



RESEARCH ARTICLE

PREVALENCE AND RISK FACTORS FOR BACK PAIN AMONG COLLEGE TEACHERS OF PUNJAB INDIA

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ABSTRACT

Objectives: The aim of the study was to find out the prevalence of low back pain among college teachers of India and its correlation with various risk factors. **Background:** Low back Pain (LBP) is a very common problem in individuals and its prevalence varies from place to place and among professional, in particularly teachers. In literature various risk factors were identified for LBP including physical, psychological and social factors, literature is lacking for Indian population. **Methodology:** Study was survey questionnaire prospective design using incident sampling spread over six months. 400 self-reporting closed ended questionnaire consisting of demographic data, 15 close ended questions along with consent form and Oswestry Low Back Pain Disability Questionnaire were distributed among teachers after inclusion and exclusion criterion with appropriate instructions, later these were collected and analysis was done for percentage & correlation of LBP with various factors. **Result:** 46.98% teachers reported LBP, 37.46% were minimally disabled, and 7.61% moderate and only 1.90% were severely disabled. Taking lecture in standing without support was significantly negatively correlated with LBP, mixed approach with support and without support standing was positively correlated with LBP. Prolonged sitting posture due to work, due to exam marking and due to internet use were found to be positively significantly correlated with LBP. Previous injuries to low back, upper-limb & lower limb and was positively significantly correlated with LBP. **Conclusion:** It is concluded that about 47% of the college teachers reported that they had back pain once or more in their lifetime, prolonged sitting due to exam duty, internet uses history of injuries to back, upper limb and lower limb could be considered as risk factor. Standing without support during lecture may leads to a good posture and so less back pain.

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INTRODUCTION

Low Back Pain is a discomfort that occurs on posterior aspect of back between the bottom of the ribs and top of the legs, which may be sudden or gradual in onset. Lower back pain (LBP) is the most common musculoskeletal disorder caused by any single tissue involvement or a combination of injury to muscles, ligaments, tendons, intervertebral disc, nerve and vertebrae of the lumbar spine.² Charoenchai et al³ reported that 70% to 80% of world's population has at least one episode of LBP in their lifetime causing decrease in quality of life as well as physical activity. LBP can be classified according to duration and severity of symptoms as: acute LBP that occurs up-to 6 weeks from the onset, sub-acute LBP that occur from 7-12 weeks and chronic LBP that occurs more than 12

Several studies reported high incidence of LBP in the 3rd decade of life.⁷ Dionne et al⁵ reported that prevalence of LBP increases with age.⁹ Regarding gender and low back pain past studies are not conclusive as Hajel J⁶ reported that back pain can affect both males and females of all age groups.⁶ Whereas Koley et al⁴ reported that women suffers from LBP more than men, because of their greater physical activities in house or work places.⁴ Prevalence rate in general population varies across the world with minimum reported as 17% in United States of America¹³ and maximum reported 59% in United Kingdom.⁸ Various other studies have shown prevalence of LBP among different professions like among teachers it was 53.8% in Ethiopian¹⁶, 55.3% in Filipino¹⁵, 55.7% in Botswana.¹⁴ Among nurses prevalence of LBP was 40.6% in

Hong Kong²², 41% in France²³, 48.2% in Maharashtra²⁰, 56.7% in China.²¹ Various risk factors which were identified related to low back pain were reported as physical factors,²⁶ psychological & psychosocial²⁴. Physical risk factors among teachers are like poor posture as prolonged sitting²⁶, during various activities like frequent reading²⁶, marking of assignments²⁶, preparing of notes/lessons²⁶, working in front of computer²⁶. Another poor posture is prolonged standing in the class while taking lecture.²⁶ Others risk factors reported among teachers were like writing on board with chalk²⁶, which require sudden twisting & turning,²⁶ awkward position like above head arm position to write on board²⁶, bending forward for lifting objects,²⁶ carrying heavy objects such as books.²⁵ According to various studies teachers who had previous back injury were more likely to suffer from back pain.¹⁴ Teachers who did not involve in regular physical exercises were more likely to develop low back pain²⁷. Apart from this, teachers who were involved in household activities²⁷ were found to be co-related with LBP. Psychological factors like depression,²⁷ anger,²⁷ loss of self-confidence,²⁷ loss of self-efficacy²⁷ were associated with LBP. Socioeconomic risk factors like low social support in the workplace were associated with LBP²⁴ among teacher for LBP.

From above mentioned facts it was observed that there were studies which claim different rate of prevalence of LBP and also identified various risk factors for LBP but data is lacking for college teachers in particularly Indian population. So objective of this study was to find out the prevalence of low back pain among college teachers of India and its correlation with various risk factors.

