Prevalence and Risk Factors of Low Back Pain Among Office Workers at Alzaiem Alazhari University

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Abstract

Background: Low Back Pain (LBP) is one of the commonest musculoskeletal problem in work place and common cause of pain and have great social and economic impact. It causes disability that influence work performance in individuals. Data from Sudan so few. **Objectives: General Objectives:** To determine the prevalence and risk factors of LBP among office workers. **Specific objectives:** To determine the effect of BMI on LBP, the effect of abdominal circumference on LBP, the association between LBP and working hours, social and economic impact of LBP and to determine the association between LBP and family history. **Materials and study design**: In this observational, cross-sectional study performed in January 2016, overall,300 office workers 126 male (42%) and 174 females (58%) from different complex of colleges in Alzaiem Alazhari University (Banat, Bahri and Kafory complex) filled out a questionnaire containing various predictor individual and occupational factors. **Results**: Our results show that 220 (73.4%) of the recruited population suffer from back pain. Females are the most affected 135 (45%) versus males 85 (28.3%). **Conclusion:** LBP has an important prevalence among office worker in Alzaiem Alazhari University. This study might help to estimate low back problems in office workers and emphasize healthy lifestyle, ergonomic measurement and holding educational programs.

Introduction

Low back pain (LBP) is one of the most common musculoskeletal disorders especially among the working population. It is the commonest cause of job related disability and a leading contributor to lost hours and missed work days. Globally, there is a lifetime incidence of 40%, affecting as much as 80% of people in the developed countries. This common health complaint usually begins at age 20-40 years but is mostly noticed in individuals aged 40-80 years. The distribution among men and women is not clear. [1]

The causes of LBP are assumed to be of multi-factorial origin, indicating that individual, physical and psychosocial factors can contribute to their development. It may start from diseases, injures or stresses to many different structures including bones, muscles, ligaments, joints, nerves or the spinal cord.[2] Different factors have been shown to be risk factors for the occurrence of LBP including gender ,smoking, , many work-related risk factors like sitting for a long period increased the risk of LBP. The

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occupational risk factors are due to certain working situations such as maintaining same posture for a long period of time, carrying heavy objects and other uncomfortable postures or movements required during work. Various psychosocial problems, such as high stress, low job satisfaction, low social support and effort-reward imbalance also increased LBP occurrence. [3] The non modifiable risk factors include increasing age and major spinal deformities. Several studies have reported these risk factors in different regions of the world.[1]

Chronic LBP and history of LBP affect individual general health leads to important socio-economic consequences due to sick leave, instability in work, medications, doctor consultation, physiotherapy, hospitalization and surgery.[4]Although LBP did not feature as a major cause of sickness absence in the workplace, the pain and sleep loss reported in some studies could influence productivity at work.[1]

LBP occurs in similar proportions in all cultures, interferes with quality of life and work performance, and is the most common reason for medical consultation. In Europe, 30% of the general worker population suffers from LBP. It remains the leading cause of disability in persons younger than 45 years old. More than one-quarter of the working population is affected by LBP each year with a lifetime prevalence of 60–80% and a large percentage of LBP claims for long durations (more than 90 workdays lost). In the past decades, there has been increasing interest in occupational health issues relating to musculoskeletal system; One of these is low back pain (LBP)., Low back pain is not only considered to be the most common reason for functional disability, worldwide, but also estimated to affect almost 90% of the universal population. It has been observed that individuals suffering from LBP might develop major disruptions in their physical, social, and mental well-being, which could affect their occupations. Physical impact includes the loss of physical function and deteriorated general health. Social impact includes decreased participation in social activities. Psychosocial impacts are manifested through insomnia, anxiety, and depression. [4]

Materials and Methodology

Study Design:

Across-sectional study design was used to determine the prevalence and risk factors of L.B.P among office workers at Alzaiem Alazhari University in period extended from November to December 2015.

Setting:

This study was conducted at Alzaiem Alazhari University which was established in and has 3 complex of colleges Banat, Bahri and Kafory and has all medical and scientific collages except collage of pharmacy.

Study Population:

The study involves all age group of office workers in Alzaiem Alazhari University during study period, were asked to complete questionnaire.

