

ASSESSING THE PREVALENCE OF LOW BACK PAIN AND ITS SEVERITY ALONG WITH THE IDENTIFICATION OF FACTORS THAT EXACERBATE THE RISK OF LBP AMONG UNIVERSITY STUDENTS: A CROSS-SECTIONAL STUDY

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Abstract

Low back pain is a debilitating condition that causes discomfort, anguish, and disability to the sufferer. The aim of the study was to better explore the prevalence of Low Back Pain, its severity, and identification of risk factors that exacerbate the menace of LBP among the students at Jazan University. The study used convenience non-probability sampling to conduct a cross-sectional study during the study period (10 April 2023 to May 2023). The data collection instrument was a self-designed questionnaire piloted and then disseminated in printed format to the students of Jazan University. Out of 200 students from Jazan University, 90 (45%) reported experiencing LBP. However, only 57 out of the 90 participants (63%) sought medical care for their condition. Regarding the type of LBP, 18.9% suffered from chronic, 63.3% from sub-acute, and 17.8% from acute LBP. Moreover, the intensity was moderate in 52.2% and severe in 21.1% of participants. Weight, psychological factors, and number of sleep hours/night could be the risk factors associated with LBP. 27.8% of participants were overweight among those who experienced LBP past year. Of the study population, 93% knew about the relationship between LBP and incorrect sitting posture. However, only 48% of the population practised taking short breaks during their studies and moving around. This study was a balanced one in terms of the study population as it included an almost equal proportion of students from allied health sciences and community colleges. There should be some informative campaigns that will make students more aware of the long-term side effects of LBP. Moreover, feasible interventions should be incorporated in colleges and workplaces to prevent LBP, injuries to the back due to chronic LBP, and to avoid mental health problems. However, the present study was conducted on university students, but studies should be performed on other sectors of society so that the actual prevalence of LBP can be estimated.

Keywords: Low back pain (LBP), Lumbosacral pain, awareness, University students, prevalence, severity, knowledge, practice, Saudi Arabia

INTRODUCTION

Low back pain, also known as lumbosacral pain, lumbago, or lower back pain, is a leading cause of long-term disability worldwide. It is characterized by pain in the posterior part of the body that starts from the lower margin of the 12th rib to the gluteal folds and may or may not be accompanied by referred pain in one or both limbs. The pain lasts for at least one day (Hoy *et al.*, 2014). It is expected that the total disability burden and disease-related cost due to LBP will increase in the coming decades (Hartvigsen *et al.* 2018). Over 551 million people were estimated as LBP sufferers in 2017, and it was the highest contributor to the disability burden globally. In the year 2020, it was reported that about 619 million people are suffering worldwide, and it was

suggested by using prevalence projections that this number will rise to 843 million by 2050. The high prevalence percentage of LBP in all regions of the globe could pose some social and economic consequences with special reference to the substantial cost of care for this ailment. A further after-effect of LBP is societal and economic loss because of its high prevalence in the working-age population which causes a loss in productivity. Moreover, some workers prefer to take premature retirement just because of this ailment and in turn, face financial loss.

The Kingdom of Saudi Arabia has experienced extensive health transformations and new health challenges due to the rapidly changing socio-economic environment.

It was reported in a systematic review conducted by Al-Amer, (2020) that LBP is more prevalent among healthcare workers in KSA as compared to other countries globally. The risk factors reported for it include age, BMI, and gender (female), whereas work-related factors comprise bending and twisting back, lifting objects, and performing hand-to-hand procedures.

The Gulf Cooperation Countries, which includes KSA, share similar geographic locations and socio-demographic characteristics. The prevalence of LBP in Qatar was reported as 56.5% [Bener et al. 2014]).

Developed countries have been found to have a lower prevalence of low back pain than developing countries. For instance, the population prevalence of low back pain in the United Kingdom was 36.1%. In contrast, developing countries have been found to have a higher prevalence than developed countries. For example, the population prevalence in the United Kingdom (UK) was 36.1% [Raspe et al 2004].

A study conducted on employees from Bahrain found a positive correlation between the prevalence of LBP and increasing years of experience [Tantawy, 2019]. According to a study conducted by Aldera et al (2020), the incidence of low back pain in different professional groups within a working-age group ranged between 64% - 89%. They also suggested that the prevalence of LBP in the KSA has only been examined within specific professional groups, which limits the ability to generalize the findings. Moreover, they reported a notable finding that the prevalence of LBP is more common in female employees.