METHODOLOGY

The study was conducted in various colleges of Jalandhar city located in Punjab state of India, which were managed by DAV college managing committee, New Delhi. Minimum of 400 full time teachers (male and female) aged between 21-65 years were selected. Study was survey questionnaire prospective design using incident sampling spread over six months after approval from appropriate authorities. The teachers who were having congenital disorder, PPRP (post-polio residual paralysis), teachers on medicine for psychotic disorders and guest/part time teachers were excluded from the study. 400 self-reporting closed ended questionnaire consisting of demographic data, 15 close ended questions about LBP, related difficulty in daily activities & various risk factors along with consent form and Oswestry Low Back Pain Disability Questionnaire were distributed among subjects with appropriate instructions, later these were collected and analysis was done for percentage & correlation.

RESULTS

Out of 400 recruited teachers 315 participants (78.75%) revert back to us with their questionnaires which were fulfilled in all aspect accurately and were further analysed. remaining incomplete questionnaires were discarded as few participants denied giving full information even after their consent. Out of 315, 126(40%) were male and 189(60%) were females. LBP was found to be correlated significantly with females with a p value of 0.05 with correlation coefficient of 0.132. The mean age of participants was 35.43 years, ranging from 21-65 age, 225 (71.42%) were married, 90(28.57%) were singles. Age

and marital status were not correlated with LBP significantly. In this study 46.98% teachers reported LBP, 29.84% of total participants reported that their activity reduced due to LBP and only 16.50% visited to expert for their LBP. LBP was found to be positively significantly correlated with activity reduced at the p value of 0.01 with a correlation coefficient of 0.679. Whereas LBP was not found to be correlated with number of lectures per week and total working years. Persons who reported LBP were also evaluated for disability on Oswestry Low Back Pain Disability Index, 37.46% were minimally disabled, and 7.61% moderate and only 1.90% were severely disabled. In this study 90.15% teachers reported that they took lecture in a standing position, 45.71% reported that they use to take lecture in standing without support, 7.93% with support and 44.76% use to stand with support & sometimes without support. Standing without support was found to be negatively significantly correlated with LBP at the p value of 0.05 with a correlation coefficient of -.136. Only 4.44% reported that they use to take lecture in sitting position, whereas LBP was significantly positively correlated with standing with support & without support position during Lecture (correlation coefficient = 0.112).

Regarding methodology of teaching 91.11% teachers reported to use chalk and board method, 24.76% use to take lecture with multimedia and only 22.53% use to carry books or notes during teaching, 80.63% teachers reported that they required maintenance of prolonged standing position during working hours, 20.63% prolong sitting due to work related to teaching, 11.42% prolong sitting due to exam marking and 10.77% for internet use. LBP was significantly correlated with prolonged sitting posture due to work, due to examination work and due to internet uses (correlation coefficient of 0.164, 0.122, and 0.124 respectively).

Very few teachers reported that had previous injury to low back (6.43%), upper limb (1.90%) and lower limb (3.49%). And these injuries were significantly positively correlated with LBP (correlation coefficient of 0.224, 0.148 and 0.202 respectively). 76.5% teachers were involved in household activities and 15.55% teachers were not doing any sort of physical exercise. LBP and daily physical exercises in minutes were significantly negatively correlated (correlation coefficient = -0.132). 76.5% teachers reported that they were engaged in household activities which was not found to be correlated with back pain. Out of total female participant 88.89% were involved in household activities

DISCUSSION

In this study 46.98% participated college teacher reported that they suffer from LBP one or more times in their lifetime. It is in consistent with various studies like 45.6% in china¹⁸, 44% in Pakistan¹², 53.8% in Ethiopia¹⁶ (school teachers), 55.3% in Filipino¹⁷ and 34.8% teachers in France²⁸ reported LBP. The reason behind this variation in the prevalence rate may be because of different population, different socioeconomically status of different countries and facility in institutions to faculty.¹²

In this study 40% male and 60% were females, female gender was found significantly correlated with LBP as also reported by Beyen TK in 2013 that female teachers were 3 times more prone or likely to experience LBP when compared to males.¹⁶

The higher prevalence rate of LBP among female teachers as compared to male teachers as shown in this study might be because the number of female participants were more in the current study, as also reported in Tanzania teachers by Nilahi

of muscles and so early fatigue of muscles forced them to use a mixed approach. 80.63% teachers reported that they required maintenance of prolonged standing position during working hours which was not correlated with LBP.

