Prevalence and Associated Factors of Low Back Pain among Physicians in Egypt

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ABSTRACT

Background: Low back pain (LBP) is a common musculoskeletal issue among healthcare workers, particularly physicians, due to the physical demands of patient care, including prolonged standing and lifting. While, LBP is well-researched globally, data on its prevalence and risk factors among Egyptian physicians is limited.

Objective: This study aimed to assess the prevalence of LBP among physicians in Egypt and identify the personal and work-related factors associated with it. **Materials and methods:** A cross-sectional study was conducted among 250 physicians in Egypt using a self-administered questionnaire covering personal characteristics, LBP history, and work-related factors. A total of 240 valid responses were analyzed. Prevalence and associations with risk factors were determined through statistical tests, including Chi-square and logistic regression. **Results:** The prevalence of LBP was 82.5%, with females (86.2%) experiencing higher rates than males (75.3%, p = 0.048). Younger physicians (mean age 39.4 ± 10.5 years) reported more LBP than older ones (p = 0.044). Physicians outside metropolitan Cairo had a higher prevalence of LBP (p = 0.035). Work-related factors such as prolonged standing (p = 0.021) and frequent bending (p = 0.017) were significantly associated with LBP, while sustained sitting was protective (p = 0.034). Of the participants, 64.3% showed treatment, and 13.3% took sick leave due to LBP. **Conclusion:** LBP was highly prevalent among Egyptian physicians, particularly females, younger doctors, and those working outside metropolitan Cairo. Improving workplace ergonomics may reduce LBP's impact and enhance physicians' health and productivity.

Keywords: Low back pain, Musculoskeletal disorders, Physicians, Prevalence, Egypt, Healthcare workers.

INTRODUCTION

Low back pain (LBP) is widely recognized as a major contributor to morbidity within the healthcare workforce, exerting a profound influence on the professional functionality and overall productivity of healthcare workers (HCWs) [1]. Musculoskeletal injuries occur with greater frequency among healthcare workers compared to other professional groups, especially in individuals tasked with the physical handling and lifting of dependent patients [2].

LBP is a term encompassing a spectrum of sensations such as pain, discomfort, muscle tension, or stiffness localized in the spinal region between the inferior costal margins and the gluteal folds, which may or may not radiate to the lower limbs in the form of sciatica [3]. LBP imposes a considerable economic strain on governmental systems, primarily through heightened rates of disability, diminished workforce productivity, absenteeism, and escalating healthcare costs [4]. Healthcare providers who are frequently involved in lifting and transferring patients or handling heavy equipment face an elevated risk of developing LBP [5].

The etiology of LBP has been associated with a broad spectrum of risk factors, including personal characteristics, psychosocial influences, occupational demands, and environmental conditions [5]. Occupational risk factors contributing to LBP encompass abrupt physical exertion, forward bending, twisting motions, heavy lifting, and prolonged static postures. In contrast, personal risk factors included variables such as gender, age, body mass index, family history, smoking habits, alcohol consumption, and levels of physical activity [6]. This study was conducted in the Aseer region of southwestern Saudi Arabia reported an overall 12-month prevalence of LBP among healthcare workers delivering primary, secondary, and tertiary care services at 73.9% (95% CI: 70.7–77.0). Moreover, 40.5% of those affected by LBP required medication and/or physiotherapy for management [7].

In Northwest Ethiopia, a separate cross-sectional study revealed that over 50% of its participants were experiencing LBP during the study [8]. The use of a standardized Nordic musculoskeletal questionnaire can yield reliable and valuable insights into musculoskeletal symptoms, serving either as a prompt for more detailed investigations or as a basis for making informed decisions about preventive strategies [9]. This study aimed at assessing the prevalence of LBP among Physicians in Egypt and its associated factors.

MATERIALS AND METHODS

This is across sectional study with physicians who worked at least for one year at any hospital in Egypt. Out of 250 distributed questionnaire, 240 responses were included in the study and 10 were excluded as 4 refused to participate, 3 had disc prolapse and 2 had osteoporosis and one did not respond.

