

ABSTRACT

Background: low back pain is one of the most common public health problems and of the most common musculoskeletal complaint. Many risk factors have been considered for developing low back pain include smoking, obesity and sedentary lifestyle.

Aim of study: To evaluate smoking, obesity, and sedentary lifestyle associations with low back pain in young adults aged (18 – 39 years).

Methods: a comparative cross sectional study for young adults aged 18 – 39 years, participants with low back pain as a symptom constitutes the first group, others free of this symptom considered as the control group. Age and gender matched in both groups. Smoking, obesity and sedentary life style variables collected and analyzed statistically using odd ratio and chi-square

Results: One hundred patients were enrolled in the study after 12 patients being removed due to our exclusion criteria. 45 patients were with low back pain, 2:1 male to female ratio, For LBP group; data show 30:15 obese to none obese ratio, 23:22 smokers to none smoker ratio, and ratio of 35:10 with sedentary lifestyle compared to active one.

While in the control group, data show 22:33 obese to none obese ratio, 16:39 smokers to none smoker ratio, and ratio of 23:32 with sedentary lifestyle compared to active one. Using Chi-square test, the P- value was of 0.0079, 0.025 and 0.0003 for obesity, smoking, and sedentary lifestyle, respectively. The odds ratio was 3, 2.55 and 4.86 for obesity, smoking, and sedentary lifestyle, respectively. All above results were statistically significant.

Conclusion: Each of smoking, obesity and sedentary lifestyle is statistically correlated with low back pain in young adults' age group.

Keywords: low back pain, obesity, smoking, sedentary life style

Corresponding Address: to Laith Thamer Al-Ameri FIBMS (neurosurgery)

Nawras Alaa-Aldeen Hussein

Dalia Ahmed Braisem

Al-Kindy college of Medicine – University of Baghdad

E-mail Laith.thamer@yahoo.com

Received at 11/10/2018

Accepted at 9/12/2018

INTRODUCTION

Low back pain (LBP) is one of the most common public health problems all over the world. It is symptom rather than a disease with a large number of possible underlying causes. It is considered as the most common musculoskeletal complaints constituting heavy burden on national health. A roughly estimated of 80% of population suffered from low back pain at some point in their lives^[1-2].

According to duration of pain, LBP could be classified into acute, sub-acute and chronic. Acute LBP describe pain for less than 6 weeks, sub-acute for a pain last 6 to 12 weeks while chronic LBP for a condition last more than 12 weeks^[3-4].

LBP may be due to degenerative processes of spine axis, various types of trauma, occupational positions^[5], congenital malformations and obesity^[2,6,7]. Treatment of LBP varied depending on the severity, duration, underlying cause and any associated symptoms or medical

conditions. These may include specific treatment and physical therapy^[2].

Many risk factors have been considered for developing LBP^[8].The most frequently reported risk factors is heavy physical workload such as lifting, incorrect posture, lack of physical exercise, sedentary lifestyle and smoking^[1]

Smoking identified as the major health hazard associated with high morbidity and mortality. It is a leading cause of cancer of the lung, oral cavity, larynx, and bladder. Smokers are at greater risk to develop coronary artery disease, cerebrovascular accidents, and atherosclerotic peripheral vascular disease.^[9]

Several study correlate smoking with intervertebral degenerative disc disease, as smoking results in imbalance in anabolic and catabolic activity with the disc in addition to its effect on extracellular environment through its effect on nutrients and chemical status, those all will make

negative impact on activity and viability on disc cells^[10]

The World Health Organization defines obesity as a body mass index (BMI) of 30 or above^[11]. Obesity is a serious public health problem worldwide and its prevalence is rapidly increasing^[12]. International data indicates that the obesity epidemic is in fact of a global health problem with more than half of world's population is considered to be overweight^[13-14].

Obesity has an increased risk to develop cardiovascular disease, diabetes, osteoarthritis, and spine disease^[15-16].

Obesity has been implicated as a risk factor for lumbar disc degeneration, but previous epidemiological studies have conflicting associations^[10, 17]

Sedentary lifestyle has been shown to be related to LBP either directly or indirectly through its association with obesity^[1,8].

Aim of our study is to find the relation of obesity, smoking and sedentary life style as risk factors to low back pain in young adults aged (18-39 years).

METHODS

This is a comparative cross-sectional study including young adults aged (18 to 39 years) for patients attending Al-Kindy teaching hospital in the period from 1st December 2017 to 1st February 2018. Patients were divided into two groups, first group for those complaining of chronic low back as a symptom (low back pain at least for three months), while patients free of chronic low back pain were considered as the control group. Age and sex were matched for all participants between both groups.

A direct interview was made for each studied person to check age, height, weight, smoking and occupational status. Patients considered as obese (i.e. their BMI ≥ 30), those previously obese with recently normal BMI, those previously operated with spine surgery, and previous smokers were all excluded from the study..