Exclusion criteria:

- New graduated office workers.
- Not registered office workers.
- Office workers who refused to participate in our study.

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- Office workers who took annual leave.

Sampling Technique and Sample Size:

Total converge sample technique was used, about sample size 350 office worker was included in this study from 500 office workers in Alzaiem Alazhari University the rest 150 was discarded due to above exclusion criteria.

Data Collection Tools:

All workers present in the office at the time of the study were asked to complete a questionnaire were included in the study. The data was collected by standardized structured interview data collection sheet with closed ended questions. And sought information about demographic characteristics of workers nature of work, smoking and Alcohol consumption status. Present at L.B.P in the previous 5 years and at the time of study, duration, severity, association of LBP and seeking for medical advice and absence from work due to LBP Severity was scaled by well designed scale represented in number from 1-10 in which 1 less pain and 10 severe type of pain.

Data Collection Technique:

Data was collected in 4 weeks.

Data Analysis Technique:

A total number of 350 questionnaires were distributed and 345 were returned, 45 questionnaires were discarded due to inadequate response. So a total 300 questionnaires were collected, manually, organized, categorized and represented in tables using frequencies and percentage. Also soft program {Statistical Package for Social Science (SPSS)} was used for statistical analysis.

Ethical Considerations:

The written permission was taken from original director of office workers, head master of each college. Then purpose of study was explained for each one verbally and clearly in simple word and we told them have a right to withdraw from the study when they need.

Limitation:

Inability to involve all office workers.

Results

Socio- demographic characteristics of the studied population: In this pilot research, the sample under study of 300 participants was composed of 174 females (58%) and 126 males (42%). As shown in **Table 1,** 220 (73.4%) of the studied population suffer from LBP. Females have recorded approximately twice-higher percentage of those suffering from LBP 135 (45%) ***P value*** (o.oo8) than males 85 (28.3%). Gender is significantly associated with LBP. BMI more than (25-30 kg/m2). has a significant correlation with LBP. That neither height nor weight is significantly associated with the risk of occurrence of LBP. Also, no significant association between Abdominal circumference and LBP. Middle age groups 21-30 years, 31-40 years, and 41-50 years (30%), (18%), (17%) respectively higher than the senior age groups 51-60 years, 61-70 years, (6.7%), (1.7%) respectively. There is strong significant correlation marital status and LBP, (43%) among singles, (54%) among married, and

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divorcee (2.0%). In our study the years of work have minor significance association with LBP 1-5 years (36%), 6-10 years (23%) ,11-15 years (17%), and 16-20 years (5%), and 21-25 (6.4%). But hours of work had role Less than 4 hours (0.05%), 4-8 hours/day (73.6%) and (25.9%) for more than 8 hours/day, so the duration of sitting is main aggravating factor (65.9%). Life style mainly exercise have great effect on reducing LBP because persons who on regular exercise (4.1%) had expert LBP and those had interrupted manor of exercise (29.5%) but persons who never do exercise were (66.4%). Aggravated factors in our study sitting had highest percentage and exercise and lifting heavy objects have approximately same percentage 13%.

Health status and association: There is associations between LBP and many symptoms; sleep disturbance (35.9%), posterior lower limb pain (44.1%), lower limb numbness and tingling (41.8%), gait changes (36.8%). Using of 1 type of medication (22.6%), 2 types of medication (41.9%) and 3 or more medications (22. 6%).Also, (31.2%) they received physiotherapy and their frequency vary (51.5 %) once, only (9.1%) twice and (39.4%) 3 times and more. Our result of radiological investigation (68.4%) for X-ray; 47.8%of them did it once,39.1% repeated it twice and 13% had it 3 times. (42.3%) whom did MRI, 79.4% of them had it once and repeated twice or 3 times or more 14.7%,5.9% respectively. only (12.6%) whom did CT scan. (53.1%) did the blood investigation. 142 patients (64%) had family history. However, just (2.3%) had history of admission because of LBP mainly due to superimposed trauma.

Alcohol consumption and smoking:
There are no correlations between Alcohol consumption, smoking and LBP.