The higher prevalence of LBP among the population of KSA, Qatar [Hanna et al. 2019], and other GCC countries could be because of environmental conditions, for instance, harsh weather conditions for most of the year do not permit outdoor exercise and other activities that lead to sedentary behaviour.

The study aimed to identify the prevalence, extent of determinants, and risk factors for low back pain and measure the level of awareness about the role of correct and proper sitting posture among university students in Jazan, Saudi Arabia. This study was conducted due to the lack of literature in the southern region of the kingdom.

The Corona pandemic contributed to increased low back pain rates for humans due to the working and online study conditions and the recession that overshadowed the lifestyle and the control of the virtual world. Hence it was important to carry out this research specifically during this exceptional period. Moreover, it is crucial to raise awareness about the dangers of sitting for longer periods and the wrong sitting postures and its complications to the student in the future.

METHODOLOGY

Study location: The study was conducted in the Jizan region, the southwest province of the Kingdom of Saudi Arabia.

Sampling: It was a cross-sectional study using a convenience sampling method. The data was collected by conducting a survey using a printed questionnaire disseminated to the students of Jazan University. A self-designed questionnaire, to measure different objectives through the study period, was developed in the English language. To make the questionnaire more understandable to the intended demographic, the items of the questionnaire were translated into the Arabic language by a professional translator without using any dialect phrase.

Inclusion criteria: The people of the Jizan region who have volunteered to participate in the survey were included in the study. The identity of the participant was kept anonymous during data analysis.

Exclusion Criteria: The study did not include participants who did not know the Arabic language, wished not to participate in the study, and were from outside the Jazan region.

Data Collection: The questionnaire was piloted on 10 students to ensure the clarity of information and determine the time needed to fill up the questionnaire. Feedback from the pilot study was incorporated into the final draft of the questionnaire. Data from the pilot study was not included in the study. The questionnaire was distributed, and data was collected for 45 days (10 April to 25 May 2023).

Ethical consideration: Informed consent of all the participants was taken before conducting the study. The privacy and confidentiality of the participants were preserved, and ethical and moral values were observed in designing the research plan. Moreover, the study was exclusive of anything that may cause any physical, social, or emotional harm to the participants of the research. No incentives or rewards were given to participants.

Data analysis: The data was analyzed using Microsoft Excel.

RESULTS

Response rate: The response rate was recorded as 100% as all 200 questionnaires were returned complete.

Demographic features of the participants: In the present study, 60% of participants reported their gender as female and 40% were male. The Majority (68.5%) of the participants belong to an age range between 20-24 years, followed by 25-29 years (15.5%) and the least proportion (6.5%) of participants were from the age group less than 20 years of age. Moreover, 41.5% of participants were students at the College of Public Health, 10% of respondents were from the College of Nursing, and 4% were from the College of Pharmacy. Moreover, 44.5% of participants in the study were from colleges other than allied health sciences. Regarding their academic year of studies, we found that most participants (26.5%) were studying in the 4th year whereas the least proportion of the participants (9.5%) were from the 2nd year of their program of study. Details are shown in Table 1.

Table 1: Demographic Characteristics of the Study Population

Characteristics		Frequency	Percentage
Gender	Male	80	40%
	Female	120	60%
Age (years)	Less than 20	13	6.5 %
	20-24	137	68.5 %
	25-29	31	15.5 %
	more than 30	19	9.5 %
Academic specialization	Public Health	83	41.5 %
	Pharmacy	8	4 %
	Nursing	20	10 %
	Other than allied health sciences	65	44.5 %
The academic year of study	First	20	10 %
	Second	19	9.5 %
	Third	29	14.5 %
	Fourth	85	42.5 %

Prevalence of low back pain: The participants were asked whether they had experienced low back pain in the past year, and if the participants answered “Yes” then the type and intensity of pain were evaluated. In this study, 90 out of 200 participants (45%) reported experiencing low back pain in the past year. Moreover, 63.3% reported sub-acute back pain, 18.9% were having chronic, and 17.8% of respondents suffered from acute low back pain. The details are shown in Figure 1.

