Research Article

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Prevalence and factors associated with low back pain among school teachers residing in northern Dhaka city

Abstract

Low Back Pain (LBP) is known as a common musculoskeletal problem & it is found a greater percentage among professionals. The purpose of the study was to find out the prevalence of LBP & its associated factors among school teachers. A cross-sectional study was carried out comprising 69 male and 76 female with an age range between 25-60years old took part in this study. Results indicated that a greater percentage of school teachers found LBP. Factors like BMI, previous back injury, sleeping disturbance were responsible for LBP. However, there was no significant relationship found between LBP with office ergonomics. A knowledge program might be introduced among school teachers for creating awareness of factors related to LBP.

Keywords: low back pain, associated factors, school teachers, ergonomics

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Introduction

Low back pain (LBP) is a common musculoskeletal disorder in both the developed & developing countries & more than half of the worldwide population will experience LBP in their life. It is recognized as a very common health problem in exploiting people that play a major part in the quality of animation. In the United States, LBP is defined as a second most usual case of impairment among adults.[1] It influences socioeconomic problem of individuals.[2] LBP is now regarded as a top ten high burden diseases as higher than HIV, road injuries, tuberculosis, lung cancer, chronic obstructive, pulmonary disease, and preterm birth complication.[3] Recent studies suggested that school teachers involved at a greater risk of musculoskeletal pain.[4] LBP refers to pain or discomfort located in the bottom part of the back, which is recognized as the lumbar back. Some responsible factors like a study-related task, prolonged sitting, standing posture, and inappropriate furniture are the major cause of LBP for the school teacher.[5,6] An overweight shows a high body mass indicator, which indicated poor subjective ill health.[7] Individuals who suffered from LBP often create major physical, social and mental disruption that affects his/her occupation and decrease the quality of life (Tavaflan et al. 2007). Some other factors like insomnia, irritability, anxiety, and depression are also responsible for LBP.[8] There were lacks of research published in our country on this issue. So, this study will be expected to determine the prevalence and the associated factors that responsible for LBP.

Methodology

It was a descriptive Cross-sectional study conducted among teachers from different school situated at Mohalhali, Khilkhet, Mirpur in northern Dhaka city. Study was carried out over six months from September 2016 to February 2017. The Study population consists of male and female school teachers with an age range of 25-60years old and who was employed for at least 5months. Samples were selected purposively and data were collected through face to face interview with the interviewer-administered structured questionnaire. The collected data were checked thoroughly and strictly for any error or information missing and then analyzed by using the statistical software named "Statistical Package for Social Science" (SPSS-22). Before data collection, permission from the Ethical Committee of The State College of Health Sciences was acquired and a request letter will give over to the appropriate authorities of the study area for getting permission and seeking help for smooth access to data collection.

Results

The current study found & Figure 1 shows that about 46% of school teachers complained LBP whereas about 54% of school teachers did not have LBP (Tables 1-6).

Table 1 Socio-demographic factors of respondents [n=145]

Variables	(n)	(%)
Age Range (In Years)		
25 to 34 Years	47	60
35 to 44 Years	40	27.6
45 to 54 Years	13	9
55 to 64 Years	5	3.4
Gender		
Male	69	47.6
Female	76	52.4
Educational level		
Graduate	44	30.3
Post Graduate	101	69.7
Monthly Income		
< 30000 BDT	55	37.9
300000-60000 BDT	64	46.2
60000-90000 BDT	14	9.7
90000> BDT	9	6.2

Analysis of the socio-demographic characteristics and table 1 shows that age range 25 to 34 years were maximized (n=87, 60.0%) and mean age of the respondents was 34.4966 (±8.164). Among them, female participants were more than male where the majority (n=101, 69.7%) of the participants completed their post graduation & the median of monthly income of the respondents was BDT 40,000.

Table 2 Distribution of respondents by information related factors (n=145)

Variables	(n)	(%)
Working hour in a day		
< 5 hours	36	24.8
5-10 hours	108	74.5
>10hours	1	0.7
Teaching Experience		
< 1 Year	9	6.2
1 to 5 Year	59	40.7
5 to 10 Year	32	22.1
>10 Year	45	31
Sitting time during work		
< 1hour	72	49.7
1-3 hour	63	43.4
>3 hour	10	6.9
Standing Time during work		
< 3 hours	25	17.2
3 to 5 hours	84	57.9
>5 hours	36	24.8
School work at home		
Yes	138	95.2
No	7	4.8
Computer work		
Yes	85	58.6
No	60	41.4
Sleep disturbance		
Yes	59	40.7
No	86	59.3
Previous Back Injury		
Yes	26	17.9
No	119	82.1
Job satisfaction		
Yes	115	79.3
No	30	20.7

Revealed that the majority (n=108, 74.5%) of respondents worked at 5 to 10 hours in a day. Among them, a greater percent (40.7%) of respondents was 1 to 5 years of job experience. Most of them (n=72, 49.7%) sitting time in school at <1 hour where more than half (n=84, 57.9%) of the respondents standing time was at 3 to 5 hours and more than half of the respondents did not use a computer. Nearly all participants (95.2%) worked school task in their household. A high percentage (40.7%) of respondents was suffering from sleep disturbance. Maximum participants (n=119, 82.1%) did not possess any past back injury and most of (n=115, 79.3%) among the respondents had job satisfaction.