The research was discussed and approved by the department of community medicine unit in Al-Kindy College of medicine. A written consent were obtained from each person enrolled in this study.

Data introduced to IBM-SPSS 22 software with Chi-square and odds ratio calculations were used to deal with the variables, a P-value less than 0.05 was considered significant. Data were showed in tables and graphs.

RESULTS

After excluding 16 persons according to our exclusion criteria, a total of 100 participants were eligible to be included in current study, mean age was 29.29 ± 5.9 years. Male to female ratio was 2:1.

45 patients were suffering of chronic LBP as a symptom constituting the first group (LBP group); other 55 patients were free of LBP considered as the control group.

Regarding data collected for obesity, 30 (66.66%) participants of LBP group and 22 (40%) of control group were obese. The P-value was 0.0079 which was highly significant. Odd ratio was 3 with 95% confidence interval suggesting the obesity as a significant risk factor for LBP (table1, figure 1).

Twenty three (51%) participants of LBP group, 16 (29.1%) participants of the control group were smokers. P-value was 0.025 which is significant. Odd ratio was 2.55 with 95% confidence interval suggesting smoking as a significant risk factor for LBP (table 2, figure 2).

Concerning sedentary lifestyle, 35 (77.77%) participants of LBP group, and 23 (41.82%) participants of the control group showed a sedentary lifestyle history. The P-value was 0.0003 which is highly significant. Odd ratio was 4.86 with 95% confidence interval suggesting sedentary lifestyle as a significant risk factor for LBP (table 3, figure 3).

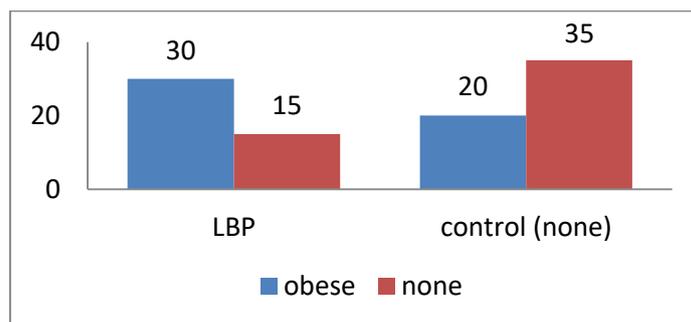


Figure 1: number of obese participants in both groups.

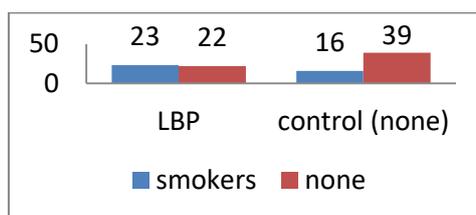


Figure 2: number of smokers in both groups.

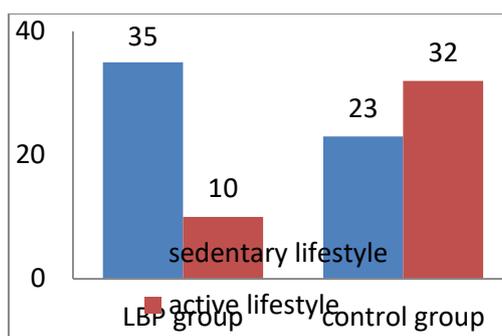


Figure 3: number of participants according to the type of lifestyle in both groups.

Table 1 shows the association between Obesity status and getting LBP

Factors	Group with LBP		Control group		Chi-square statistics	P-value	Odd ratio
	No.	Percent	No.	Percent			
Obese	30	66.66%	22	40%	7.0513	0.0079	3
Non Obese	15	33.33%	33	60%			

Table 2 shows the association between smoking and getting LBP

Factors	Group with LBP		Control group		Chi-square statistics	P-value	Odd ratio
	No.	Percent	No.	Percent			
smokers	23	51%	16	29.1%	5.044	0.025	2.55
Non smokers	22	49%	39	70.9%			

Table 3 shows the association between lifestyle and getting LBP

Factors	Group with LBP		Control group		Chi-square statistics	P-value	Odd ratio
	No.	Percent	No.	Percent			
Sedentary life	35	77.77%	23	41.82%	13.138	0.0003	4.86
Active	10	22.22%	32	58.18%			

DISCUSSION

The obesity, smoking, and sedentary lifestyle were evaluated in current study, each independently for possible associations for the development of low back pain. Up to our knowledge, few previous articles have dealt with these issues.