Table 1: ***Socio- demographic characteristics of the studied population:***

Variables	Yes N (%)	No back pain N (%)	P.V.
Total number	220 (73.4%)	80 (26.6%)	
1- Age			
20-30	90 (30%)	32 (10.7%)	
31-40	54 (18%)	24 (8%)	
41-50	51 (17%)	16 (5.3)	
51-60	20 (6.7%)	6 (2%)	
61-70	5 (1.7%)	2 (0.6%)	
2- Gender			
Male	85	41	
Female			

	28.3%			13.7%	
	135			39	
	45%			13%	
3- BMI					
25-30	184			69	
31-35	29			10	
36-40	5			1	
more than 40	2			0	
4- Exercise	international	65	29.5	146 (66.4%)	
	regular	9	4.1%		
5- Frequency of Pain attack					
Weekly	105 (47.8%)				
Monthly	91 (41.4%)				
Yearly	24 (10.9%)				
6- Severity of pain					
1-4	72 (32.7%)				
5-7	116 (52.7%)				
8-10	32 (14.6%)				
7- Working Hours					
less 4	1 (0.45%)			6 (2.7%)	
4-8	162 (73.6%)			65 (29.5%)	
more 8	57 (19%)			9 (3%)	

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Variables	N0.	(%)	
1- Aggravating Factors			
sitting	145	65.9%	
exercise	27	12.3%	
Lifting heavy objects	29	13.2%	
other	19	8.6%	
2- Relieving Factors			.001
medication	94	42.7%	
rest	126	57.3%	
3- Smoking			.092
Yes	32	14.5%	
No	187	85%	
4- Alcohol			.462
Yes	6	2.7%	
No	214	97.3%	
5- Family History of LBP			.067
Yes	88	40%	
No	132	60%	

Assossiations

Variables	No.	(%)	P.V.
1- Sleep Disturbance			.017
Yes	79	35.9%	

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No	141	64.1%	
2- Posterior LL Pain			.015
Yes	97	44.1%	
No	123	61.5%	
3- LL tingling and Numbness			
Yes	92	41.8%	
No	128	58.2%	
4- Admission			
Yes	5	2.3%	
No	215	97.7%	

Discussion

Low back pain (LBP) is one of the most common musculoskeletal disorders especially among the working population. In this pilot study the prevalence of LBP among office worker in the A.A. U is (73.4%), that near to other Sudanese study (87.5%) of nurses reported having LBP [(4)]. So far from Lebanese office workers (45.2%)[(3)].In the literature, LBP prevalence ranges from 37.3%[(8)]to 70-85%[(7)].

Also, we found LBP MORE PREVELANCW in female, female (45%) and male (28. 4%).similar finding Females have recorded (68.1%) and males (31.9%). This is probably due to their higher responsibilities as being workers in addition to spending longer duration in household work and children care.[(3)] Other studies performed in USA and China, back and spine impairments were found to be more common in women[(7, 9)]which is consistent with our finding. But, other studies reported males (57%) and females (43%) in *Southwest Nigeria study* and in *South–South Nigeria study* (35%) males and (23.3%) females had LBP.[(5)(1)] which contradicted our finding. Also the National Institute of Neurological Disorder (NIND) 2014 fact sheet, men and women were reported to be equally affected by LBP.[(6)]which is inconsistent with our finding.

LBP in our study (43%) among singles, (54%) among married, and divorcee (2.0%). Similar to other one study 86% married and 11% singles.[(5)] however , other Sudanese study showing the single (80%), married (17.50%) and divorcee were (2.50%).[(4)] which is inconsistent with our finding.

