Prevalence of Low Back Pain among University Students in King Abdulaziz University, Saudi Arabia

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ABSTRACT

Low back pain (LBP) is considered to affect both young and elderly adults. Med students appear to provide time-consuming curricula, likely perpetuating sedentary habits and a significant burden of LBP among med students. The primary aim of the present study was to evaluate the prevalence of LBP and to see if there is any association between LBP and sedentary lifestyle or (to identify the associated factors) among medical students in King Abdulaziz University. A quantitative cross-sectional study included 380 out of 2000 medical students from all years using a self-administered questionnaire in English distributed to a targeted sample adapted from previously published research by AlShayhan *et al*.
52.4% were females and 47.6% males. 26.3% of participants were 20 years or less, 37.3% were 21- 22 years. 19.3% were smokers. 34.6% practice exercises currently. The number of hours using computers or tablets was reported as 2-4 hours in 15.9%, 4-6 hours in 22.4%, 6-8 hours in 18.1%, and 8-10 hours in 12.7%. 7.9% reported a history of surgery or trauma to the back, 44.2% reported a history of back pain in family members and treated by a doctor, 49% had a history of low back trouble since joined the college (ache, pain, discomfort), 54.7% had a history of low back trouble once in life (ache, pain, discomfort), 3.7% reported a history of hospitalization because of low back pain and 9.3% reported skipping a day because of low back pain. Lower back pain is common among med school students in King Abdulaziz University, Saudi Arabia. It is significantly associated with age and the number of hours using computers or tablets. University students should be advised to avoid risk factors as much as possible.

Key Words: *Lower back pain, Risk factors, Students, King Abdulaziz university, Saudi Arabia*

eIJPPR 2021; 11(1):70-78

HOW TO CITE THIS ARTICLE: Althakafi KA, Abduljabbar FH, Mugharbel AT, Alzahrani NA, Roublah FA. Prevalence of Low Back Pain among University Students in King Abdulaziz University, Saudi Arabia. Int J Pharm Phytopharmacol Res. 2021;11(1):70-8. https://doi.org/10.51847/0DTjg1X3Xa

INTRODUCTION

Low Back pain (LBP) is a prevalent health problem that affects people around the world; it can affect people during their lives [1]. Sixty to eighty percent of individuals have had low back pain during their lifetime [2, 3]. Usually, LBP is located in the lumbar region and its causes may include muscle tension (torn or pulled muscle and/or ligament), heavy lifting, poor posture over time such as sitting in a curved position, and sedentary behaviors [2, 4-6].

Sedentary lifestyle (SL) is becoming more prominent because of using computers for a long time, watching television for a few hours a day, reclining, sitting, and writing [7, 8]. We can define SL, as any behaviors that lead to low levels of energy expenditure (Equal or less than 1.6-2.9 METs) [9]. Sedentary behavior has a solid relationship with weight gain, blood sugar, heart diseases, and low back pain [10-14].

Quality of life becomes a problem with high concern for people with LBP because it affects them directly as it is one of the reasons for the lack of productivity during working hours, early retirement, and a considerable proportion of work absence as it impairs the worker performance significantly [15]. Various investigations have reported that between 24% and 87% of patients have frequent episodes of LBP within a year after their first time [16]. Because of its recurrent nature, there may be a

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Received: 30 September 2020; **Revised:** 27 January 2021; **Accepted:** 02 February 2021

financial burden on patients. A study in the US showed that the overall costs of LBP exceed $100 billion per year [17], So LBP is one of the most financially debilitating disorders.

A study reported a high prevalence of LBP Among medical students. It demonstrated that the overall prevalence of LBP among the students was up to 50%. This is attributed to poor study habits, style of living, and psychological causes [18].

A study focusing on the prevalence of LBP among health science students in King Saud University, Riyadh, Saudi Arabia during 2016-2017, found it to be 56.6% [19]. They found that LBP can be triggered by certain factors including: prolonged computer or tablet usage, being uncomfortable in bed during sleep, carrying a heavy backpack, sense of tiredness, feeling depressed, earlier exposure to trauma, and family history of LBP [19]. No studies have been done in our area to explore the prevalence of low back pain among university students nor to explore risk factors that can be associated with LBP.

