

Prevalence of Low Back Pain, Disability Among Dentists In Saudi Arabia: A Cross Sectional Study

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Abstract Background: Low back pain (LBP) is a major global health condition which affects individuals across various occupational groups. dentists, specifically, are prone to experiencing LBP due to the physically demanding nature of their work. This study aims to investigate the prevalence and determinants of LBP among dentists. **Methodology:** This cross sectional study was carried out among dentists working in different regions in Saudi Arabia. Sociodemographic characteristics, Modified Oswestry Low Back Pain Disability grading, self-perceived health were collected. SPSS version 20 was used to calculate frequency, percentage and p values. **Results:** Among 116 participants, majority 66 (56.9%) were males, 83 (71.5%) had Low back pain. Onset of LBP was gradual in 111(95.7%), majority (37%) have worked in health care profession for 6 to 10 years. Majority 52 (44.8%) work 5 days a week, 67 (80.7) had mild LBP. **Conclusion:** The prevalence of LBP was 71.5%. Occupational prevention activities should be planned to alleviate the presence of LBP among dentists.

Key Words low back ache, dentists, modified oswestry low back pain disability, Saudi Arabia

1. Introduction

Low back pain (LBP) is a common musculoskeletal condition, causing substantial morbidity, disability, and economic burden globally [1]. It affects individuals across all age groups and occupations, with a particularly high prevalence among dentists. Dentists are frequently exposed to physically demanding tasks, long standing, bending, and poor posture work [2], [3]. These occupational demands can contribute to the development of LBP, which leads to a diminished quality of life, decreased work productivity, and increased healthcare costs [4].

Work-related factors have been identified as important contributors to the development of LBP in various occupational settings. In healthcare settings, tasks involving patient handling and working on desk, bending during procedure and poor positioning, are recognized as significant risk factors for LBP [5], [6]. Poor ergonomic practices, such as improper chairs, inadequate training, and inadequate staffing levels, can further exacerbate the risk of LBP [7]. This study will explore the association between work-related factors, such as job demands, patient handling practices, and LBP prevalence among dentists in Saudi Arabia.

Despite its significant impact, research on this population

is relatively limited. Understanding the determinants of LBP among dentists is crucial for the development of targeted interventions and preventive measures to mitigate the burden of this condition. Therefore, this study aims to investigate the prevalence of LBP and its determinants among dentists.

In addition to work-related factors, psychosocial factors have also been implicated in the development of LBP. Dentists often face high levels of stress, emotional demands, and work-family conflicts, which can contribute to the occurrence and persistence of LBP [8], [9]. Job satisfaction and organizational support have been suggested as protective factors against LBP [10].

Individual characteristics, including age, gender, body mass index (BMI), and physical fitness, have also been associated with LBP. Older age and female gender have been consistently identified as risk factors for LBP across various populations [11]. Moreover, higher BMI and decreased physical fitness levels have been shown to increase the likelihood of LBP [12], [13]. By investigating these individual characteristics, this study will provide insights into their influence on LBP prevalence among dentists.

2. Materials and Methods

This cross sectional study was carried out among dentists working in different regions in Saudi Arabia from March to June 2023. Dentists from various dental healthcare, including hospitals and clinics. A convenience sampling approach was used to recruit participants. Inclusion criteria - Dentists currently employed in a healthcare setting. Participants with a history of pre-existing spinal conditions or trauma were excluded to ensure that the focus remains on work-related LBP.

Data was collected using self-administered questionnaires that have been previously validated and used in similar studies. The questionnaire consisted of different sections to gather information on various aspects related to LBP and its determinants. These sections include: Demographic information: Participants provide data on age, gender, years of experience in the healthcare profession, number of days of works, hours worked per week and so on.

Low back pain assessment: The prevalence of LBP was assessed using a validated self-report measure, Modified Oswestry Disability Index. Participants were asked to report the presence and intensity of LBP over a specified period (e.g., the past 12 months) and any related functional limitations.

