RESEARCH ARTICLE

PREVALENCE OF LOW BACK PAIN AMONG HEALTH SCIENCES STUDENTS IN SRINAGAR: A CROSS SECTIONAL STUDY

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ARTICLE INFO	ABSTRACT
  ***Corresponding author:** Gazalla Altaf*	***Aim:*** To determine the prevalence of low back pain (LBP) among health sciences students and to identify the associated factors. ***Methods:*** Cross-sectional study was conducted among 1163 students from five health sciences colleges during the academic year 2016–2017. Self-administered questionnaire was conducted and included 4 sections: demographic characteristics, risk factors, Nordic musculoskeletal questionnaire and Oswestry disability questionnaire. Data were analyzed using SPSS. ***Results:*** Mean age was $20.74 \pm$ (1.59 years). 70.9% of students were female. Lifetime prevalence of LBP was 56.6%, 12-month prevalence 48.8%, and point prevalence 21.2%. Dentistry students had highest lifetime prevalence of LBP (67.6%) with significant p value (<0.001). Male were found to have higher lifetime prevalence compared to female ($p \leq 0.001$). Spending more than 10 h on computer or tablet was significantly associated with LBP (OR 2.19; 95% CI 1.30–3.70; p = 0.003). Feeling discomfort on bed was associated with LBP (OR 1.81; 95% CI 1.38–2.38; $p \leq 0.001$). Uncomfortable college furniture was associated with LBP (OR 1.40; 95% CI 1.09–1.79; p = 0.008). Using heavy backpack was found to be associated with LBP (OR 1.49; 95% CI 1.01–2.03; p = 0.011). Most of students LBP (90.3%) found to cause minimal disability on Oswestry scale. ***Conclusion:*** Dentistry students at higher risk of developing LBP compared to other students

INTRODUCTION

Job-related musculoskeletal disorders (MSDs) usually happen over a period of time, resulting from repeated work-load exposures. The neck, low back, and upper limbs are commonly vulnerable to MSDs (Bernacki *et al.,* 1999). The life time prevalence of LBP is reported to be high, affecting nearly 80% of people at some time in their adult life, and the point prevalence is ranging from 30% to 50% (Jin *et al.,* 2004). For example, in France more than half of the French population experienced LBP at least one day in the previous 12 months (Gourmelen *et al.,* 2007). Low back pain is commonly recognized "non-specific" as no organic source was found to cause the pain (Urquhart *et al.,* 2011). Frequent initial onset of back pain appears in age of 30 years, and the peak is between 45 and 60 years (Anand *et al.,* 2013). Health science students are vulnerable to stress and prolonged time of studying and training which will make them predisposed for having LBP. Reported overall prevalence of LBP in health science students ranges from 40.1 to 57.9%, but there is controversy about which college has highest prevalence of LBP (Alshagga *et al.,* 2013). According to Nordic classification of LBP, lifetime prevalence, 1-year prevalence and point prevalence of LBP among: medical students were 73.4, 46.1–59.9 and 27.2%;

physical therapy students 69.2–82.3, 63.2–73.7 and 27.6%; and nursing students 79, 71 and 30%, respectively (Moroder *et al.,* 2011). LBP might be chronic, and this will affect future health professionals in the provision of health care to patients. Studies have shown conflicting results on the effect of identifiable risk factors in health science students on LBP. Identified risk factors for LBP included gender, age, weight, general health status, socioeconomic status, smoking, year of study, psychosocial factors (feeling very sad, overwhelmed, exhausted), history of back pain, history of back trauma, family history of treated back pain, use of heavy backpack, physical fitness, prolonged sitting time, bad postural habits, short sleep hours, discomfort in bed and college furniture (Bernacki *et al.,* 1999; Jin *et al.,* 2004; Anand *et al.,* 2013; Alshagga *et al.,* 2013; Moroder *et al.,* 2011). If risk factors are well recognized and understood, this would help in establishing preventive measures of LBP and modifying risk factors which will lead to better quality of life for future health professionals. No studies have been done in our region about the prevalence of low back pain among health science students. Further risk factors will be tested in this study. Aim of this study is to determine the prevalence of LBP among health science students and to identify the association between risk factors and LBP.

