PREVALENCE OF MUSCULOSKELETAL LOW BACK PAIN IN OFFICE WORKERS AT LAHORE, PAKISTAN

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ABSTRACT

Objective: To determine the prevalence of musculoskeletal low back pain (LBP) among office workers at Lahore.
Study Design: Cross sectional study.
Place and Duration of study: The study was carried out in Lahore for six months, from Oct 2016 to Mar 2017.
Material and Methods: A self-reported questionnaire was drafted to identify the prevalence and then find out its associations with the risk factors leading to LBP. Individual characteristics and traits of work ergonomics collected and analyzed to calculate the prevalence of LBP. The sample size was calculated by using epitools sample size calculator. A convenient sampling method was used and the collected data was further analyzed by Microsoft excel 2013.
Results: Out of total 900 office workers approached 669 participated in the study with a response rate of 74%. A total of 82.21% were male amongst these public sector office workers. The mean age was 32.72 years with standard deviation of ± 8.93 years, 29.45% of all who participated in the study, were suffering from LBP. Sleep disturbance was reported in 23%, and walking style was affected in 53% of individuals due to LBP and about 8% reported complete disruption of their daily activities. Significance of results was calculated by chi square test and *p*-value calculation for different variables. No significant relation between low back pain and age, gender, sitting time, chair type, distance between table and chair and exercise was noted (*p*-value>0.05).
Conclusion: It is concluded that LBP has high prevalence amongst office workers but our study could not establish significant associations with type of chair used, distance between table and chair, sitting hours and exercise.

Keywords: Low back pain, Office workers, Prevalence, Work ergonomics.

INTRODUCTION

Low back pain (LBP) is the most common musculoskeletal health problemin the office workersthat leads to disability at times with interference in daily life activities[1]. LBP can be defined by pain, aches, stiffness, spasm, discomfort, soreness or irritation in the lower back/ lumbar spine[2,3]. Abnormal and awkward sitting postures are very common among office workers who are working for hours, thus the majority of them are suffering from low back pain[4,5]. Lower back mainly involves lumbar spine. So, the more lower the position of a vertebra in the lumbar spine, more will it hold weight, and thus will be more prone for injury because of bearing more weight as positioned lower in lumbar spine. That is why L4-L5 is more prone to injury than L3-L4 segment[6]. Literature proves the prominence of ergonomic relationship between mechanical vulnerability of the upper limb, lower limb, upper and lower back at work leading to symptomssuch as pain, numbness, tingling in the shoulders, neck, lower back and legs[6,7]. Most of the epidemiological studies have been successfully attempted to recognize and colligate the risk factors and causes for the prevalence of LBP among blue collar workers and some studies also showed the prevalence of LBP in different occupational populations[8,9]. Age, gender, psychological, social, educational, structural such as body mass index (BMI) are some of the individual factors which are associated with job strength and work stress and have been under examination for a long time and

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largely indicate the ultimate incidence of LBP[9]. Few epidemiological studies have worked on the appearance, prevalence and related risk factors of LBP among office workers[10,11]. The prevalence of LBP varies widely all over the world[12,13]. In older workers, prevalence is higher than the younger ones[14]. The incidence of LBP is also affected by smoking[15]. Thus, the epidemiological studies are successful in providing a lot of information on the prevalence, incidence and risk factors of LBP in office workers in industrialized countries. But very little information regarding individual, social, work ergonomics, and biomechanical factors to the occurrence and prevalence of LBP is available in low income countries[10]. Pakistan is one of the developing countries and needs more resources to educate themasses regarding better health. The main purpose of this study was to find out the prevalence of LBP among office workers of Lahore, Pakistan. This study also examined the predisposing factors causing LBP among office workers.

Table-I: Frequency distribution of socio demographic data and baseline characteristics among the study group.