Table 3 Distribution of respondents based on Ergonomics (n=145)

Variables	(n)	(%)
Seat & working table distance		
Closely	134	92.4
Not closely	4	7.6
Adjustable back support		
Yes	113	77.9
No	32	22.1
Using arm support		
Yes	62	42.8
No	83	57.2

Regarding the ergonomics analysis, maximum (n=134, 92.4%) respondent closely maintained their seat from working table. Most of (n=113, 77.9%) among them used the adjustable backrest support and more than half (n=83, 57.2%) of the respondents reported not using arm support.

Table 4 Information related to pain characteristics (n=67)

Variables	(n)	(%)
Suffering time		
< 1 month	1	1.5
1 to 6 month	5	7.5
3 to 12 month	7	10.4
>1 year	54	80.4
Severity of pain		
Mild	27	40.3
Moderate	29	43.3
Severe	11	16.4
Pattern of pain		
Temporary	41	61.2
Continuous	18	26.9
Severe	8	11.9
Radiating pain		
Sharp pain	37	55.2
Dall pain	3	4.5
Thrombing pain	13	19.4
Burning Pain	7	10.4
Numbness	7	10.4

Revealed that highest percent (n=54, 80.4%) of participants complained suffering of pain for more than one year and maximum had mild (40.3%) and moderate (43.3%) level of pain with temporary pattern. most of them (n=37, 55.2%) complained sharp radiating pain.

Table 5 Association between LBP with age, sex, BMI, Previous back injury, and arm support in sitting position

Variables	Low Back Pain		Total	Chi -Square test
	Present	**Absent**		
Age Range				
25 to 34 Years	37 (42.5%)	50 (57.5%)	87 (100.0%	χ^2=4.859
35 to 44 Years	24 (60.0%)	16 (40.0%)	40 (100.0%)	df=3
45 to 54 Years	4 (30.8%)	9 (69.2%)	13 (100.0%)	P=0.182
55 to 64 Years	2 (40.0%)	3 (60.0%)	5 (100.0%)	
Sex				
Male	26 (37.7%)	43 ((62.3%)	69 (100.0%)	χ^2=3.850
Female	41 (53.9%)	35 (46.1%)	76 (100.0%)	df=1 p=0.50
Body Mass Index				
< 18.5	0 (0.0%)	3 (100.0%)	3 (100.0%)	χ^2=12.618
18.5-24.9	27 (36.5%)	47 (63.5%)	74 (100.0%0	df=3
25-29.9	38 (62.3%)	23 (37.7%)	61 (100.0%)	p=0.006*
>30	2 (28.6%)	5 (71.4%)	7 9100.0%)	
Previous Back Injury				
Yes	21 (80.8%)	5 (19.2%)	26 (100.0%)	χ^2=15.225
No	46 (38.7%)	73 (61.3%)	119 (100.0%)	df=1 p=0.000*
Teaching experience				
< 1 Year	6	3	9	χ^2=3.562
1 to 5 Year	24	35	59	df=3
5 to 10 year	13	19	32	p=.313
Ø 10 Year	24	21	45	
Disturbance during sleeping[a]				χ^2=6.884
Yes	35 (59.3%)	24 (40.7%)	59 (100.0%)	df=1
No	32 (37.2%)	54 (62.8%)	86 (100.0%)	p=.011*
Doing School work at home[a]				
Yes	63 (45.7%)	75 (54.3%)		χ^2=.354
No	4 (57.1%)	3 (42.9%)		df=1 p=.704
Adjustable Back support[a]				
Yes	49 (43.4%)	64 (56.6%)		χ^2=1.666
No	18 (56.3%)	14 (43.8%)		df=1 p=.231
Job Satisfaction[a]				
Yes	52 (45.2%)	63 (54.8%)		χ^2=.219
No	15 (50%)	15 (50%)		df=1 p=.684

p-value reached from chi-square. 'a' indicated for using of Fisher's exact Test. Mark represents a significant association of LBP with BMI (p-value 0.006), Previous back injury (p-value 0.000) and sleeping disturbance (p-value.011)

Table 6 Associated Factor of LBP among the respondents (n=145)