MATERIALS AND METHODS

Quantitative cross-sectional study was conducted at 5 health science colleges (medicine, dentistry, pharmacy, nursing and college of applied medical sciences "physical therapy, occupational therapy, clinical laboratory and clinical nutrition") at Srinagar, which was conducted during the academic year 2017–2018. The study included 1163 students and excluded students who have spinal deformities or had undergone back surgery. Self-administered questionnaire was distributed. Instruction was explained by one of the authors and the data collector who was well informed about all the parts of questionnaire. Completeness of questionnaires was checked by the authors. The questionnaire contains 52 questions in 3 pages divided into 4 sections: demographic characteristics such as age, gender, weight, height, college, year at college. Risk factors included smoking, physical activity, coffee drinking, hours spent on using computer, position while studying, sleeping hours, comfort of bed to back, comfort of college furniture to bed, using heavy backpack, being overwhelmed, feeling exhausted and feeling sad. LBP was assessed using Nordic musculoskeletal questionnaire. Disability was classified based on Oswestry questionnaire. Nordic and Oswestry questionnaires were previously tested for validity and reliability (Kuorinka *et al.,* 1987; Fairbank and Pynsent, 2000). Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean ± standard deviation, and categorical variables were expressed as percentages. The t-test was used for continuous variables, and Chi-square test was used for categorical variables. Odds ratio (OR) with their 95% confidence interval (CI) was used for assessing the risk factors for LBP using the univariate analysis. A p value <0.05 was considered statistically significant.

RESULTS

One thousand and fifty-two participants out of 1163 were enrolled in this study.. Mean age of participants ± (standard deviation) was 20.74 ± (1.59 years). Majority of participants were female (70.9%). Demographic characteristics are shown in Table 1. Overall lifetime prevalence of LBP among health sciences undergraduate was 56.6%, 12-month prevalence 48.8%, and point prevalence 21.2%. Dentistry students had significantly highest lifetime, 12-month and point prevalence compared to other students. Males had significantly higher lifetime prevalence of LBP than females (Table 3). Risk factors associated significantly with point prevalence of LBP are hours spent on using computer or tablet (p = 0.002), sleeping on uncomfortable bed (p < 0.001), uncomfortable college furniture (p = 0.005), using heavy backpack (p = 0.01), feeling overwhelmed (p < 0.001), feeling sad (p < 0.001), previous history of back trauma (p < 0.001) and family history of low back pain treated by a doctor (p < 0.001).

DISCUSSION

The overall lifetime prevalence of LBP among undergraduates was found to be high (56.6%), which is within the range of previous studies (40.1–57.9%). Further, 1-year prevalence was reported to be 48.8% and point prevalence 21.2%, which is higher than the results reported in Hafeez *et al.*'s study (21%, 13.1%) (Nordin *et al.,* 2014).

Table 1. Demographic characteristics

Characteristic	*n*(%)
Gender	
Male	306 (29.1)
Female	747 (70.9)
Age	
≤19	261 (24.8)
20	302 (28.7)
21	171 (16.2)
≥22	318 (30.2)
Colleges and subspecialties	
Medicine	328 (31.1)
Dentistry	145 (13.8)
Pharmacy	217 (20.6)
Nursing	120 (11.4)
Physicaltherapy	123 (11.7)
Occupationaltherapy	24 (2.3)
Clinical nutrition	49 (4.7)
Clinical laboratory	47 (4.5)
Academic year	
First	281 (26.7)
Second	275 (26.1)
Third	180 (17.1)
Fourth	152 (14.4)
Fifth	160 (15.5)
Tobacco	
Yes	48 (4.6)
Ex-smoker	9 (0.9)
No	996 (94.6)
Physical activity	
Active	403 (38.3)
Inactive	648 (61.5)
BMI	
<20	212 (20.1)
20–25	453 (43)
>25	296 (28.1)
Hours spent on using computer or tablet (h)	
<4	228 (21.7)
4–10	391 (37.1)
>10	434 (41.2)
Overwhelmed	
Yes	447 (42.5)
No	590 (56)
Sadness	
Yes	403 (38.3)
No	648 (61.5)
Exhausted	
Yes	608 (57.7)
No	442 (42)

In our study, dentistry students showed significantly highest lifetime, 1-year and point prevalence of LBP compared to other students. This could be attributed to the nature of their clinical training. As dentists use prolonged sitting and standing during their job, apply awkward posture and repetitive movements, many loads are exerted to the lumbar spine. It is believed that the higher muscular demand may lead to fatigue and consequently increase the risk of LBP in dentists. In a systematic review, it was reported that the prevalence of general musculoskeletal pain ranges between 64% and 93% and the most prevalent regions for pain in dentists have been shown to be the back (36.3-60.1%) (Udoye and Aguwa, 2007). In our study we found that Males suffered more pain than females. These results are similar to the results of study done by Al Wazzan *et al.* with findings - 58.24% males and 41.75% females suffered with neck and lowered back pain (Al Wazzan *et al.,* 2001). Also a study by Aasa *et al.* demonstrated that males reported a higher prevalence of LBP than women (Aasa *et al.,* 2005). Though a study by Leijon Mulder *et al.* concluded that female were more likely to report LBP than men (Leijon and Mulder, 2009). BMI was not significantly associated with LBP, which is consistent with previous studies (Hulya Yucel and Perihan Torun, 2016). No significant association was found between incidence of LBP and smoking.