Variable	Frequency (%)
Gender	
Male	550 (82.21)
Female	119 (17.79)
Total	669 (100.00)
Smoking Status	
Smoker	68 (10.16)
Nonsmoker	601 (89.84)
Total	669 (100.00)
Age	
17-25	156 (23.47)
26-35	312 (46.64)
36-45	138 (20.63)
46-55	46 (6.88)
56-65	17 (2.39)
Total	669 (100.00)
Low back pain prevalence	
No pain	472 (70.55)
With pain	197 (29.45)
Total	669 (100.00)

MATERIAL AND METHODS

This cross sectional study was done to evaluate the prevalence of musculoskeletal LBP among office workers in Lahore city from Oct 2016 to Mar 2017. After the approval of ethical committee, the workers from different public sector offices were approached. The sample size was calculated by using epitools sample size calculator. Non-probability convenient method of sampling was used. All office workers of both genders between 15-65 years of age with working duration of 3 hours or more per day and willing to participate were included in the study. The individuals with any other associated disability with musculoskeletal complaints, pregnancy, tumor, surgery of lumbar spine, traumatic injuries of lower back were excluded. A verbal informed consent was obtained and a self-administered questionnaire was distributed among 900 office workers. This questionnaire, in English language, was used as data collecting instrument and the information collected included individual demographic traits, working hours and sitting time, biomechanical information while sitting, pain patterns, relieving and aggravating factors. The data was managed and analyzed by Microsoft Excel 2013. The variables were represented in frequency tables

with their percentages. To find out any association between variables, chi-square test was applied, with *p*-value less than 0.05 considered significant.

Demographic data implied to bivariate answers i.e. yes or no which included smoking, past history of any trauma, back surgery or accident. Work related questions including sitting hours during office time, distance from computer, use of chair type i.e. adjustable back support, back support or no back support were added in ordinal type answers. Pain related questions were also included in ordinal type of answers such as pain intensity, onset of pain, affected walking style and sleep disturbances due to pain.

RESULTS

All 900 office workers were provided with a self report questionnaire in which response rate was 74% (i.e. 669 responders). The majority of participants were males (82.21%) working in public sector offices. Among all the participants, 29.45% were suffering from LBP. The demographic and baseline characteristics are shown in table-I. The mean age was 32.72 years with standard deviation of ± 8.93 years. Group differences were not found significant in demographic data (table-II).

The relation of work ergonomics such as sitting hours, adjustable back support, distance between table and chair and exercising habits are depicted in table-III. No significant associations were noted among all exercising groups. The intensity of discomfort was measured through descriptive pain rating scale and out of 197 individuals with LBP, 45 (22.84%) reported sleep disturbancesas shown in table-IV. As the *p*-value is more than 0.05, so it implies that there is no significant relation between low back pain and age, gender, sitting time, chair type, distance between table and chair and exercise.

Table-II: Relation of demographic data with pain among the study group.

Gender and pain				
Variable	**Without Pain**	**With LBP**	**Total**	***p*-value**
	Frequency (%)	**Frequency (%)**		<0.05
Male	389 (82.42%)	161 (81.73%)	550	0.82
Female	83 (17.58%)	36 (18.27%)	119	
Total	472 (100.00%)	197 (100.00%)	669	
Smoking and pain				
Non- smokers	423 (89.62%)	178 (90.36%)	601	0.8
Smokers	49 (10.38%)	19 (9.64%)	68	
Total	472 (100.00%)	197 (100.00%)	669	
Age and pain				
17-25	110 (23.31%)	46 (23.35%)	156	1
26-35	220 (46.61%)	92 (46.70%)	312	
36-45	97 (20.55%)	41 (20.81%)	138	
46-55	33 (6.99%)	13 (6.60%)	46	
56-65	12 (2.54%)	5 (2.54%)	17	
Total	472 (100.00%)	197 (100.00%)	669	

DISCUSSION

This cross sectional study was carried out to examine the prevalence of LBP among office workers at Lahore. The results have shown that a major proportion of office workers (29.45%) were suffering from LBP. Out of total 669 individuals responded, 197 reported LBP in which 21 (10.66%) experienced very mild pain, 86 (43.65%) mild pain, 74 (37.56%) moderate pain, 13 (6.60%) severe pain and 3 (1.52%) unbearable pain. Different factors including gender, age, smoking, sitting hours, type of chair used, distance between working table and chair and exercise were not significantly associated with severity.