Following an explanation of the study's objectives, physicians who agreed to participate were requested to complete a self-administered questionnaire comprised of three sections. The first section gathered demographic and personal data, including information on gender, age, place of residence, highest educational attainment, marital status, occupation, number of children, smoking habits, regular physical activity, co-existing medical conditions, as well as weight and height measurements. The second included questions to evaluate the characteristics of low back trouble adapted from the standardized Nordic musculoskeletal questionnaire [9], while the third part included questions asking about work-related risk factors (specialty, years

Received: 19/05/2024
Accepted: 17/07/2024

in health care system, working hours a day, working days a week, rest breaks, sustained sitting, prolonged standing, moving patients or lifting heavy equipment, work shifts and using computer or not). Participants' consent was implied through their completion of the questionnaire. The questionnaire was thoroughly translated into Arabic and initially distributed to 20 participants in a pilot study to evaluate its clarity, the time required for completion, and any potential issues. Based on the feedback, revisions were made before converting it into a Google Form, with the link shared through WhatsApp and other social media platforms.

Sample Size

The aim of this study is to detect the prevalence of LBP among physicians in Egypt. A previous study reported that the prevalence of LBP was 87.7% among physicians [10]. A total sample size of 166 physicians were needed to provide 95% confidence level for a single proportion and with 5% margin of Error. This sample was increased by 20% to account for expected non-responses, so the total sample needed were 200 physicians. Sample size calculation was done using Epi info version 7.1.5.2.

Ethical considerations: This study was conducted following approval from the Research Ethics Committee, National Cancer Institute, Cairo University. The study adhered to the ethical principles set out in the Declaration of Helsinki and complied with The Code of Ethics of the World Medical Association for research involving human subjects.

Statistical Analysis

Data handling and analysis were carried out using the Statistical Package for Social Sciences (SPSS) version 23. For numerical data, results were summarized as means with standard deviations. Categorical data were presented as frequencies and percentages. Normality testing for numerical variables was conducted using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Group comparisons for normally-distributed numerical variables were made using the Student's t-test, while the Mann-Whitney U test was employed for non-normally-distributed variables. Categorical data comparisons between groups were performed using either Chi-square or Fisher's exact tests where appropriate. Logistic regression analysis was utilized to identify factors associated with LBP. All statistical tests were two-tailed, with significance set at P-values ≤ 0.05.

RESULTS

The study comprised a total of 240 physicians, with the participants' mean age of 40.20 ± 11.60 years. The majority were females (66.2%). 79.2% of the participants were married and 14.8 % were single. More than half of them were from outside metropolitan Cairo (64.1%). 46.2 % of the physician had MD degree followed by 40.7% who had MSC degree. the majority of participant worked as specialist or consultant and only 13.1% were general practitioner. 22.7% only had chronic disease. Approximately 90% of them were non-smokers .68.5% of the participant did not practice physical activity and near half of them were overweight (47.7%) (**Table 1).**

Table (1): Personal characteristics of the participants

Variables		N	%
Age (Mean ± SD)		40.20 ±11.60	
Sex	Male	81	33.8
	Female	159	66.2
Marital Status	Single	35	14.8
	Married	187	79.2
	Divorced	5	2.1
	Widow	9	3.8
Residence	Metropolitan Cairo	85	35.9
	Outside metropolitan Cairo	152	64.1
Education level	Bachelor	31	13.1
	MSc	96	40.7
	MD	109	46.2
Job	General practitioner	31	13.1
	Specialist	85	36.0
	Consultant	120	50.8
Chronic disease	No	184	77.3
	Yes	54	22.7
Smoking	No	214	89.9
	Yes	21	8.8
	X-smoker	3	1.3
Physical activity at least 30 min,3 times /week	No	161	68.5
	Yes	74	31.5
BMI	Normal	59	24.7
	Overweight	114	47.7
	Obese	66	27.6

SD: Standard deviation, MSc: Master of Science, MD: Doctor of Medicine, min: Minutes, BMI: Body mass index.