Aim of the study

The primary aim of the present study was to investigate the prevalence of low back pain and to see if there is any association between LBP and sedentary lifestyle or (to identify the associated factors) among medical students in King Abdulaziz University.

MATERIALS AND METHODS

This is a quantitative cross-sectional study designed to evaluate the prevalence of low back pain among medical students and the risk factors associated with it at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. 380 out of 2000 medical students from all years were involved by calculating confidence level 95%, margin error 5%, and response distribution 50%. A self-administered questionnaire in English was distributed to our targeted sample. Verbal consent was taken from the students to complete the questionnaire. Data collection was done from September to December 2018 and the study has been approved by an institutional review board (IRB) of KAUH.

The study questionnaire was adapted from previous research by AlShayhan *et al*. [19], which consisted of 52 questions and was divided into 4 Sections; first, demographic details such as gender, age, height, weight, college, the year at college. Second, there are questions about risk factors included physical activity, whether smoker or not, consuming coffee, time spent using a computer, sleep duration, the comfort of the bed to back, position while studying, using a heavy backpack, position while studying, being overwhelmed, feeling tired and depressed. LBP was estimated using a Nordic musculoskeletal questionnaire. They were pre-tested for validity [20, 21].

The data were entered using Microsoft Excel 2016 (Microsoft Corporation, Seattle, WA, USA), then, it was analyzed using SPSS version 2.

RESULTS AND DISCUSSION

The sociodemographic characteristics and smoking history among the studied students are shown in **Table 1**. About half (52.4%) were females and 47.6% males. 26.3% of participants were 20 years or less, 37.3% were 21- 22 years, 33.1% were 23- 24, and 2.8% were 25- 35 years old. The entire studied sample was medical students. Family monthly income was reported >15000 SAR in 66.6% of samples. 19.3% of samples were smokers.

Table 2 shows the coffee drinking, exercises, sports, using computers or tablets, sleeping, college furniture, overwhelmed, loss of energy, and sadness among the studied students. About one-fifth (19.5%) of samples reported taking coffee once daily, 23.5% more than one daily, and 28.9% 2-5 cups per week. 34.6% of participants exercise currently (35.2% 1-2 times weekly and 49.2% 3-4 times weekly). Of the participants practicing exercise, 41.8% practiced football, 10.7% volleyball, and 23% practiced basketball. The number of hours using computers or tablets was reported as 2-4 hours in 15.9%, 4-6 hours in 22.4%, 6-8 hours in 18.1%, and 8-10 hours in 12.7%. Regarding position during using computer or tablet; 16.1% reported recumbent position and 73.9% reported sitting position. 45% of participants sleep for 4-6 hours at night, 43.6% sleep for 6-8 hours, and 6.5% sleep more than 8 hours. More than one-fifth (23.8%) reported feeling discomfort on the bed, 38.5% reported that college furniture is comfortable to back, 27.5% reported using a heavy backpack, and 37.1% reported feeling overwhelmed. Regarding loss of energy; 44.5% can work about as well as before and 33.4% reported that it takes an extra effort to get started at doing something. 31.4% of the sample feel sad and 7.6% feel sad all the time and can't snap out of it.

Table 3 shows low back pain prevalence and characteristics among the studied students. Only 7.9% reported a history of trauma or surgery to back, 44.2% reported a history of back pain in family members and treated by a doctor, 49% had a history of low back trouble since joined the college (ache, pain, discomfort), 54.7% had a history of low back trouble once in life (ache, pain, discomfort), 3.7% reported a history of hospitalization because of LBP and 9.3% reported skipping a day because of LBP. About fifth (19.5%) reported that work activity affected with back pain during the last 12 months, 12.7% reported reduced activity during the last twelve months

due to back pain, 18.7% reported that total length of time that low back trouble prevented them from doing normal work during the last twelve months as 1-7 hours,

Table 4 illustrates the low back pain diagnosis and treatment characteristics among the studied students. 5.1% were seen by a chiropractor, physiotherapist, doctor, or other such people because of low back trouble during the last twelve months and 21.2% had back trouble at any time during the last 7 days. When asked participants to score pain from 1 to 10 (0 = none and 10 = maximum) 60.6% of 145 participants scored it as 0, 2.0% as 1, 4.2% as 2, 9.3% as 3, 8.2% as 4, 6.2% as 5, 2.8% as 6, and 4.0% as 7.

