Prevalence and associated risk factor of low back pain among medical student of Umm Al-Qura University, Makkah, Saudi Arabia: Cross-sectional study

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ABSTRACT

Background: Low back pain is an incredibly Complaint experienced by different individuals ages. In 2015, the worldwide point commonness of movement constraining low back torment was 7.3%, suggesting that 540 million individuals were influenced at any one time. Low back pain is a symptom, not a disease, and can result from a few diverse known or obscure irregularities or sicknesses. It is characterized by the area of agony, regularly between the lower rib edges and the butt cheek creases. *Aim:* To determine the prevalence of low-back pain and explore factors associated with MSP among medical students at Umm Al-Qura4 University Saudi Arabia. *Method:* A cross-sectional survey was performed among medical students in Umm Al-Qura University during the period from 12 June 2020 to 12 October, 2020. The survey included 366 students whose ages ranged from 18 to 25 years old. The Statistical Package for Social Sciences (SPSS) version 24.0 was used in the analysis. *Results:* A total of 366 students were involved in this study, 249 *(*68%) of them were females 68%. As for BMI, exact of 236 (64.5%) were at normal weight while 45 (12.3%) were obese. Exact of 277 (75.7%) students complained of LBP during the last period related to trauma. As for aggravating factors, the long sitting session was the most reported factor (75.2%) followed by wrong sleep position (58.5%), sedentary lifestyle (45%), inappropriate lifting (28.7%), and stress (27.9%), while long-standing (4.7%), and menses (2.3%) were the least reported factors. The most-reported red flags of back pain were neck pain (39.1%) followed by weakness (16.7%), leg weakness (11.6%), numbness (10.1%), and loss of knee reflex (4.7%). *Conclusion:* LBP was more among females and mainly related to inappropriate sleep, setting, or even studying positions. Neck pain was the most reported with a low mood. Lack of exercise with long study hours was remarkably reported. Also, irrespective of the high prevalence of reported LBP, but there was no considerable effect on student's scholastic performance.

Key words: Low back pain, Neck pain, Pain, KSA

1. INTRODUCTION

The afflictions of Well-being are cosmopolitan. They influence everyone in some structure in a certain section of life and modify their Quality of Life. Thusly, they cause significant mental aggravation to the patient and their families. Seeing that this problem is important to the cutting edge social insurance system, low back pain is an incredibly experienced Complaint by people of different ages (Hartvigsen, 2003; Hoy, 2012; Kamper, 2016). In 2015, the worldwide point common point of movement restricting low back pain was 7·3%, suggesting that 540 million individuals were influenced at any one time (Vos, Allen, 2016). Low back pain is an symptom not an disease, and may be the result of some well-known a few or obscure irregularities or miscellaneous disease, It is characterized by the area of agony, regularly between the lower rib edges and the butt cheek creases (Dionne, 2008).

Several reviews have represented the occurrence of musculoskeletal pain (MSP) among university college students. In X-ray technology students the prevalence of MSP in any body site was 37%. The prevalence rate was between 38.2% (lower back pain) and 60.4% (neck pain) in music collage students. The prevalence of neck pain (64%), lower back pain (57%), and shoulder pain (48%) were high among dental hygiene students. The prevalence of MSP in medical students was between 45.7% and 65.1% (Algarni, 2017). Educational level, age, gender, increased mobility, obesity, psychological factors (stress, anxiety, and depression), work factors, low flexibility and mobility of muscles, competitive sports, the type and way of carrying, transporting weight, postural habits, physical activity level, smoking, and domestic factors such as watching TV and computer/videogames were the cardinal risk factors for LBP (Ikram et al. 2020). LBP often begins in childhood, and the prevalence rate for adolescents approaches that seen in adults (Vujcic, 2018).

Low back pain is classified into several categories based on differential diagnosis, there is no higher sitting for categorization of low back pain. Low back pain etiology is divided into 3 categories: musculoskeletal, non- musculoskeletal and visceral causes of low back pain. 97% of reported cases are due to musculoskeletal cause, while 1% of patient is due to non-musculoskeletal cause and 2% have a visceral cause of low back pain. The goal of using this type of classification is to focus on major cause of low back pain which is musculoskeletal cause (Manusov, 2012).