Most of the physician had LBP (82.5%). From those who reported LBP, mean age when feeling LBP was 31.96 years old. Only 5.6% of them reported hospital admission due to LBP. Job changing due to LBP had reported by 12.6% of physician. 33.5% of them mentioned lower back problems in the past 12 months either from 1-7 days or > 30days but not every day, 19.8% mentioned pain about 8-30 days in the past 12 months and only 10% had LBP every day in the past 12 months. More than one-third (42.1%) reported that LBP reduced their activity at home or at work and 50.6% reported that LBP reduced their leisure activity. About one-third (37.1%) of the participants had lower back problem prevented them from doing their usual work (at home or away from home) in the past 12 months **(Table 2).**

Table (2): Characteristics of low back pain among the physicians

Variables		N for LBP (198)	%
1. History of LBP	No	42	17.5
	Yes	198	82.5
2. Age when feeling LBP (Mean ±SD)		31.98±7.22	
3. History of hospital admission due to LBP	No	187	94.4
	Yes	11	5.6
4. Have you ever had to change your job or task because of lower back pain?	No	173	87.4
	Yes	25	12.6
5. How much time have you had lower back problems in the past 12 months?	Zero days	6	3.0
	1-7 days	66	33.5
	8-30days	39	19.8
	>30 days (not daily)	66	33.5
	Every day	20	10.2
6. Has a lower back problem reduced your activity in the past 12 months? [Work activity (at home or away from home)]	No	110	57.9
	Yes	80	42.1
6. Has a lower back problem reduced your activity in the past 12 months? [leisure activity]	No	89	49.4
	Yes	91	50.6
7. How much time has your lower back problem prevented you from doing your usual work (at home or away from home) in the past 12 months?	0 day, No day	69	35.6
	1-7 days	72	37.1
	8-30 days	31	16.0
	>30	22	11.3

SD: Standard deviation, LBP: Low back pain

Nearly one-third (30.9%) of physicians sought medical advice, such as seeing a doctor, physical therapist, chiropractor, or other healthcare professionals, for lower back problems in the past 12 months. The majority (64.3%) received treatment for LBP, with most treatments (77.1%) consisting of analgesics, muscle relaxants, and antidepressants. About half (46.9%) experienced lower back problems in the past seven days, and 13.3% took sick leave due to these issues (**Table 3)**.

Table 3: Responses of physician about pain characteristics

Variables		LBP (N=198)	%
8. Have you seen a doctor, physical therapist, chiropractor or anyone else for lower back problems in the past 12 months?	No	134	69.1
	Yes	60	30.9
9. Have you received any treatment for lower back problems?	No	70	35.7
	Yes	126	64.3
If the answer is yes, please specify the type of treatment (you can choose more than one type): [The treatment you received]	Analgesic, muscle relaxant, Antidepressants	101	77.1
	Analgesic, muscle relaxant, Antidepressants and corticosteroids	1	0.8
	Analgesic, muscle relaxant, Antidepressants and physiotherapy	16	12.2
	Analgesic, muscle relaxant, Antidepressants, corticosteroids and physiotherapy	4	3.1
	Analgesic, muscle relaxant, Antidepressants, corticosteroids, physiotherapy and surgery	4	3.1
	Physiotherapy	5	3.8
10. Have you had lower back problems in the past 7 days?	No	104	53.1
	Yes	92	46.9
11. Have you taken sick leave due to lower back problems?	No	170	86.7
	Yes	26	13.3