In contrast to other studies, smoking was not a significant connotation in our study[15,16], the reason of which might be that a less number of smokers i.e. 10.16% participated in the study. Some studies have shown that there was no staff[16]. Insignificant results were also obtained among some ergonomic factors by examining sitting hours, type of chair used and the distance between working table and chair. Those who were sitting more than 6 hours in a day, were

Table-III: Relation of work ergonomics with pain among the study group.

Variable	**without Pain**	**With LBP**	**Total**	***p*-value**
	Frequency (%)	**Frequency (%)**		<0.05
Sitting hours and LBP				
<6 hours	217 (45.97)	89 (45.18)	306	0.84
>6 hours	255 (54.03)	108 (54.82)	363	
Total	472 (100.00)	197 (100.00)	669	
Chair type and LBP				
Adjustable back support	171 (36.23)	70 (35.53)	241	0.981
Back support	181 (38.35)	77 (39.09)	258	
No back support	120 (25.42)	50 (25.38)	170	
Total	472 (100.00)	197 (100.00)	669	
Distance between Working Table and Chair with LBP				
Normal	312 (66.10)	131 (66.50)	443	0.993
More	43 (9.11)	18 (9.14)	61	
Less	117 (24.79)	48 (24.37)	165	
Total	472 (100.00)	197 (100.00)	669	
Exercise and LBP				
Yes	197 (41.74)	81 (41.12)	278	0.89
No	275 (58.26)	116 (58.88)	391	
Total	472 (100.00)	197 (100.00)	669	

*The normal distance between a table and a chair is 18″

Table-IV: Frequency Distribution of intensity of discomfort and sleep disturbance due to low back pain.

Variable	**Frequency (%)**
Intensity of Discomfort* (S.D= ± 37.84)	
Very mild pain	21 (10.66)
Mild	86 (43.65)
Moderate	74 (37.56)
Severe	13 (6.60)
Unbearable	3 (1.52)
Total	197 (100.00)
Sleep disturbance (S.D= ± 58.79)	
Yes	45 (22.84)
No	132 (67.01)
Sometimes	20 (10.15)
Total	197 (100.00)

*Intensity of discomfort was measured by using descriptive pain rating scale.

direct relation of age with LBP as seen in our study where non significant results have been calculated showing that increasing age does not enhance low back health. Comparatively, a study in Southwest Nigeria had supported that LBP was significantly associated with senior suffering from LBP as compared to those sitting less than 6 hours in a day. Similarly, a study was done in Greek office workers in 2007 in which it was obtained that sitting time was not associated with LBP[15]. In the same manner, a systematic study on association between sitting

and LBP also showed no association between these two factors[10]. Furthermore in a study, the adjustable back support was associated with decreased prevalence and incidence of LBP as also seen in other studies[17]. A healthy individual may retain his health more than those who live a sedentary lifestyle[5]. Exercise therapy is the most commonly used type of conservative treatment for low back pain. Many systematic reviews have concluded that exercising is good in low back health, adding more to it, they emphasized that exercise therapy is effective for chronic low back pain[18]. This present research concluded that regular exercise is a not significant predicator of LBP, being less prevalent in those who exercise regularly (41.12%) in comparison with those who do not (58.88%). Similarly a research in 2007 showed that exercise is not directly related to low back pain[15]. The present research included individual questions regarding pain patterns that is the onset of pain, intensity of discomfort by descrip-tive pain rating scale ranging from no pain to unbearable. Their affected walking styles due to LBP, sleep disturbances, affected daily activities were recorded. Pakistan is a country with abundance of public and private office workers with quite varied working environ-ments, which might have tremendous variations in the results of LBP. Many epidemiological studies have pointed out the risk factors of LBP and many studies have been conducted as the global burden of LBP is high[19]. Our study provides more information regarding prevalence and its associations with other individual factors as there is paucity of data in Pakistan particularly. With *p*-value ofgreater than 0.05 implies that there is a no significant relation of low back pain with age, gender, sitting time, chair type, distance between table and chair and exercise.

CONCLUSION

It is concluded that LBP has high prevalence amongst office workers but our study could not establish significant associations with type of chair used, distance between table and chair, sitting hours and exercise.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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