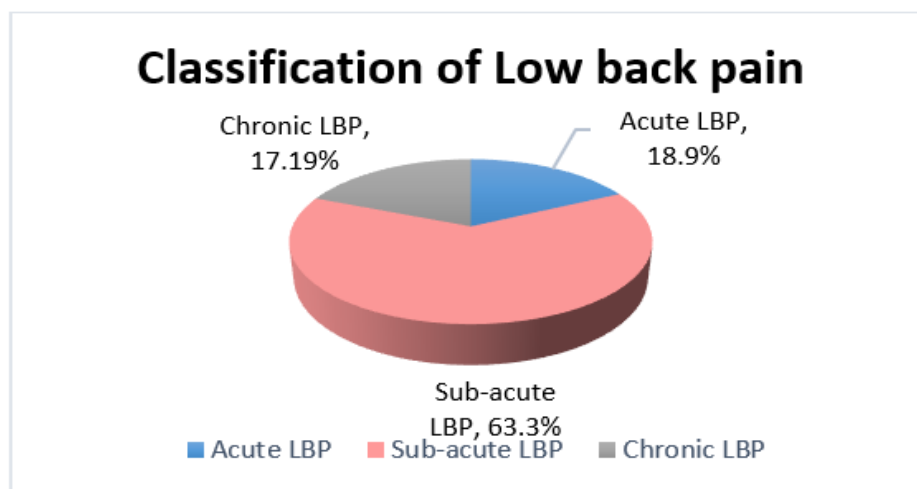


Figure 1: The frequency of Chronic, Sub-acute, and Acute low back pain in the study population.

"Out of 90 participants, only 57 (63%) sought medical care for low back pain. Out of the 90 participants, 12 (13.3%) reported experiencing Sciatica pain, while 78 (86.6%) experienced pure low back pain. Among the population with low back pain, 19 out of 90 (21.1%) reported severe pain, 47 out of 90 (52.2%) reported moderate pain, and 24 out of 90 (26.6%) reported mild pain. Among the participants having LBP, 19/90 (21.1%) reported severe pain, 47/90 (52.2%) reported moderate pain and 24/90 (26.6%) reported mild pain. Details are shown in Figure 2.

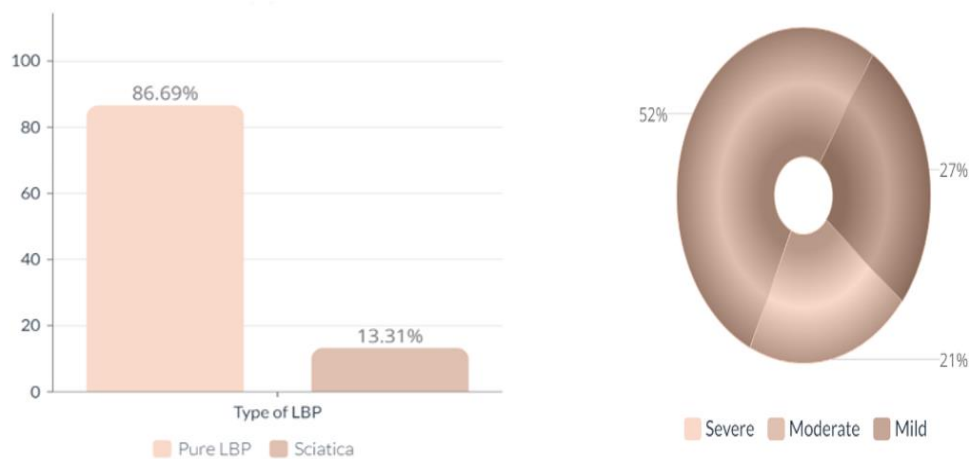


Fig 2a: Type of Low Back Pain Fig. 2b: Intensity of Low Back Pain
Figure 2: The types of low back pain and its intensity among the study population

Risk factors that could lead to LBP: In our study population, 70.5% of participants reported themselves as active and 29.5% as physically inactive. Almost half of the study population mentioned that they must sit for longer hours to study, and 26.5% of participants reported that sometimes they need to sit for longer durations. Half of our study population is from allied health science and such specializations require more devotion, and concentration and need more time to study. It could be the reason that 51% of participants mentioned that they must sit for longer periods. Regarding the use of computers or tablets, an equal proportion of participants (46.5%) spent less than 4 hours and between 4-10 hours each day. Whereas, more than 10 hours were spent on computer/tablet by only 7% of participants. Details are given in Table 2.

Table 2: Risk factors that can increase the likelihood of low back pain.