LBP: Low back pain

About two-thirds of the participants (63.7%) took a break between work periods. 16.8% only moved a patient, carried, or moved heavy equipment while performing their work. More than half of them stood for two or more hours without changing their position. Half of them worked at day (52.1%) while 46.6% worked at both day and night. About half of the participants reported that staff was sufficient to perform the required tasks. 58.3% of the physician thought that working at night exacerbate lower back pain. More than half (58.4%) used computer in their work they spent on average about 3.5 hours per day. Half of the physician (54.6%) had a private work in (clinic/hospital/medical center...etc.) in addition to government work **(Table 4).**

Table (4): Work habits and environmental factors associated with lower back pain among physicians

Variables		N (for all participants)	%
16. Do you take a break between work periods?	No	86	36.3
	Yes	151	63.7
17. While performing your work, do you move a patient, carry, or move heavy equipment?	No	198	83.2
	Yes	40	16.8
18. While doing your job, do you sit for two or more hours without changing your position?	No	101	42.3
	Yes	138	57.7
19. While doing your job, do you stand for two or more hours without changing your position?	No	115	48.3
	Yes	123	51.7
20. Do your work shifts:	At Day	122	52.1
	At Night	3	1.3
	Both	109	46.6
21. Do you think the staff is sufficient to perform the required tasks?	No	112	47.5
	Yes	124	52.5
22. In your opinion, does working at night exacerbate lower back pain?	No	98	41.7
	Yes	137	58.3
23. Do you use a computer in your work?	No	99	41.6
	Yes	139	58.4
24. If yes, please indicate the number of hours of use per day		3.54±2.05	
25. Do you do any private work in (clinic/hospital/medical center...etc.) in addition to government work?	No	108	45.4
	Yes	130	54.6

The prevalence of LBP in the studied sample was 82.5%. Females experienced LBP more than male (p value =0.048). Younger aged physician suffered from LBP more than older (p=0.044). Those who were from outside metropolitan Cairo had LBP higher than those from metropolitan Cairo (p value=0.035). Other studied personal factors (marital status, Education level, Job, Chronic disease, smoking history, Physical activity and BMI) were not significantly associated with LBP in the last 12 months **(Table 5).**

Table (5): Relation between Personal factors and LBP among physicians

Variables		Low back pain				P value*
		No		Yes		
		N (42)	%	N (198)	%	
Sex	Male	20	24.7	61	75.3	0.048
	Female	22	13.8	137	86.2	
Age (years)	Mean ±SD	44.60±15.10		39.40±10.50		0.044
Marital status	Single	5	14.3	30	85.7	0.791
	Married	34	18.2	153	81.8	
	Divorced	0	0.0	5	100.0	
	widow	2	22.2	7	77.8	
Number of children (years)	Mean ±SD	2.35±0.88		2.35±0.93		0.975
Residence	Metropolitan Cairo	21	24.7	64	75.3	0.035
	outside metropolitan Cairo	21	13.8	131	86.2	
Education level	Bachelor	8	25.8	23	74.2	0.092
	MSC	11	11.5	85	88.5	
	MD	23	21.1	86	78.9	
Job	General practitioner	6	19.4	25	80.6	0.336
	Specialist	11	12.9	74	87.1	
	Consultant	25	20.8	95	79.2	
Chronic disease	No	31	16.8	153	83.2	0.685
	Yes	11	20.4	43	79.6	
Smoking	No	35	16.4	179	83.6	0.201
	Yes	6	28.6	15	71.4	
	X-smoker	1	33.3	2	66.7	
Physical Activity	No	28	17.4	133	82.6	1.00
	Yes	13	17.6	61	82.4	
BMI	Normal	13	22.0	46	78.0	
	Overweight	16	14.0	98	86.0	0.356
	Obese	13	19.7	53	80.3	

*Chi square test, p value set significant at ≤ 0.05, BMI: Body mass index

Years of experience or working hours/day or working days per week or specialty not statistically associated with LBP in the last 12 months (Table 6).