Table 5 shows the relationship between LBP and age, gender, BMI, smoking, exercises, and the number of hours using computers or tablets among the studied students. Age and number of hours using computers or tablets are significantly associated with LBP (P >0.05) while exercises, smoking, BMI, and gender were not (P <0.05).

Table 1. Sociodemographic characteristics and smoking history among the studied students

Parameter	Frequency	Percent
Age group:		
18-20	93	26.3
21-22	133	37.7
23-24	117	33.1
25-35	10	2.8
Gender:		
Male	168	47.6
Female	185	52.4
Weigh:		
36-50	61	17.3
51-60	89	25.2
61-70	74	21.0
71-80	60	17.0
81-90	35	9.9
91-130	34	9.6
Height:		
145-160	105	29.7
161-170	127	36.0
171-180	100	28.3
181-190	21	5.9
College (specialty):		
medical student	353	100.0
Academic year:		
2nd	51	14.4
3rd	97	27.5
4th	53	15.0
5th	74	21.0
6th	71	20.1
7th	7	2.0
Family monthly income:		
<5000	15	4.2
5000-10000	25	7.1
11000-15000	70	19.8
>15000	235	66.6
Other than that	8	2.3
Total duration of the studied program (in years)		
6	22	6.2
7	328	92.9
8	3	.8
Type of years:		
Basics years	124	35.1
Clinical/practice years	**229**	**64.9**
Smoking:		
Yes	68	19.3
No	273	77.3
Ex-smoker	12	3.4
Duration of smoking (in years):		(N = 68)
< 1 year	8	11.8
2-3 years	44	64.7
≥ 4 years	17	28.0

Table 2. Coffee drinking, exercises, sports, using computers or tablets, sleeping, college furniture, overwhelmed, loss of energy, and sadness among the studied students

Parameter	Frequency (No.)	Percent (%)
Coffee drinking:		
Once daily	69	19.5
More than once daily	83	23.5
Once a week	55	15.6
2-5 per week	102	28.9
None	44	12.5
Practicing exercises currently:		
Yes	122	34.6
No	231	65.4
Times of practicing per week (if the last answer was year): (N=122)		
1-2	43	35.2
3-4	60	49.2
5-7	19	15.6
Duration of practicing per week:		(N=122)
<30 minutes	29	23.8
30-60 minuets	68	55.7
1-2 hours	19	15.6
>2 hours	6	4.9
Practicing recreational sports:		
Ballet	4	3.2
Basketball	28	23.0
Football	51	41.8
Squash	3	2.5
Skate	4	3.3
Swimming	10	8.2
Tennis	4	3.2

Volleyball	13	10.7
weight lifting	5	4.1
Number of daily hours using computers or tablets:		
1-2 hours	24	6.8
2-4 hours	56	15.9
4-6 hours	79	22.4
6-8 hours	64	18.1
8-10 hours	45	12.7
10-12 hours	20	5.7
>12 hours	26	7.4
Other than that	39	11.0
Position during using computer or tablet:		
Recumbent position	57	16.1
Sitting and lying down	13	3.7
Sitting and walking	4	1.1
Sitting position	261	73.9
Both	18	5.1
Sleeping hours per night:		
<4 hours	17	5.0
4-6 hours	159	45.0
6-8 hours	154	43.6
>8 hours	23	6.5
Feeling discomfort on bed:		
Yes	84	23.8
No	269	76.2
College furniture is comfortable to back:		
Yes	136	38.5
No	217	61.5
Using a heavy backpack:		
Yes	97	27.5
No	256	72.5
Feeling overwhelmed (stressed to the level that can't manage the situation):		
Yes	131	37.1
No	222	62.8
Loss of energy:		
I can work about as well as before	157	44.5
I can't do any work at all	9	2.5
I have to push myself very hard to do anything	69	19.5
it takes an extra effort to get started at doing something	118	33.4
Sadness:		
sad all the time and cant snap out of it	27	7.6
so sad and unhappy that can't stand it	5	1.4
do not feel sad	210	59.5
feel sad	111	31.4