There are many studies that contribute physical and psychosocial factors and their association with low back pain. A study conducted in Sweden shown that interaction between bad social contacts outside work and displeasure with free time increased the Probability of low back pain (Thorbjörnsson, 1998). Another study among Danish female nurses, stress was shown associated with low back pain such as: time pressure and lack of social support were linked with low back pain (Gonge, 2002). Whereas in Arab society anxiety and depression were strongly associated with low back pain. This difference in the results between studies maybe due to several reasons, such as culture and environment of the study and the methodology used (Bener, 2013). In previous studies in the Kingdom of Saudi Arabia, the aim of those studies was to obtain the association of low back pain with obesity. These studies used patients attending primary care clinics in Riyadh, KSA. Found that low back pain is more common in obese individuals (Katz,

2006). A study was conducted in Al-Qassim region showed the prevalence of low back pain was 18.8% through general population. Which was common in females more than males (Al-Arfaj, 2003). The main aim of the study was to work out the prevalence of low-back pain and to explore factors associated with MSP among medical students at UQU University Saudi Arabia. In addition, we evaluate the impact of MSP on the students' quality of life and satisfactions of students.

Objectives

To estimate the prevalence of low back pain among medical students and to identify the associated risk factors of low back pain among medical students in UQU.

2. METHODOLOGY

Study design and setting

A cross-sectional survey was carried out in Umm Al-Qura University students among medical students. Electronic questionnaire was distributed to them during the period from 12 June 2020 to 12 October 2020. The ethical approval for this study was taken from the Institutional Medical Ethics Committee of the University. All Male and Female Medical student from second year to internship year were the target population of our study. The objectives of the study were explained to them, and after they agreed by their participation to electronic survey. Who had injury, genetic traumatic disorder or underwent surgical procedure on lumbosacral area were excluded from the study.

Sample Size

According to the epidemiological information online sample size calculator, the total number of all medical students from second to internship year in UQU, according to (Vice-dean Academic Affairs) is 1525 students. The number of students each year is: the second year is (234), the third year is (260), the fourth year is (265), the fifth year is (249), sixth year (225), and internship year is (292) students. Almost 307 students should be sampled so that a 95% confidence level and 5% margin of errors are accomplished. Prevalence, confidence intervals, and error was be calculated. 10% of the target sample size was added to the total number to accommodate any loss of data.

Measures and Outcomes

This study is based on a self-administered questionnaire formulated by the researchers. It was hosted by Google form and sent to the recipient through different social media platforms. Written consent was obtained from the recipient at the beginning. Before initiating data collection, a pilot study of the questionnaire was sent to 10% of the sample size of 153 students to test its validity and reliability. The questionnaire is consist of four sections. The first section questions about sociodemographic data (age, gender, GPA, academic year), the second section is about the history of presenting illness for Lower Back Pain (LBP) (presence of LBP, the onset of LBP, characteristic of LBP, duration of LBP, aggravating and alleviating factor of LBP), third section questions about red flags (numbness, weakness, neck pain, urinary incontinences, saddle anesthesia, bowel incontinence, loss of knee reflex and ankle reflex), fourth section questions about the associated risk factor of LBP (medication use for LBP, the position of the student while studying, daily sitting hours, weekly exercise hours, knowledge of the correct sitting position, lifting a heavy object, smoking, drinking coffee, affecting the daily activity and GPA, family history of LBP and seeking any medical advice for LBP, Height, and weight). Data was collected for 1 month. Two different operators was perform data entry. Capitalize data was transferred to a statistical database.

Data analysis

After data were extracted, it had been revised, coded, and fed to statistical software program IBM SPSS version 22 (SPSS, Inc. Chicago, IL). Descriptive analysis based on the frequency and percent distribution was done for all variables, including student's personal data, low back pain (LBP) related data, while GPA was described as mean with standard deviation (SD). Cross-tabulation was used to assess the distribution of low back pain according to students' personal factors. The significance of relations in cross-tabulation was tested using the Pearson chi-square test. An independent t-test was used to test for differences in GPA in relation to having LBP.

3. RESULTS

The survey included 366 students whose ages ranged from 18 to 25 years old with mean age of 22.1 ± 1.8 years old. Majority of the students were females (68%; 249). As for BMI, exact of 236 (64.5%) were at normal weight while 45 (12.3%) were obese. Exact of 150

students (58.1%) had Family members suffer from back pain. The GPA was from 1 to 4.6 points with mean value of 3.5 ±0.4 points (table 1).