Table (6): Work-related factors associated with LBP among physicians

		LBP				P value*
		No		Yes		
		N =42	%	N =198	%	
Experience	<=5	9	19.6	37	80.4	0.438
	6-10	8	11.4	62	88.6	
	11-15	13	19.4	54	80.6	
	>15	12	21.8	43	78.2	
Working hours /day	<8	16	14.2	97	85.8	0.173
	>=8	25	21.2	93	78.8	
Working days /week	<=5	28	20.0	112	80.0	0.214
	>5	12	12.9	81	87.1	
Specialty	Internal medicine	6	11.8	45	88.2	0.442
	Family Medicine &public health	2	18.2	9	81.8	
	Surgery	10	27.0	27	73.0	
	GYN/OB	0	0.0	7	100.0	
	Oncology	3	16.7	15	83.3	
	Radiology	1	14.3	6	85.7	
	Clinical pathology	10	25.6	29	74.4	
	Ophthalmology	1	5.3	18	94.7	
	Orthopedics	0	0.0	3	100.0	
	Pediatrics	0	0.0	6	100.0	
	Anesthesia & ICU	3	27.3	8	72.7	
	Psychiatry	1	33.3	2	66.7	
	Others	5	22.7	17	77.3	

*Chi square test, p value set significant at ≤0.05, LBP: Low Back Pain, GYN/OB: Gynecology/Obstetrics, ICU: Intensive Care Unit.

DISCUSSION

The majority of studies investigating LBP among healthcare professionals have primarily focused on nurses [11-13], while relatively few epidemiological studies have estimated the prevalence and identified associated risk factors of LBP specifically among physicians [14]. This study aimed to evaluate the prevalence of LBP and identify its determinants among physicians working in Egypt.

In the present study, a significant proportion of physicians (82.5%) reported experiencing LBP, with 33.5% suffered from it in the past year. Similar findings have emerged from recent surveys in Riyadh and the Eastern Region, where the lifetime prevalence of LBP among physicians in the Eastern Region was reported at 67.7%, and the rate of clinic visits for LBP was 32.6% [15]. Lifetime prevalence of LBP was reported to be 87.7% in Riyadh [10]. In this study, 94% of physicians with LBP had minimal disability, while 6% experienced moderate disability, with no reports of severe disability. Global research reflects varying prevalence rates, with Turkish physicians reporting a lifetime LBP prevalence of 53.9% [16].

Among physicians in Iran, the prevalence of LBP was 15.1% [17]. In a separate investigation conducted in Iran, the total prevalence of LBP among resident physicians reached 56.8% [18]. In Kuwait, the 12-month LBP prevalence among physicians was 13.7% [19]. In Malaysia, the cumulative prevalence of LBP was 72.5% while the 12-months prevalence was 56.9% [20].

The prevalence of LBP in India among healthcare professionals was 45.7% [21] in Bangladesh, Nigeria, and Ireland, it was 11.9%, 39.1%, and 30%, respectively which is lower than the result of this study [22-24]. The likely cause of this difference lies in the methodological heterogeneity used across studies, for instance. The differences in prevalence rates observed across studies, including the current one, may be explained by variations in the demographic and occupational characteristics of participants involved, as well as the use of differing tools and methodologies for identifying LBP.

Our study revealed that 75.3% of male physicians and 86.2% of female physicians currently suffer from LBP. These results align with those of **Tanzil *et al.*** [25] and **Mehrdad *et al.*** [26] who reported a lower prevalence than ours. In their studies, LBP prevalence among healthcare workers, including doctors, was 40.5% in males, 44.8% in females, and 39% in males. However, the disparity in LBP prevalence among female healthcare workers is notable, as these studies considered all healthcare professionals. Physicians, irrespective of gender, face an elevated risk of LBP due to their heavy workloads, which include teaching medical students, performing surgeries, and attending to patients. It was further noted that female physicians exhibited a slightly higher prevalence of

LBP compared to their male counterparts. This disparity may be attributed to several factors, including psychological influences, hormonal fluctuations, the physiological impact of menstruation, and the smaller surface area of SI joint in females, which leads to greater mechanical stress across these joints [27].