Table 3. Low back pain prevalence and characteristics among the studied students

Parameter	Frequency (No.)	Percent (%)
Yes	28	7.9
No	325	92.1
History of back pain in family members and treated by a doctor:		
Yes	156	44.2
No	197	55.8
History of low back trouble since joined the college (ache, pain, discomfort)		
Yes	173	49.0
No	180	51.0
History of low back trouble once in life (ache, pain, discomfort)		
Yes	193	54.7
No	152	43.1
History of hospitalization because of low back pain:		
Yes	13	3.7
No	340	96.3
Skipping a day because of low back pain:		
Yes	33	9.3
No	320	90.7
The total length of time with low back trouble during the last 12 months		
0 days	200	56.6
1-7 days	75	21.2
8-30 days	40	11.3
Everyday	7	2.0
>30 days< but not every day	31	8.8
Work activity affected with back pain during the last 12 months (at home or in college)		
Yes	69	19.5
No	284	80.5
Reduced activity during the last 12 months due to back pain? (Leisure activity)		
Yes	45	12.7
No	308	87.3
Total length of time that low back trouble prevented from doing normal work (at home or away from home) during the last 12 month		
0	278	78.7
1-7	66	18.7
8-30	7	2.0
>30	2	.6
Low back trouble at any time during the last 7 days:		
Yes	75	21.2
No	278	78.8
Pain Score: (0 = none and 10 = maximum) (n=145)		
0	214	60.6
1	7	2.0

2	15	4.2
3	33	9.3
4	29	8.2
5	22	6.2
6	10	2.8
7	14	4.0
Radiation of pain to legs		
Yes	38	10.8
No	315	89.2

Table 4. Low back pain diagnosis and treatment characteristics among the studied students

Parameter	Frequency (No.)	Percent (%)
Seen by a doctor, physiotherapist, chiropractor, or other such person because of low back trouble during the last 12 months		
Yes	18	5.1
No	335	94.9
Analgesia requirement:		
Occasional	18	5.1
Regular	7	2.0
None	328	92.9
Analgesia route:		
Oral	15	4.2
IM	2	.6
None	336	95.2
Analgesia type:		
And IV also	1	.3
Lower p	1	.3
NSAIDs	1	.3
Paracetamol	12	3.4
Upper part	1	.3
None	337	95.5
0.00%	221	62.6
1 – 10 %	66	18.7
11 – 20 %	43	12.3
21- 30 %	9	2.5
31- 40%	11	3.1
41 – 80 %	3	0.8

Table 5. The relationship between low back pain and age, gender, BMI, smoking, exercises, and number of hours using computers or tablets among the studied students