Table 1. Personal data of sampled students at UQU, Saudi Arabia

Personal data	No	%
Age in years		
18-19	50	13.7%
20-22	140	38.3%
23-25	176	48.1%
Gender		
Male	117	32.0%
Female	249	68.0%
BMI		
Normal	236	64.5%
Overweight	85	23.2%
Obese	45	12.3%
Family members suffer from back pain?		
Yes	150	58.1%
No	108	41.9%
GPA		
Range		1.0-4.6
Mean ± SD		3.52 ± 0.43

Table 2 demonstrates low back pain and factors related among UQU students. Exact of 277 (75.7%) students complained of LBP during the last period which was related to trauma among 19 students who were excluded from competing study questionnaire. Among others, the pain was for less than 3 months among 179 (69.4%). The pain was dull among 111 (43%) of the students with pain followed by crampy pain (21.7%; 56), sharp pain (17.1%; 44), and crushing (9.7%; 25). As for aggravating factors, long sitting session was the most reported factor (75.2%) followed by wrong sleep position (58.5%), sedentary life style (45%), inappropriate lifting (28.7%), and stress (27.9%) while long standing (4.7%), and menses (2.3%) were the least reported factors. Regarding relieving factors, maintaining good posture was the most reported (60.1%) followed by sleeping in the right position (57%), Sit in the right position (48.1%), Physiotherapy (17.8%), and Applying heat (16.7%). Exercise and message were the least reported factors (2.3% and 0.8%, respectively).

Table 2. Low back pain and factors related among UQU students, Saudi Arabia

Low back pain		No	%
History of LBP	Yes	277	75.7%
	No	89	24.3%
Pain related to trauma	Yes	19	6.9%
	No	258	93.1%
Duration of LBP	Less than 3 months	179	69.4%
	More than 3 months	79	30.6%
Type of pain	Burning	6	2.3%
	Cramp	56	21.7%
	Crushing	25	9.7%
	Dull	111	43.0%
	Sharp	44	17.1%
	Stab	14	5.4%
	Throbbing	2	.8%

Aggravating factors	None	4	1.6%
	Long sitting session	194	75.2%
	Wrong sleep position	151	58.5%
	Sedentary lifestyle	116	45.0%
	Inappropriate lifting	74	28.7%
	Stress	72	27.9%
	Intensive sport activity	64	24.8%
	Anxiety	42	16.3%
	Backpack	37	14.3%
	Long standing	12	4.7%
	Menses	6	2.3%
Relieving factors	None	29	11.2%
	Maintain good posture	155	60.1%
	Sleeping in the right position	147	57.0%
	Sit in the right position	124	48.1%
	Physiotherapy	46	17.8%
	Applying heat	43	16.7%
	Topical analgesics / cream	8	3.1%
	Applying ice	6	2.3%
	Exercise	6	2.3%
	Message	2	0.8%

As for red and yellow flags for backpain (figure 1), the most reported red flags were neck pain (39.1%) followed by weakness (16.7%), leg weakness (11.6%), numbness (10.1%), and loss of knee reflex (4.7%). Considering yellow flags, low mood was the most reported (40.7%) followed by difficulty at work (38%), lack of social support (10.5%), and social withdrawal (80.1%).
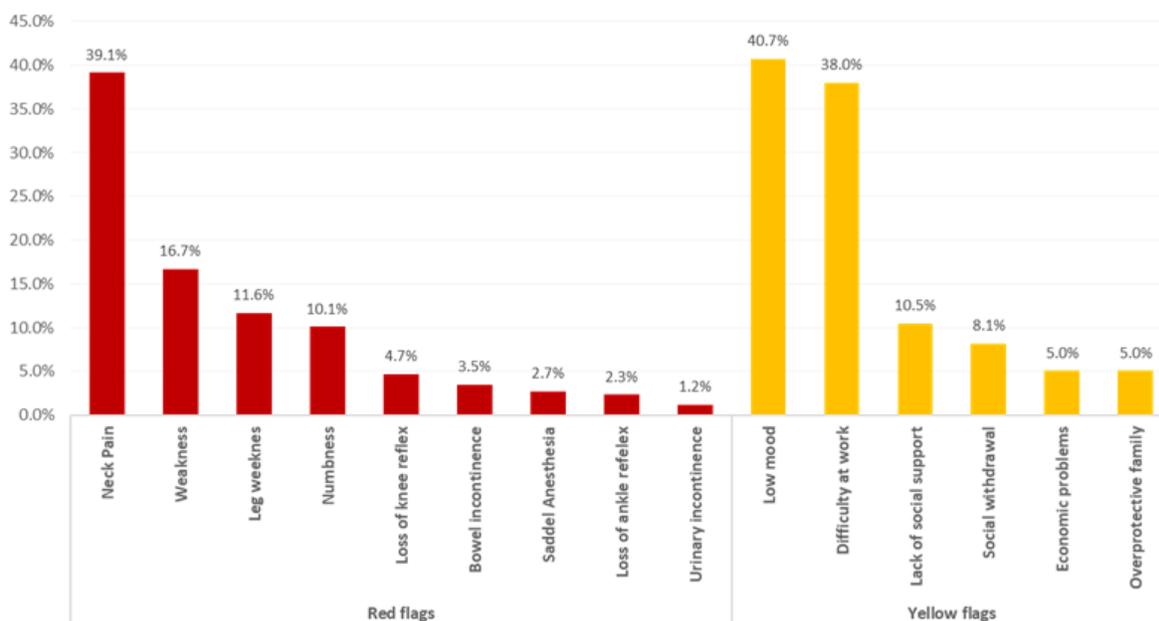