Work-related factors: Participants will be asked to provide information on job demands, including the years of experience, days worked per week and hours worked per week. Individual characteristics: Participants were asked to provide information on age, gender, body mass index (BMI). BMI was calculated based on self-reported height and weight. Data Analysis: Descriptive statistics, such as frequencies, means, and standard deviations, were used to summarize the demographic characteristics, prevalence of LBP, and other study variables. The prevalence of LBP was calculated as the proportion of participants reporting LBP over the specified period. Inferential statistical analyses, such as chi-square tests was conducted to explore associations between LBP and the various determinants.

Ethical Considerations: Ethical approval was obtained from the Research Ethics Committee in Shaqra University prior to data collection (NUMBER: ERC_SU_20220100). Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation. Measures were taken to ensure data security and participant privacy throughout the study.

3. Results

Among 116 studied participants, the majority 50 (43.1%) of respondents fall within the age range of 35- 44 years. There is a smaller representation of respondents in the younger age groups, with 10 (8.6%) aged 18-24 and 2 (1.7%) aged 55-64. majority of respondents have a postgraduate educational level, accounting for 59.5%, Saudi nationals accounted for 92.2% of the participants. The largest group of respondents had 6-10 years of experience, making up 37.1% of the sample, males representing 56.9% and females representing 43.1%. The majority of respondents are engaged in clinical

practices, accounting for 94.8%. Among the study participants, 83 (71.5%) had low back pain (Table 1).

Table 2 represents the individual scores in Modified Oswestry Low Back Pain Disability. Section 1 - Pain intensity: The majority of respondents (59.0%) reported moderate pain intensity (score of 2), followed by 25.3% reporting mild pain (score of 1). Section 2 - Personal Care: Most participants (81.9%) experienced no or minimal disability in personal care activities such as washing and dressing, while a small proportion (9.6%) reported mild difficulties. Section 3 - Lifting: The responses indicate that lifting activities were challenging for a significant number of individuals, with 44.6% reporting moderate disability (score of 3) and 34.9% reporting mild disability (score of 2). Section 4 - Walking: Walking seemed to cause fewer problems, as the majority (78.3%) reported no or minimal disability, while 15.7% reported mild difficulties. Section 5 - Sitting: Sitting was found to be moderately challenging for 39.8% of respondents, followed by 41.0% reporting mild disability. A smaller proportion experienced more severe difficulties. Section 6 - Standing: Standing presented varying levels of disability, with 48.2% experiencing moderate disability and 26.5% reporting mild disability. Section 7 - Sleeping: Most participants (83.1%) reported no or minimal disability in relation to sleeping, while 7.2% reported mild difficulties. Section 8 - Social Life: The majority of respondents (69.9%) experienced no or minimal disability in their social life. However, 20.5% reported mild difficulties. Section 9 - Travel: Travel activities appeared to cause fewer issues, as 56.6% reported no or minimal disability, while 36.1% reported mild difficulties. these results suggest that low back pain has a varying impact on different aspects of individuals' daily functioning.

Among people with LBP, 80.7% had mild severity, 14.5% had moderate intensity and 4.8% had severe LBP (Table 3). Among participants with severe LBP, 33.33% had much worse perceived health than one year ago, 89.3% of mild LBA participants had Same health status as compared to previous year. Overall, the majority of respondents (81.7%) rated their general health as much better or somewhat better compared to one year ago. The chi-square test suggests a statistically significant relationship between the severity of low back pain and the perceived improvement or deterioration in general health (chi-square = 19.152, $p = 0.014$) (Table 4).

4. Discussion

The present study aimed to investigate the prevalence of low back pain (LBP) among dentists in Saudi Arabia and explore its implications within the dental healthcare setting. The findings of this study shed light on the significant burden of LBP among dentists and provide insights into potential risk factors and preventive strategies.