Variables	Low back pain		t-Value	p- value
	Present Mean±SD	Absent Mean±SD		
Age	34.6716±7.28924	34.3462±8.89159	0.239	0.812
BMI	24.9984±2.85967	24.2359±3.65918	1.381	0.169
Monthly Income	49674±29641.96116	24.2359±3.65918	2.01	.046*
Sitting time	2.2687±4.23310	2.0321±1.29017	0.469	0.64
Standing time	4.8209±1.50429	4.5449±1.33918	1.169	0.244
Working duration	6.7239±1.34639	6.5641±1.33231	0.716	0.475

t-value reached from independent sample t-test. *Mark represents the significance of sample t-test. The study found significant association of LBP with monthly family income (p-value 0.046).
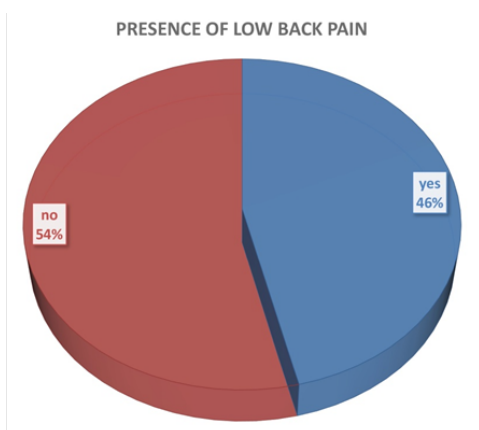

Figure 1 Prevalence of LBP among the respondents.

Discussion

The present study was undertaken to determine the prevalence of LBP and its associated factors among school teachers. The result of the current study indicated that LBP is a common musculoskeletal disorder found in school teachers & its prevalence was 46.2% among 145 participants. Age group 25 to 36years old reported with LBP in a high percentage where female school teachers were suffering more than male but there was no significant association of LBP with age & sex in this study. The previous study found age group 40 to 59years old had a majority of LBP & female teachers were three times more experienced LBP than male teachers and significant association found between LBP and sex.[9] Other studies stated that a higher prevalence rate of LBP found in female teachers than male.[6,10] On the other hand, a study stated by Jin et al. (2004), younger teachers are at more risk for developing LBP. The current study found more than two third of the participants were satisfied with their job and there was no significant relation of LBP with Job satisfaction, but the other study found the person with LBP who had a mild and moderate level of Job satisfaction.[10] This study initiated that no relation found between job experience and LBP. Past study stated that the longer the years of practice, the greater the risk of having LBP and length of employment seemed to be significantly associated with the prevalence of LBP for the school teachers.[10] Some studies demonstrated that static posture & prolonged sitting could be risk factors for LBP (Omokhodion et al. 2003; Pope et al. 2002). The study found a greater risk of LBP occurrence in teachers who had prolonged sitting, prolonged standing, long period of working hours with computers, & correcting examination papers (Mohammad et al. 2014).[10] But current study

found that there was no significant relation of LBP with sitting and standing time. Revealed that a number of school teachers were suffering LBP who had a history of back injury and there was a highly significant relationship between LBP with a back injury and another study showed that history of injury in the lower back had the significant impact on the back pain. Ozguler et al.,[11] stated that teachers who had previous back injury were 1.96 times to develop LBP compared who had no history of LBP. The study also revealed that a greater percent of the school teacher had normal body weight and less than half of the participants had overweight and a significant relation found between BMI and LBP. A recent study conducted among school teachers in Botswana and demonstrated that BMI was not significantly associated with LBP.[4] Less than half of the participants had LBP who had the history of sleep disturbance where a significant association was seen in LBP with sleep disturbance, but a study found in Ethiopia, teachers who had been disturbed during sleeping were 1.91 times more likely to experience LBP when compared to those who were not disturbed during sleeping. The possible reason for the difference could be those who were disturbed during sleeping, lack sufficient rest than those who did not (Beyen et al. 2013).[9] Nearly all teachers work at home for school purpose and a greater percentage had not used computer work in this subject. Different working condition & demands of school teachers (teaching, assessing students, homework, correcting examination papers & working with computers) that require prolonged sitting and standing may be considered as a risk factor for MSDs.[6] In ergonomics, this study indicated that about 92.4% of school teacher maintain closed the distance between the seat and working table and more than two third of the participants used back support. A study conducted by Yue et al.,[5] stated that significant association was found among uncomfortable back support and the prevalence of LBP. Maximum participants' pain persists >1year where most of them had a mid and a moderate level of pain with an intermittent pattern. Sharp radiating was the most common pattern of pain. School teachers were considered to have a widely varied prevalence rate of LBP, ranging from 17.7% in Japan to 53.3% in Brazil to 59.2% in China & 6% in the United States (Ono et al. 1997; Grant et al. 1995).

Conclusion

It is concluded that the prevalence of LBP was fairly high among school teachers. Factors such as BMI, previous back injury, & sleeping disturbance were associated with the prevalence of LBP among school teachers. There were no significant relations found between LBP with ergonomics. Higher monthly income teachers had higher rates of LBP compared to low income teachers. Some preventive strategies such maintain body weight; fairness of stress and comfortable work related

environment will help to reduce the incidence of LBP in the school teacher population.

Acknowledgements

Conflict of interest

Authors of the article declare that there is no conflict of interest regarding this article.

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