Figure 1. Red and yellow flags of LBP among UQU students, Saudi Arabia

Table 3 demonstrate the risk factors of LBP among medical students in Umm AlQura University. Exact of 74.4% of students study on sitting position, and 54.7% study for 4-8 hours daily while 27.1% study for more than 8 hours daily. Regarding exercise, 45.3% of the students don't practice exercise while 35.7% practice for 1-3 hours weekly. Regarding the right setting position, it was correctly known by 80.6% of the students. Regular or continuous lifting heavy objects were reported by 39.6% of the students. Smoking was reported by 10.1% of the students and 72.5% drink coffee.

Table 3. Risk factors of having LBP among UQU students, Saudi Arabia

Risk factors of LBP		No	%
Study position	Lying down	55	21.3%
	Sitting	192	74.4%
	Walking	11	4.3%
Daily study hours	1-2 hrs.	8	3.1%
	2-4 hrs.	39	15.1%
	4-8 hrs.	141	54.7%
	> 8 hrs.	70	27.1%
Hours of exercise weekly	I don't exercise	117	45.3%
	1-3 hrs.	92	35.7%
	> 3 hrs.	49	19.0%
Do you know the right sitting position	Yes	208	80.6%
	No	50	19.4%
Do you leave heavy object?	Never	13	5.0%
	Rarely	143	55.4%
	Regularly	27	10.5%
	Usually	75	29.1%
Do you smoke?	Yes	26	10.1%
	No	232	89.9%
Do you drink coffee?	Yes	187	72.5%
	No	71	27.5%

Table 4 illustrates the distribution of LBP among students by their demographic data and effect on GPA. LBP was recorded among 70.8% of feminine students compared to 29.2% of males with recorded statics significance (P=.049). It had been insignificantly reported among 46.9% of older students (23-25 Yrs.) compared to 14.1% of those who aged less than 20 years (P=.732). regarding effect of LBP on student's achievement, mean value of GPA among those with LBP was 3.6 points in comparison to 3.5 of others with no pain complaint (P=.152).

Table 4. Distribution of LBP among students by their demographic data and effect on GPA

Factors	History of LBP				P-value
	Yes		No		
	No	%	No	%	
Age in years					
18-19	39	14.1%	11	12.4%	.732
20-22	108	39.0%	32	36.0%	
23-25	130	46.9%	46	51.7%	
Gender					
Male	81	29.2%	36	40.4%	.049*
Female	196	70.8%	53	59.6%	
BMI					
Normal/underweight	186	78.2%	52	21.8%	.068
Overweight	65	76.5%	20	23.5%	
Obese	26	60.5%	17	39.5%	
GPA					
Range	2.0-4.6		1-4		.152#
Mean ± SD	3.6 ± 0.41		3.5 ± 0.48		

P: Pearson X^2 test; #: Independent t-test; * P < 0.05 (significant)

4. DISCUSSION

Low back pain (LBP) is worldwide problem which affects 70 - 80% of population and influence their social and economic status (Croft, 1998, Elfering and Mannion, 2008). The majority cases of LBP are for non-specific causes (Balagué, 2012). It is self-limiting and mostly treated within primary care after 12 months of primary diagnosis of LBP three-quarters of patients might have persistent symptoms such as pain and disability (Croft, 1998).