S. No.	Risk factors		Response of study population Percentage (n)
1.	Physical activity	Active	70.5% (141)
		Inactive	29.5% (59)
2.	Sitting for long periods due to the nature of your work/study	Yes	51% (102)
		No	7.5% (15)
		Maybe	15% (30)
		Sometimes	26.5% (53)
3.	Number of hours spent/day on computer or tab.	Less than 4 hours	46.5% (93)
		4-10 hours	46.5% (93)
		More than 10 hours	7% (14)

Risk factors that are probably associated with LBP: Weight, psychological factors, and number of sleep hours per night were considered as the factors that could be the reason for the occurrence of low back pain. In our study population, 45% of participants reported experiencing back pain during the past twelve months. Among those respondents, 34.4% were overweight, 6.7% were obese, whereas 27.8% reported that they did not fall under the category of overweight, obese, or the one that gain weight quickly. In addition, 48.9% of the affected population reported experiencing mood swings, followed by stress (18.9%), while 25.5% of low back pain sufferers did not have any of the given psychological factors. Surprisingly, 58.9% of low back pain

sufferers sleep for 5-10 hours per night, and even 5 out of 90 participants completed more than 10 hours of sleep per night. Detailed results can be found in Table 3.

Table 3: Risk factors associated with Low Back Pain

S. No.	Risk factors		Response of study population Percentage (n)
1.	Weight	Being overweight	34.4% (31)
		Obese	6.7% (6)
		Quickly gaining significant amounts of weight	31.1% (28)
		Not applicable	27.8% (25)
2.	Psychological factors	Mood Swings	48.9% (44)
		Stress	18.9% (17)
		Depression	6.7% (6)
		None of the above-mentioned factors	25.5% (23)
3.	Number of sleep hours per night	Less than 5 hours	35.5% (32)
		5-10 hours	58.9% (53)
		More than 10 hours	5.6 % (5)

Knowledge and practice with respect to low back pain

In our study population, almost all participants (93%) have prior knowledge regarding the relationship between lower back pain and incorrect sitting position. Only 12 out of 200 participants mentioned that they were unsure about the exact correlation between sitting position and the occurrence of lower back pain. Furthermore, 83.5% of respondents were familiar with the significance of taking rest or doing some relaxing activities at work or study place but 3.5% of participants had no idea about it. Approximately half of the study population practised taking short breaks and moving around during their studies. Detailed results can be found in Table 4.

Table 4: Knowledge about lower back pain

S. No.			Response of study population Percentage (n)
1.	Knowledge about the relationship between lower back pain and incorrect sitting position.	Yes	93% (186)
		No	1% (2)
		Maybe	6% (12)
2.	Knowledge about the importance of taking rest or doing some relaxing activities in work/study place?	Yes	83.5% (167)
		No	3.5% (7)
		Sometimes	13% (26)
3.	Practice taking rest, moving around, or taking a break between your work hours.	Yes	48% (96)
		No	10% (20)
		Sometimes	42% (84)

DISCUSSION

Low back pain is one of the devastating conditions in which the bearer suffers physically and mentally as well. It inflicts grief, discomfort, and disability on its bearer. The efficiency of the person to perform day-to-day tasks gets affected and hence productivity and in turn economy get weak [Ricci et al., 2006, Rizzo et al. 1998, Wennig et al, 2009]. These days, Low back pain (LBP) is one of the prevalent complaints among people of all age groups. Moreover, it has been reported that at least 90% of the population experienced low back pain once in their life (Nygaard et al, 2020; Allegrì et al., 2016). It was considered previously that LBP is a disease of old age, but now 13.5%-39.5% of adolescents (aged between 18-24 years) reported the complaint of

low back pain. Furthermore, LBP also showed an impact on the psychology of the people suffering from it. It could also lead to depression, anxiety, and irritability.

Health science students are vulnerable to stress and prolonged time of studying and training which will make them predisposed to having LBP. The prevalence rate of LBP among health science students was reported between 40.1% to 57.9%.

The 2017 review article published in the Lancet on the prevalence of Low Back Pain. According to Maher et al. (2017), the occurrence of low back pain in the general population was greater in high-income countries (30%) and was more common in females than males. As a result, administrations/governments have documented low back pain as a major public health issue, leading to the declaration of a 'call for action'. [Hartvigsen et al 2018; Buchbinder et al. 2018]

The prevalence and incidence of LBP in the Saudi Arabian general population, and the factors associated with LBP are not clear and vary in the literature. It has been observed that most of the findings were obtained during secondary analyses and were extracted from the studies evaluating work-related musculoskeletal (MSK) problems.