Table 2 Comparison of low back pain prevalence among different college students (prevalence %)

	Medicine	Dentistry	Pharmacology	Nursing	Physical therapy	Occu- pational	Clinical nutrition	Clinical	*p* value
Lifetime prevalence	63.7	67.6	45.2	50	52	45.8	59.2	57.4	<0.001*
12-month prevalence	55.5	60.7	36.4	42.5	47.2	41.7	46.9	48.9	<0.001*
Point prevalence	23.2	35.2	15.7	21.7	15.4	12.5	12.2	17.0	<0.001*

Table 3 Univariate odds ratio and confidence interval (95% CI) for LBP point prevalence to predict the risk factors

Risk factors	Odds ratio	95% CI	*p* value
Male gender	0.93	0.67–1.29	0.641
Age (years)			
<19	1.00		
20	1.00	0.66–1.51	.987
21	1.07	0.67–1.73	.776
>22	1.24	0.83–1.85	.290
Smoking	0.86	0.41–1.80	.686
Coffee cups (per week)			
<2	1.00		
2–5	1.21	0.82–1.81	.338
>5	1.02	0.71–1.47	.905
Physical active	1.09	0.80–1.47	.588
Number of hours using computer or tablets (h)			
<4	1.00		
4–10	0.94	0.62–1.48	.789
>10	1.64	1.10–2.45	.015*
Sleeping hours per night (h)			
<4	1.36	0.81–2.29	.242
4–8	0.95	0.70–1.30	.761
>8	1.00		
Feeling discomfort on bed	2.63	1.94–3.57	<0.001*
College furniture is not comfortable tomyback	1.56	1.14–2.13	.005*
Usingheavy backpack	1.49	1.01–2.03	.011*
BMI			
<25	1.00		
>25	0.99	0.69–1.41	.940

*Significant p value (<0.05)

Table 4. Characteristics of LBP among college

	Medicine	Dentistry	Pharma	Nursing	Occp. Therapy	Phystherapy	Cli. Nutrition	Cli. Nutrition	P
Acute	85.7	70.5	83.5	76.5	81.0	70.0	78.3	91.3	
Subacute	10.4	21.6	8.9	1 5.7	12.1	20.0	13.0	4.3	
Chronic	3.8	8.0	7.6	7.8	6.9	10.0	8.7	4.3	
Type of pain									
Pure LBP	79.1	80.5	77.2	56.9	84.5	70.0	78.3	79.2	**0.036***
Sciatic	20.9	19.5	22.8	43.1	15.5	30.0	21.7	20.8	
Seek care because of LBP									**0.184**
Yes	10.4	10.3	10.1	21.6	20.7	10.0	21.7	16.7	
No	89.6	89.7	89.9	78.4	79.3	90.0	78.3	83.3	
Use of medication									**0.008***
Yes	22.5	12.6	27.8	37.3	17.2	20.0	8.7	8.3	
No	77.5	87.4	72.2	62.7	82.8	80.0	91.3	91.7	
Previous history of trauma to back									**0.133**
Yes	6.7	4.1	4.1	9.2	2.40.0	0.0	10.2	4.3	
No	93.3	95.9	95.9	90.8	97.6	100.0	89.8	95.7	
Oswestry disability scale									**0.002***
Minimal	93.8	92.9	93.9	73.8	92.3	81.8	93.1	85.2	
Moderate	5.7	7.1	4.1	24.6	4.6	18.2	3.4	11.1	
Severe	0.5	0.0	2.0	1.6	1.5	0.0	3..4	3.7	
Crippled	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	

All values in %

Coffee consumption increased in students having LBP, but in this study no significant correlation was found between coffee consumption and LBP. Most of students (61.4%) are physically inactive, and no significant association was found between physical activity and LBP. It is reported that prolonged sitting time using computer or tablet is strongly associated with LBP (Hafeez *et al.*, 2013). In this study, the result is consistent with the literature and it shows significantly higher point prevalence among students spending more than 10 h using computer or tablet compared with other groups. Prolonged sitting increases compression load on the spine. Position while studying and sleeping hours were not associated with incidence of LBP. Hafeez and Yucel found an association between LBP and history of trauma of back, but it was not significant (Hafeez *et al.*, 2013). In contrast, Alshagga reported significant association between trauma and family history of musculoskeletal disorders with LBP [17]. In this study, previous history of trauma of back and family history of treated LBP were strongly associated with incidence of LBP (p < 0.001).

Conclusion

Health science students reported high prevalence of LBP. Dentistry students are at higher risk to develop LBP compared

with other colleges. Lectures about preventive measures should be included in health-related courses. Students should take a break during using computer or tablet and they should do stretching exercises to back. What we need is not preventing its incidence and recurrence by including preventive aerobic and relaxation exercises in weekly activities of dentists. This will help in improving the quality of work in their clinical practice.

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