This study was aimed to estimate The prevalence of low back pain among medical students and to identify the associated risk factors of low back pain among medical students in UQU. Also, aimed to assess the effect of having low backpain on student's scholastic achievement through GPA estimation. The study revealed that nearly three out of each four students complained of LBP during last few months. The pain was mainly not related to trauma and it was for less than three months among two thirds of the students which makes their answers are precise and this estimation is nearly approaches the reality. According to pain nature, dull pain type was the dominant one which is related to faulty life style as other types of pain may be associated with certain medical condition such as throbbing pain related to inflammation, sharp pain may be due to injury or sciatica and so for all other types. Dull pain is concordant with what reported regarding aggravating factors as wrong setting position and wrong sleep position with sedentary lifestyle are all the lifestyle of students during study. Also pain reliving factors included position related factors including correct setting, sleep and study positions. This was confirmed through that more than three quarters of the students told that they study with lying down or sitting position which may be for long duration as nearly three quarters of them study for at least 4 hours daily. This estimated incidence of LBP was concordant with what reported by Amelot et al., (2019), who estimated that about 72.1% of medical students reported suffering from LBP. In Belgrade (Serbia), A study was done to determine the prevalence of LBP among medical students (Vujcic, 2018). The study was showed that the period prevalence of low back pain was 75.8%, 12-month prevalence 59.5%, and point prevalence 17.2%. lower incidence of LBP among students was reported in different studies as the prevalence of LBP was 47.5% among students in India (Aggarwal, 2013), 46.1% among Malaysian students (Alshagga, 2013), and 53.4% among Austrian medical students (Smith, 2005). In a Brazil, a study done for medical and physiotherapy students, 59.9% was the 12-month prevalence of LBP and 9.2% was the purpose prevalence higher prevalence of LBP was showed from physiotherapy students when compared with the medical students in all measures (Falavigna, 2011). Locally, in Saudi Arabia, a study conducted in Riyadh to assess Prevalence of neck–shoulder pain and low back pain among high school students which reported lower rates than reported by the current study (Al Rawaf, 2019). Riyadh study reported that nearly 50% of the students had both neck-shoulder pain (NSP) and LBP, and 18.1% reported that they have experienced neither NSP nor LBP. NSP was reported by 69.4% of participants and was significantly associated with female gender and mood change and abdominal sleeping position. Also, lower prevalence of LBP among Jazan university student was assessed by Dighriri et al., (2019), as authors reported that low-back pain it was reported by 33.4% before the week of the study and 270 (61.4%) within the year before the study. These differences in esteemed rates even within the same region may be due to different methods used to estimate LBP, subjective perception of respondent regarding what is considered to be the main complaint related to backpain, and different studying hours and methods according to college nature (practical or theoretical).

Regarding flag signs of LBP reported by students, neck pain and weakness were the most reported as red flag signs while low mood and difficulty at walk were the most associated yellow flag signs. These findings are concordant with literature findings (Falavigna, 2011, Dighriri, 2019, Samanta, 2003, Downie, 2013, Henschke, 2008).

As for effect of LBP on student's achievement, the current study revealed that there was no effect of reported low back pain on student's GPA. This is what expected as low back pain may be a result of long studying hours and in turn, will not affect students GPA besides that there are other many factors related to back pain other than study positions or effect.

5. CONCLUSION

In conclusion, the study revealed that student's complaint of LBP was high exceeding three quarters of them mainly during the last few months. LBP was more among females and mainly related to inappropriate sleep, setting, or even studying positions. Neck pain was the most reported with poor mood. Lack of exercise with long study hours were remarkably reported. Also, irrespective of high prevalence of reported LBP, but there was no considerable effect on student's scholastic performance. University should pay attention to improve student's awareness of LBP and to improve its related lifestyle and behaviour.

Recommendation

The University is recommended to provide health education sessions for self-management of LBP and affording exercise day to encourage all to participate. Also, further large-scale studies are needed to have more precise magnitude of this problem in the university community to keep foot on main causes and how to avoid.

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Authors' Contributions

Informed consent

Written informed consent was obtained from all individual participants included in the study.

Conflicts of Interest

The authors have no conflict of interest to declare.

Ethical approval

The ethical committee approval code of the study was HAPO-02-K-012-2020-07-427.

Financial Resources

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