Low back pain prevalence was found to be associated with participant working conditions. According to a study conducted by Alghadir et al. (2017) on physiotherapists, the prevalence of low back pain varied in terms of severity and location according to sub-speciality. Furthermore, the study reported a higher prevalence of low back pain among neurology specialists (71%) than orthopaedic specialists (30%). According to Aldera et al. (2020), the prevalence of low back pain was associated with three factors related to occupational risk: the speciality of the participants, years of experience, and length of working hours. The highest prevalence percentage (89%) was reported for physiotherapists in Saudi Arabia [Alghadir et al., 2017], whereas it was the lowest (63.8%) for teachers. According to two studies [Al-Mohrej et al., 2016; Al-Shehri et al., 2017], the prevalence of low back pain in dentists was similar, with percentages of 68% and 64%, respectively.

In our study population, the prevalence of low back pain was 45% and is lower than other reports from KSA because the study sample comprised a mixed population (Students of allied health sciences and from community colleges who are studying literature courses). Secondly, most of the previous studies on low back pain were conducted among healthcare staff, and the data was most commonly collected from the population in Riyadh City, the capital of Saudi Arabia. It is important to note that the results of these studies may not be generalizable to the prevalence of low back pain within the general population of the entire Kingdom of Saudi Arabia. Although the prevalence of low back pain has only been explored within specific occupational disciplines in Saudi Arabia, it is like the prevalence within the general population of other Gulf Cooperation Countries. It is worth noting that Saudi Arabia is part of GCC. Low back pain is defined as acute when it lasts no longer than six weeks, subacute when it is between six weeks and three months, and chronic when it lasts longer than three months [Allegri et al. 2016]. Almost half of our study population was suffering from moderate low back pain and of the participants who experienced low back pain, 63% reported sub-acute pain. Low back pain can become chronic, which can affect future health professionals in the provision of healthcare to patients. Issa et al. (2016) reported that the prevalence of low back pain among university students from Taif, Saudi Arabia was 30%. The study also reported a significant association between academic grades and low back pain among college students, which is consistent with

our findings. The study found that individuals with high academic grades and those attending medical colleges had a higher likelihood of experiencing low back pain. This can be attributed to the long study periods and sedentary lifestyles among medical students. Al-Arfaj et al. (2003) conducted a noteworthy study, where they determined the prevalence of back pain among adults in Al-Qaseem Central Province, Saudi Arabia with the aim of identifying the relevant factors and characteristics. They carried out a survey covering nearly 1,000 houses in the villages and towns of Al-Qaseem province for a total duration of 18 months. As a result, they observed that 1085 individuals reported back pain and it was more prevalent among married people than unmarried ones. Additionally, LBP was also significantly linked to height, weight, and depression.

The prolonged sitting time due to studies or using a computer or tablet is strongly associated with LBP. Furthermore, prolonged sitting increases compression load on the spine and leads to lower back pain. The condition could get worse when accompanied by increased body weight. Interestingly, in our study population suffering from LBP, 34.4% were overweight, 6.7% were obese and 31.1% mentioned that they quickly gained a significant amount of weight.

Some previous studies have proved that psychological factors also contribute to the development of LBP. Moreover, in our study, 48.9% of participants, who suffer from low back pain, reported that they have undergone mood swings, 18.9% have faced stress but 25.5% did not experience any psychological condition. These results are in accordance with the findings of Hanna et al. (2019) who revealed that Low Back Pain sufferers were more likely to experience depression.

CONCLUSION

We have noticed that the students in allied health sciences were suffering more from lower back pain, and it could be due to long sitting and spending more time on a computer screen due to the demands of their courses of study. Although the students in the present study were aware of LBP

and the importance of taking breaks in between, only half of the study population practised taking rest or breaks during their studies and moved around. Informative campaigns can help raise awareness about the outcomes of low back pain under chronic conditions. The study population was balanced in terms of an almost equal number of participants from allied health sciences and community colleges.

However, the study was conducted exclusively on university students, but other studies should be performed that will include other sectors of society, and then the actual prevalence of LBP can be evaluated. Since LBP was causing minimal disability to undergraduates, further longitudinal studies need to be conducted to evaluate the long-term effect of LBP.

Moreover, detailed epidemiological research is needed to identify the prevalence of LBP in the general population of KSA. When prevalence is more widely understood, it might help drive change that could impact the levels of disability from this painful condition.

Lectures about preventive measures should be included in health-related courses. Students should take a break during using a computer or tablet and they should do stretching exercises to relax the back.

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Transparency Declaration: Nothing to declare.

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