Parameters		Low back pain		Total (N=353)	P-value
		Yes	No		
Age	18-20	63	29	92	0.005
		32.8%	18.0%	26.1%	
	21-22	67	66	133	
		34.9%	41.0%	37.7%	
	23-24	54	63	117	
		28.1%	39.1%	33.1%	
	25-35	8	3	11	
		4.2%	1.9%	3.1%	
Gender	Male	90	79	169	0.681
		46.9%	49.1%	47.9%	
	Female	102	82	184	
		53.1%	51.2%	52.3%	
BMI	Under weight	22	17	39	0.314
		11.5%	10.6%	11.0%	
	normal	146	135	281	
		76.0%	83.9%	79.6%	
	over weight	1	0	1	
		0.5%	0.0%	0.3%	
	obesity class 1	16	7	23	
		8.3%	4.3%	6.5%	
	obesity class 2	6	2	8	
		3.1%	1.2%	2.3%	
	obesity class 3	1	0	1	
		0.5%	0.0%	0.3%	
Smoking	Yes	31	37	68	0.241
		16.1%	23.0%	19.3%	
	No	155	118	273	
		80.7%	73.3%	77.3%	
	Ex-smoker	6	6	12	
		3.1%	3.7%	3.4%	
Exercises	Yes	68	55	123	0.805
		35.4%	34.2%	34.8%	
	No	124	106	230	
		64.6%	65.8%	65.2%	
Number of hours using computers or tablets	1-2 hours	12	17	29	0.006
		6.3%	10.6%	8.2%	
	2-4 hours	25	40	65	
		13.0%	24.8%	18.4%	
	4-6 hours	47	46	93	
		24.5%	28.6%	26.3%	
	6-8 hours	43	28	71	
		22.4%	17.4%	20.1%	
	8-10 hours	32	15	47	
		16.7%	9.3%	13.3%	
	10-12 hours	15	6	21	
		7.8%	3.7%	5.9%	
	>12 hours	18	9	27	
		9.4%	5.6%	7.6%	

Low back pain is a major health concern and is most commonly treated in primary health care settings. A major number of previous medical studies and systematic reviews have been published on the topic and clinical recommendations have been available [22]. This cross-

sectional study aimed at evaluating the prevalence of LBP and to see if there is any association between LBP and sedentary lifestyle or (to identify the associated factors) among medical students in King Abdulaziz University.

According to our results; 44.2% reported a history of back pain in family members and treated by a doctor, 49% had a history of low back trouble since joined the college (ache, pain, discomfort), 54.7% had a history of low back trouble once in life (ache, pain, discomfort), 3.7% reported a history of hospitalization because of LBP and 9.3% reported skipping a day because of LBP. A study on medical students by Amelot, Aymeric *et al*. reported that 72.1% of students suffered from LBP [23]. Another study reported that the 12-month prevalence of chronic and subacute LBP among medical students was 53.4% [24]. Another study on medical students reported that the lifetime, 12-month, and point prevalence of LBP was 75.8%, 59.5%, and 17.2%, respectively. Chronic LBP was experienced by 12.4% of the students [25].

The prevalence of low back pain among middle-aged and elderly Japanese individuals was 15.4% [26] while Walker in his systematic literature review has reported that the point prevalence of LBP in general ranges from 12% to 33%, whereas its lifetime prevalence range 11-84% [27]. A global study of the prevalence of LBP in the general adult population showed its point prevalence to be approximately 12%, with a one-month, one-year, and lifetime prevalence of 23%, 38%, and 40%, respectively [28]. In a large French population survey Overall, 38.3% of adults reported chronic back pain [29]. In the French portion of the World Mental Health Survey, the chronic back pain prevalence was reported 21.3% [30]. Another study reported the prevalence of LBP ranged from 21% to 75% in elderlies [31]. A study showed that 70-85% of the population will have an episode of LBP at some point and 90% of them will experience more than one episode [32]. A systematic review of the spinal pain prevalence among elderly people, including studies conducted in developed countries, reported a 20% prevalence (≥60 years) [33]. The point, annual, and lifetime prevalence of LBP in the participants of another survey was 17.2%, 39.1%, and 56.2%, respectively [34]. In a study conducted on Irish healthcare workers including allied health workers, administrative, general support, nurses, and doctors, the lifetime LBP prevalence was 46% with an annual prevalence of 30%, and a point prevalence of 15.5% [35]. In other studies LBP prevalence was reported to be 33% in Belgium, 28.4% in Canada, 14% in the UK, 13.7% in Denmark, 6.8% in North America, and 12% in Sweden [36]. Prevalence or incidence data from the Netherlands, Israel, Finland, Belgium, Sweden, USA, and Canada ranged from 0.024-7.0% and 1.4-20.0%, respectively [37]. Bressler *et al*. systematically reviewed studies on the prevalence of LBP in elderly individuals concluded that its prevalence in elderly population is not known with certainty [38]. Another study on chronic impairing LBP significantly increased over the 14-year interval, from 3.9% in 1992 to 10.2% in 2006 [39].