Table NO. 1. Various factors which were considered as risk factors for LBP

Risk factor	Number	Percentage	Correlation coefficient with LBP	P value
Position during lecture : Standing	284	90.15%	-0.95	0.093
Position during lecture : Sitting	14	4.44%	0.075	0.186
Mix standing and sitting	17	5.39	0.057	0.316
Standing without support	144	45.71%	-0.136*	0.016
Standing with support	25	7.93%	0.006	0.916
Mix with support and without support standing	141	44.76%	0.112*	0.047
Methodology using C&B	287	91.11%	-0.108	0.055
Methodology carry books	71	22.53%	0.025	0.659
Methodology using laptop	78	24.76%	-0.024	0.668
Prolonged Standing	254	80.63%	0.091	0.107
Prolonged sitting due to work	65	20.63%	0.164**	0.003
Prolonged sitting due to exam	36	11.42%	0.122*	0.031
Prolonged sitting due to internet use	34	10.79%	0.124*	0.028
Previous injury to back	20	6.34%	0.224**	0.000
Previous injury to UL	6	1.90%	0.148**	0.000
Previous injury to LL	11	3.49%	0.202**	0.000
Participants not doing physical exercises	49	15.55%	-0.052	0.355
Participants involved in household activities	241	76.5%	0.057	0.317

CD in 2014²⁶, other reason could have been that they involved in household activities more than males, in this study also they involved more in household activities, as also reported by Nilahi CD in 2014.²⁶ Symptoms of LBP were more common among women also because they are the primary caregivers for children and older people in the Asian countries as also reported by Kopee JA in 2004¹⁰ and Hathorn DC in 2009.¹¹ Lower threshold in women for pain could also have been contributed in higher percentage of LBP among women as also reported by Chiu and Lam, 2007³⁰. The mean age of participants in this study was 35.43 ranging from 21-65 and upon analysis which was not correlated with LBP. Whereas in previous studies prevalence of LBP was high between 30-39 years of age.²⁶ In this study 16.50% participated teachers visited to expert for their LBP which was positively significantly correlated with LBP, while 9.20% participants visited to physiotherapist which was also positively significantly correlated with LBP and this result was accordance with previous study in United Kingdom they reported approximately 9% LBP patients visit to physiotherapists.²⁹ And only 6.66% of participant teachers visited to Doctor and it was also positively significantly correlated with LBP. In this study, 29.84% participants reported that their activity level was reduced which may be due to LBP as significant correlation was found between then, similarly Waqas M *et al* reported in 2017 that 65% of teachers' activity reduced due to LBP.¹² Low back pain could have attributed the limitation and decreased duration of daily activities.¹⁹ In the current study 37.46% teachers were minimally disabled 7.61% moderately and 1.90% teachers were severely disabled because of LBP. A higher percentage of disability than this study among teachers due to LBP with 67.1% minimal disability 27.9% moderately and 4.3% minimally was reported in Botswana.¹⁴

Teachers those were taking lecture in standing without support were not having LBP which was significantly negatively correlated with LBP reason could be maintenance of a good posture during standing minimise the fatigue and so LBP, whereas those were using mixed approach with support and without support were having low back pain as it was positively correlated with LBP reason could be less endurance

Prolonged sitting posture due to work, due to exam marking and due to internet use were found to be positively significantly correlated with LBP in this study which can be considered as risk factor for LBP^{16,25}. Reason for this might be college teacher's give more time to teaching, self-study and other academic activities that increase the loading of anatomical structures and so pain intensity.¹² In the current study previous injuries to low back, upper-limb & lower limb and was positively significantly correlated with LBP. This result is in consistence with a study conducted by Erick PN¹⁴ and Beyen TK.¹⁶

The reason behind this could be that the previous low back injury may be a cause for the LBP.¹⁶ injuries to upper limb and lower limb could have caused alteration in the posture and contributed to LBP. In this study household activities were not found to be correlated with back back Whereas In past household activities were found to be associated with LBP²⁷.

CONCLUSION

It is concluded that about 47% of the college teachers reported that they had back pain once or more in their lifetime, they visit to expert for their low back pain and this LBP could have contributed in the reduction of activities at home or college significantly. Females were having more prevalence than males. Prolonged sitting due to exam duty, internet uses can be consider as a risk factor for LBP. History of injuries to back, upper limb and lower limb could be considered as risk factor.

The teachers who were involved in physical exercises for more duration in a day were less prone to develop LBP. Standing without support during lecture may leads to a good posture and so less back pain. From this study we can advise Indian teachers should stand without support to maintain a good posture during lectures, avoid prolonged sitting and involve in regular exercises for more duration to keep them free from LBP.

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