Raza *et al.* [28] conducted a separate study in Lahore, the findings of which contrasted with those of our investigation. Their results indicated that 61.85% of male physicians and 38.15% of female physicians were affected by LBP. The disparity in our findings may be attributed to the unequal representation of male and female physicians in our study. This is supported by a study conducted by **Shah *et al.*** [29] in Surat, where it was similarly observed that female physicians experienced a slightly higher incidence of LBP compared to their male counterparts. Evidence indicates that females may have a higher susceptibility to LBP compared to males, likely due to inherent anatomical, physiological, and structural differences. Moreover, women are at an increased risk of mechanical challenges, such as sprains and strains, in comparison with their male counterparts [27]. In the current study, female physicians exhibited a higher prevalence of LBP compared to their male colleagues. This observation aligns with the results of several other studies, which have similarly shown that females are more predisposed to experiencing LBP than males [16, 18, 30].

In this study, 33.5% of physicians reported having experienced LBP at least once in the past year. Physicians, particularly in hospital environments, are frequently subjected to LBP due to their pivotal roles in patient assessment, medication management, and surgical procedures. Systematic reviews have shown that LBP affects 36% to 68% of physicians annually [31].

In our study, 30.9% of healthcare professionals reported consulting a physician or physiotherapist, with 82.5% had a history of LBP. Of those affected, 64.3% received medical treatment, which included medication alone in 77.1% of cases and a combination of medication and physiotherapy in 3.1%. Similar findings were observed in Turkey, where 25.8% of individuals experienced severe LBP, 33.3% sought medical care, and 72.2% received a combination of medical treatment and physiotherapy [32]. In another study, 30.5% of participants reported suffering from severe acute pain. Among them, 32.6% consulted a healthcare professional, and 84.6% received a combination of medical treatment and physiotherapy [16].

In the present study, LBP was linked to occupational factors such as prolonged standing and repetitive bending. Interestingly, while extended sitting was identified as a protective factor in this study, it has been reported as a risk factor for LBP in other research [16]. Healthcare professionals who frequently engaged in bending and twisting had 1.89 times higher odds of developing LBP compared to those who did not. This elevated risk may be attributed to the combined effects of repetitive bending and lifting heavy objects, which significantly increases intradiscal pressure and may result in disc damage. Recurrent forward bending (flexion) and twisting (rotation) generate shear and compressive forces on the intervertebral discs, potentially leading to disc tears and herniation [16].

Healthcare workers who experienced prolonged standing were found to be 2.6 times more likely to develop LBP compared to those who did not. This can be attributed to the primary role of extended standing in causing spinal hypomobility, which may lead to degenerative changes in the lumbar spine. Such changes cause the pelvis to shift backward, exaggerating the lumbar curve and contributing to LBP. The tightening and spasming of the lumbar muscles can place pressure on the spinal nerves, resulting in pain. Additionally, standing for extended periods reduces blood flow to the muscles, hastening fatigue and leading to discomfort in the lower back. Conversely, healthcare personnel who engaged in prolonged sitting (more than two hours) were 51% less likely to experience LBP than those who did not [8].

Nevertheless, our study had some limitations. Primarily, the results may not be fully applicable to clinicians working in other healthcare settings. Future research could involve clinicians from both governmental and private healthcare sectors, which would provide additional insights and broader applicability of the findings. Moreover, due to the cross-sectional design of this study, the results must be interpreted with caution, as they demonstrated associations rather than establishing a causal relationship between risk factors and the prevalence of LBP. Additionally, the reliance on a self-reported questionnaire as the primary data collection tool introduces the potential for recall bias.

CONCLUSIONS

The study revealed a high prevalence of LBP among physicians, with 82.5% reporting LBP within the last 12 months. Females and younger physicians experienced LBP more frequently than their counterparts. Additionally, physicians from outside metropolitan Cairo had a higher prevalence of LBP compared to those from metropolitan areas.

Conflict of Interest: None.
Funding: None.

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