The prevalence of LBP among dental healthcare workers was found to be 71.5%, consistent with previous research highlighting the high prevalence of LBP in this occupational group. The physically demanding nature of healthcare work, including patient handling and long hours of standing, con-

Variable	Category	Frequency	Percent
Do you Suffer from Low Back Pain	No	33	28.5
	Yes	83	71.5
Onset of low back pain	Gradual	111	95.7
	Trauma	5	4.3
Pain level_Now		2.0 (0.0-5.0) #	
Pain level_Worst in the past week		5.0 (3.0-6.5) #	
Pain level_Least in the past week		2.0 (0.0-4.0) #	
How long have you had low back pain?_ Years		2.0 (0.2-5.0) #	
Age in years	Under 18	1	.9
	18-24	10	8.6
	25-34	48	41.4
	35-44	50	43.1
	45-54	5	4.3
	55-64	2	1.7
Educational level	Bachelor	47	40.5
	Postgraduate	69	59.5
Nationality	Saudi	107	92.2
	Non- Saudi	9	7.8
Years of experience	less than 1 year	11	9.5
	1-5 years	27	23.3
	6-10 years	43	37.1
	11- 20 years	24	20.7
	21-25 years	8	6.9
	26-30 years	3	2.6
Gender	Male	66	56.9
	Female	50	43.1
Hospital you work in	Government	102	87.9
	Private	14	12.1
How many days do you work per week	Daily	13	11.2
	2 days/week	5	4.3
	3 days/week	15	12.9
	4 days/ week	24	20.7
	5 days/week	52	44.8
	6 days/week	7	6.0
How many hours do you work per day	1- 3 hours	8	6.9
	4-6 hours	44	37.9
	7-9 hours	59	50.9
	9-12 hours	5	4.3
What kind of work do you do	Clinical practices	110	94.8
	Office work	6	5.2
Height (cm)*		167.39±7.9	
Weight (kg)*		74.39±15.98	
BMI*		26.41±4.7	

Table 1: Socio-demographic characteristics of study participants (N=116)

Modified Oswestry Low Back Pain Disability	0	1	2	3	4	5
Section 1- Pain intensity	49 (59.0)	21 (25.3)	6 (7.2)	3 (3.6)	1 (1.2)	3 (3.6)
Section 2- Personal Care (washing, dressing, etc.)	68 (81.9)	8 (9.6)	4 (4.8)	0 (0.0)	2 (2.4)	1 (1.2)
Section 3 - Lifting	29 (34.9)	37 (44.6)	9 (10.8)	5 (6.0)	2 (2.4)	1 (1.2)
Section 4 - Walking	65 (78.3)	13 (15.7)	4 (4.8)	1 (1.2)	0 (0.0)	0 (0.0)
Section 5 - Sitting	34 (41.0)	33 (39.8)	13 (15.7)	3 (3.6)	0 (0.0)	0 (0.0)
Section 6 - Standing	22 (26.5)	40 (48.2)	14 (16.9)	3 (3.6)	3 (3.6)	1 (1.2)
Section 7 - Sleeping	69 (83.1)	6 (7.2)	5 (6.0)	2 (2.4)	0 (0.0)	1 (1.2)
Section 8 – Social Life	58 (69.9)	17 (20.5)	6 (7.2)	1 (1.2)	(0.0)	1 (1.2)
Section 9 - Travel	47 (56.6)	30 (36.1)	3 (3.6)	1 (1.2)	2 (2.4)	0 (0.0)
Section 10 – Employment/Homemaking	30 (36.1)	44 (53.0)	4 (4.8)	(0.0)	3 (3.6)	2 (2.4)

Table 2: Modified Oswestry Low Back Pain Disability

Severity	Frequency	Percent
Mild (0%-20%)	67	80.7
Moderate (21%-40%)	12	14.5
Severe (41%-60%)	4	4.8
Total	83	100.0

Table 3: Severity as per Modified Oswestry Low Back Pain Disability

tributes to the increased risk of LBP among dental healthcare workers [14], [15]. The findings of this study emphasize the urgent need for interventions and preventive measures to alleviate the burden of LBP in this population.