Obesity, smoking, lack of exercise, increasing age, and lifestyle factors are considered as risk factors for low back pain [28, 40]. Women are at greater risk for chronic pain as compared to men, consistent with evidence that women of all ages experience chronic pain more often than men, which may be linked to the combination of social, psychological, and biological factors [41]. In our study, the number of hours using computers or tablets was reported as 2-4 hours in 15.9%, 4-6 hours in 22.4%, 6-8 hours in 18.1%, and 8-10 hours in 12.7%. Regarding position during using computer or tablet, 16.1% reported recumbent position and 73.9% reported sitting position. 45% of participants sleep for 4-6 hours at night, 43.6% sleep for 6-8 hours, and 6.5% sleep more than 8 hours. 19.5% of the sample reported taking coffee cups once daily, 23.5% more than once daily, and 28.9% 2-5 cups per week. 34.6% of participants practice exercises currently (35.2% 1-2 times a week and 49.2% 3-4 times a week). 19.3% of our sample were smokers. Multiple risk factors of LBP and lower-extremity pain include psychosocial factors, habits, social-demographic characteristics, and physical factors. This review discussed the epidemiology of LBP, with emphasis on consequences, causes, and frequency; the effect of genetics, morphologic characteristics, gender, and age; and the effect of psychological, habitual, social, mechanical, and occupational factors [42]. A recent systematic review showed that the prevalence of LBP seemed higher among middle-aged adults and women [43].

In our study; 5.1% were seen by a chiropractor, physiotherapist, doctor, or other such persons because of low back trouble during the last 12 months and 3.7% reported a history of hospitalization because of LBP. A systematic review of primary care patients in the U.S. showed that about 65% of patients with non-specific LBP still experienced pain one year after its onset; a proportion of 69% in Europe and 41% in Australia [44]. In a study of the clinical course of chronic lower back pain and related disability in the Netherlands, approximately 75% of patients whose pain had resolved before the end of their 12-month follow-up reported one or more relapses within the following year [45].

In our study age and the number of hours using computers or tablets are significantly associated with LBP ($P > 0.05$) while exercises, smoking, BMI, and gender were not ($P < 0.05$). In previous study smoking habits ($p=0.049$), LBP ($p<0.001$), lumbar function ($p=0.001$), and social function ($p=0.023$) in the Japanese Orthopaedic Association Back Pain Evaluation Questionnaire (JOABPEQ) were

significantly associated [26]. However, a systematic review conducted by Wai *et al*. [46] found that there is no evidence on whether smoking cessation relieves chronic LBP. In his systematic review, Leboeuf-Yde [47] concluded that smoking should be considered a weak indicator of LBP, as evidence of a causal link between smoking and LBP could not be found in a study using a large sample. In their systematic review, Goldberg *et al*. [48] associations with adjusted odds ratios (aORs) ≥2 including age 50-69, education level of less than high school, annual household income <$20000, income from medical comorbidities, sleep disturbances, depression, and disability. We also found a strong association between sleep disturbances and cLBP [49]. In another survey, population density, manual labor occupation, lower education, older age, and female gender were significantly associated with the distribution of chronic back pain [29]. In another study, lifting heavy patients/objects at work, older age, obesity/overweight, longer duration of practice, and female gender were significantly associated with LBP among the participants [34].

CONCLUSION

Lower back pain is common among med school students in King Abdulaziz University, Saudi Arabia. It is significantly associated with age and the number of hours using computers or tablets are. University students should be advised to avoid risk factors as much as possible. Awareness should also be raised about the causes and risk factors of this disorder among university students generally. Further studies are needed to evaluate LBP prevalence among non-medical students in other universities of Saudi Arabia.

Acknowledgments: The authors would like to acknowledge both; Mariam Yassin Mohammed Yassin and Fatima Hassan Ali AlJassas (students in the College of Medicine, King Abdulaziz University, Jeddah, KSA) for their continues help in all steps of the research work.

Conflict of interest: None

Financial support: None

Ethics statement: None

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