.41)	
	Marital status		
	Single	Ref.	0.115
	Married	3.70 (0.72–8.92)	
	Qualification		
	Below graduate	Ref.	0.455
	Below graduate	0.79 (0.43–1.45)	
	Working experience		
	< 5 years	Ref.	0.377
	5–10 years	1.59 (0.56–4.51)	
	10 years	1.95 (0.66–5.74)	0.223
	Lifting objects/patients		
	No	Ref.	0.469
	Yes	1.27 (0.66–2.42)	
	Transferring patients		
	No	Ref.	0.107
	Yes	1.74 (0.88–3.43)	
	Working in awkward positions		
	No	Ref.	< 0.001*
	Yes	4.19 (2.22–7.89)	
	Regular physical exercise		
	Yes	Ref.	0.003*
	No	2.39 (1.35–4.23)	

Table 4 (continued)

LBP measure	Risk factors	OR (95% *CI*)	*p*-value
Seeking medical care	Age		
	20–40 years	Ref.	0.143
	41–59 years	1.55 (0.86–2.82)	
	Marital status		
	Single	Ref.	0.112
	Married	2.73 (0.79–9.43)	
	Transferring patients		
	No	Ref.	0.020*
	Yes	2.15 (1.13–4.10)	
	Working in awkward positions		
	No	Ref.	< 0.001*
	Yes	7.38 (3.75–14.54)	
	Comorbidity		
	No	Ref.	0.051
	Yes	1.79 (0.99–3.21)	
	Regular physical exercise		
	Yes	Ref.	0.009*
	No	2.05 (1.19–3.53)	
Sick leave	Transferring patients		
	No	Ref.	.001*
	Yes	3.39 (1.68–6.83)	
	Working in awkward positions		
	No	Ref.	< 0.001*
	Yes	4.07 (2.06–8.02)	
	Comorbidity		
	No	Ref.	0.005*
	Yes	2.77 (1.36–5.61)	
	Regular physical exercise		
	Yes	Ref.	0.012*
	No	2.32 (1.20–4.51)	

OR, odds ratio; *CI*, confidence interval

*$p < 0.05$ Statistically significant

for illness. Exercise of moderate to high intensity can prevent 11–16% of frequent or chronic LBP, according to meta-analysis research [40]. Physical activity among office employees is helpful and can prevent LBP, according to another systematic review [41]. This study did not find a significant association between occupation categories, as similarly reported in Turkey [18]. This study also did not find a significant association between BMI. A cohort study by Jensen et al. revealed BMI was not a significant risk factor for LBP among healthcare providers [42].

Strengths and limitations

A probability sampling technique was used to choose the study participants, and valid data collection instruments were used to focus on the participants' biopsychosocial factors, personal factors, work-related factors, job satisfaction, and stress at work. This study, on the other hand, was cross-sectional in nature and a single-center survey with a modestly sized sample of healthcare providers. This study cannot eliminate the chance of recall bias with a few questions, for example, perceived stress during duty, job satisfaction, and LBP.

Our study was unable to rule out age as a contributing factor in low back pain because it focused on work-related low back pain and included healthcare workers of all ages as study participants.

Conclusion

Healthcare providers are the backbone of the healthcare system in developed and developing countries. More than half of the healthcare professionals in this research reported having LBP at least once over the previous 12 months, and one-fourth reported having chronic LBP, both of which had a significant negative impact on their work and personal lives and posed a threat to the public's health. Therefore, promoting awareness of correct patient handling and safe lifting techniques, as well as ongoing campaigns for ergonomic understanding of optimal work posture, might lessen the debilitating effects of LBP. Additionally, a good medical examination and medicines are necessary for the prevention, management, and treatment of comorbidity. Promote regular physical activity with a focus on increasing the number of healthcare professionals hired in the hospital environment. A nationwide cohort study focused on multi-level healthcare settings should be done to find out the exact scenario of LBP and its associated factors among healthcare providers.

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Authors' contributions
Conceptualization, SA and MJI; methodology, SA and MJI; software, SA and MJI; validation and investigation, SA, MJI, KMKI, MAM, SKR, and SRC; formal analysis, SA and MJI; writing—original draft preparation, SA and MJI; and writing—review and editing, SA and MJI. All authors have read and agreed to the published version of the manuscript.

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The dataset is available upon request.

Declarations

Ethics approval and consent to participate
Approved by the ethical review board of MAG Osmani Medical College Hospital, Sylhet-3100, Bangladesh. Written consent was taken from the participants prior to participation in this study.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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