Work-related factors emerged as prominent determinants of LBP among dental healthcare workers. Patient handling practices, such as bending, was identified as significant risk factors for LBP [16], [17]. Inadequate training, improper posturing, and staffing shortages further exacerbate the risk. These findings highlight the importance of implementing effective ergonomic practices and training programs that focus on safe patient handling techniques to reduce the occurrence of LBP [18], [19].

Psychosocial factors can also influence the prevalence of LBP among healthcare workers. High levels of stress, emotional demands, and work-family conflicts were associated with an increased likelihood of LBP [20], [21]. Conversely, job satisfaction and organizational support can act as potential protective factors against LBP. These findings underscore the need for healthcare organizations to prioritize the psychological well-being of their employees by implementing supportive policies, promoting work-life balance, and providing resources for stress management.

Individual characteristics, including age, gender, body mass index (BMI), and physical fitness, were also associated with LBP among healthcare workers. Older age and female gender have consistently been identified as risk factors for LBP across various populations [22]. Higher BMI and decreased physical fitness levels were also found to increase the likelihood of LBP. These findings emphasize the importance of promoting healthy lifestyles, regular exercise, and maintaining a healthy weight to prevent LBP among dental healthcare professionals. The current study's findings indicate that the severity of low back pain is associated with how individuals perceive their overall health. Those with milder low back pain tend to report greater improvements, while those with moderate or severe low back pain may experience more challenges in their general health.

The findings of this study have several implications for dental healthcare organizations and occupational health practitioners. Firstly, interventions should focus on promoting proper ergonomic practices and safe patient handling techniques to reduce the risk of LBP. This may involve providing adequate training, implementing equipment modifications, and ensuring sufficient staffing levels. Additionally, addressing psychosocial factors through supportive work environments, stress management programs, and work-life balance initiatives can help mitigate the impact of stress on LBP.

Preventive strategies should also target individual characteristics, such as age, gender, BMI, and physical fitness. Health promotion initiatives aimed at improving physical fitness and maintaining a healthy weight can help reduce the incidence of LBP. Furthermore, healthcare organizations should consider age and gender-specific preventive measures and early intervention programs tailored to the needs of healthcare workers.

5. Limitations

The cross-sectional design restricts the ability to establish causal relationships between LBP and its determinants. Future longitudinal studies can provide a more comprehensive understanding of the temporal relationship between risk factors and the development of LBP among healthcare workers. Moreover, the use of self-reported measures introduces the possibility of recall bias or misclassification of LBP. Incorporating objective measures, such as clinical assessments or biomechanical analyses, can enhance the accuracy of LBP assessment in future studies.

6. Conclusion

Work-related factors and individual characteristics contribute to the occurrence of LBP among dental healthcare workers. The findings emphasize the importance of implementing preventive strategies and interventions that target these determinants. By promoting ergonomic practices and considering individual characteristics, healthcare organizations can effectively reduce the burden of LBP among their workforce and improve the overall well-being of dental healthcare professionals.

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Conflict of interest

The authors declare no conflict of interests. All authors read and approved final version of the paper.

Authors Contribution

All authors contributed equally in this paper.

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	Severity of Low Back Pain			Total	Chi-Square, P-value
	Mild (0%-20%)	Moderate (21%-40%)	Severe (41%-60%)		
Much better now than one year ago	13 (86.7%)	2 (13.3%)	0 (0.0%)	15 (100%)	19.152, 0.014
Somewhat better now than one year ago	9 (69.2%)	2 (15.4%)	2 (15.4%)	13 (100%)	
About the same	25 (89.3%)	3 (10.7%)	0 (0.0%)	28 (100%)	
Somewhat worse now than one year ago	20 (87.0%)	3 (12.5%)	1 (4.2%)	24 (100%)	
Much worse than one year ago	0 (0.0%)	2 (66.7%)	1 (33.3%)	3 (100%)	
Total	67 (81.7%)	12 (13.4%)	4 (4.9%)	83 (100%)	

Table 4: Compared to one year ago, how would you rate your health in general now?

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