Considering age, our sample has shown LBP is strongly associated with Middle age groups, Middle age groups 21-30 yrs and 31-40 yrs, (30%), (18%) respectively higher than the senior age groups 51-

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60 yrs,61-70 yrs (6.7%),(1.7%) respectively. That contradicted other study senior staff (42%) compared with junior staff (28%). The incidence of LBP has been reported to be highest in the third decade with the overall prevalence increasing with age until the 60-65 year age group and then gradually declining. The occurrence of LBP in the older age group could be as a result of physiological changes and cumulative occupational risk factors at workplace over the years.[9]

In our study the years of work have minor significance association with LBP 1-5yrs (36%) , 6-10yrs (23%) ,11-15yrs (17%),16-20 yrs (5%), and 21-25 (6.4%). but hours of work had role less than 4 hours (0.05%), 4-8hrs/day (73.6%) and (25.9%) for more than 8 hrs/day ,so the duration of sitting is main aggravating factor (65.9%),other study similar to this result.[5]However, other study the working hours, work years, overtime, in addition to weekly overtime hour have shown no significant association with LBP.[6]

Degree of severity was scaled by well-designed scale represented in number from 1-10 in which 1 less pain and 10 severe type of pain,1-4 mild pain (32.7%) , 5-7 moderate pain (52.7%) and 8-10 sever pain (14.6%).Similar scale were done in other Sudanese study that showed (21.43%) for mild,(52.9%) for moderate and (15.7%) for the severe pain.[4] About frequency of pain with less than half experience it once a week and quarter of them daily and a few time a year.

Life style mainly exercise have great effect on reducing LBP because persons who on regular exercise (4.1%) had expert LBP and those had interrupted manor of exercise (29.5%) but persons who never do exercise were (66. 4%).other studies contrast our study and mention that no significant association between physical exercise or even variable sports and LBP.[12][3]

our study and some others find that neither height nor weight is significantly associated with the risk of occurrence of LBP.[9],[6],[12] but BMI had significant role (84.3%) for whom overweigh . Also, no significant association between Abdominal circumference and LB P has been reported in this study .

Aggravated factors in our study sitting had highest percentage (65.9%) and exercise and lifting heavy objects have approximately same percentage 13%. Other studies reported that lifting heavy objects was common risk factor[1],[12] and so prolonged standing and sitting. On the other hand, rest is most relieving factor (53%) and then followed by medications (42.7%).

There is associations between LBP and many symptoms ; sleep disturbance (35.9%), posterior lower limb pain (44.1%), lower limb numbness and tingling (41.8%), gait changes(36.8%),in other Sudanese study showed same associated symptoms the only study that found to compare our result with it.[4] in spite ofthat,sleep disturbance was reported in many studies; as no significant association with LBP in Lebanese, is inconsistent with our finding; and as (40%) in South–South Nigeria study is consistent with our finding.[1] sleep disturbance ultimately increases pain and tension by decreasing the work performance, LBP so can enhanced.[2]

In this study (20.9%) recorded as absence from work, which is higher than *Southwest Nigeria study* only (5%) recorded as absence from work [5] also, in *South–South Nigeria study*, about a fifth of those with LBP obtained excuse duty as a result of the pain. This possibly suggests that the pain was serious enough to interfere with work schedule and warrant taking time off for treatment. [1] absence from work associated with increased severity of low back pain, Trauma is one the causes of LBP but in our study

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only (37.5%)had history, but the mode was vary; falling down (61.7%), road traffic accident (27.7%) and direct trauma to the back 10.6%.

Only (2.7%)were alcohol consumes and (14.5%) were smokers in our study and other study (36%) were smokers [5] but other one showed no relation between all items dealing with smoking.[3] Other studies have found an association
between low back pain and smoking. [10]

The biological mechanism involved in the link between smoking and low back pain is not understood. However, it is thought that smoking may lead to reduced perfusion and malnutrition of tissues in and around the spine and cause these tissues to respond inefficiently to mechanical stress. [11]

Conclusion

Alzaiem Alazhari University office workers are exposed to LBP that affected their performance and their income. Some risk factors associated with LBP were identified, including BMI. This pain is usually accompanied with other musculoskeletal disorder. In spite of being a handicap, LBP has economic impact such as sick leave, doctor consultation, radiography making and medications. The findings show the necessity of preventive measure focusing on LBP and health promotion should focus on the working environment and working posture. Furthermore, more attention should be paid to other factors such as health status, especially for older age groups. Counseling and education after annual physical examination in the workplace may be important for this group. Further longitudinal study is required with a longer work history.

Conflict of interest:

Authors declare no Conflict of interest

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