Regarding obesity, our study shows a significant ratio with a P-value of (0.0079) and odd ratio (3) suggesting the association between obesity and low back pain. These results agree with Mirtz T, Toda Y, melisa J *et al* [18_20]. They state that obesity lead to loss of muscle mass in trunk and lower extremities and central obesity may be a risk factor for back pain. Current study also agree with Liuke M, Leboeuf-Yde C, Kjaer P *et al* in their research which support a link between low back pain and obesity[21,22]. Current research disagree with Manchikanti L, McCarthy L *et al* which show that both obese and non-obese individuals have the same incidence to develop low back pain^[23,24].

Sedentary lifestyle also shows a significant association with a P-value (0.0003) and odd ratio of (4.86) these results agree with Rita Neli VF *et al* who state that sedentary lifestyle is considered as a low back pain risk factor among general population, and disagree with Gilgil *et al*, as they state in their study that there was no association between regular physical exercise and low back pain^[1,8].

Smoking shows a significant association with a P-value (0.025) and odd ratio of (2.55), suggesting an association between smoking and low back pain. This result agree with Luiza HR *et al* who found a correlation between smoking habit and low back pain in adults, and with Battie MC, Mattila VM *et al*, as they reported in a prospective study that smoking was the strongest risk factor for lumbar discectomy^[1,25-26].

Obesity and sedentary lifestyle gets the higher statistical significance in current study related to the other risk factors

CONCLUSION

Each of obesity, smoking, and sedentary lifestyle has an association with chronic LBP in young adults; each of them are considered as a risk factor to develop chronic LBP.

Recommendations

It is important to be aware about the risk and impact of obesity, smoking, and sedentary lifestyle on general health especially on developing chronic low back pain. So, it is so important to cease smoking, lose weight, and to do regular physical activity.

REFERENCES

1. Rita Neli VF, Luiza HR, Brunode AA, *et al*. Non specific low back pain in young adult: Associated factors. Rev Bras Reumatol. 2014;54(5):371-377
2. Ardiana Murtezani, *et al*. Low back pain and obesity. med arch. 2015;69(2):114-116
3. Bart WK, Maurits VT, Chris Maher, *et al*. An updated overview of clinical guidelines for management of non specific low back pain in primary care. Eur spine j .2010;19:2075-2094
4. Daniel L Riddle. classification and low back pain: a review of the literature and critical analysis of selected systems. physical therapy. 1998;78(7):708-737
5. Tiric-Campara M, Krupic F, Biscevic M, *et al*. Occupational overuse syndrome (Technological diseases): carpal tunnel syndrome, a mouse shoulder, cervical pain syndrome. Acta Inform Med. 2014 Oct; 22(5): 333-340.
6. Maetzel A, Li L. The economic burden of low back pain: a review of studies published between 1996 and 2001. Best Pract Res Clin Rheumatol. 2002;16:23–30.
7. Blyth FM, March LM, Brnabic AJ, Jorm LR, Williamson M, Cousins MJ. Chronic pain in Australia: A prevalence study. Pain. 2001;89:127–34.
8. Shigeru TOMITA, Sara ARPHORN, Takashi MUTO, *et al*. Prevalence and Risk Factors of Low Back Pain among Thai and Myanmar Migrant Seafood Processing Factory Workers in Samut Sakorn Province, Thailand. Industrial Health .2010; 48; 283–291
9. Charles B Sherman. Health effects of cigarettes smoking. clinics in chest medicine. 1991;12(4):643-658

10. Ande M, Jakoi¹, Gurpal Panu², Martin H, *et al* . The Clinical Correlations between Diabetes, Cigarette Smoking and Obesity on Intervertebral Degenerative Disc Disease of the Lumbar Spine. *Asian Spine J*. 2017;11(3):337-347
- 11 .World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. Geneva: World Health Organization; 1997.
- 12 . Katz S. The burden of musculoskeletal diseases in the United States. Rosemont: Bone and Joint Decade, American Academy of Orthopaedic Surgeons; 2008.
- 13 . Abbas Ali Mansour, Ahmed A Almaliky ,mazinsalih. Population overweight and obesity trends of eight years in basra, Iraq. *Epidemiol*. 2012, 2:110.
- 14 . Field AE, Coakley EH, Must A, Spadano JL, Laird N, *et al*. (2001) Impact of overweight on the risk of developing common chronic diseases during a 10- year period. *Arch Intern Med* 161: 1581-1586.
- 15 . Vega GL. Results of expert meetings: obesity and cardiovascular disease. Obesity, the metabolic syn- drome, and cardiovascular disease. *Am Heart J* .2001; 142:1108-16.
- 16 .Fanuele JC, Abdu WA, Hanscom B, Weinstein JN. Association between obesity and functional status in patients with spine disease. *Spine (Phila Pa 1976)* .2002;27:306-12.
- 17 . Dario AB, Ferreira ML, Refshauge KM, *et al*. The relationship between obesity, low back pain, and lumbar disc degeneration when genetics and the environment are considered: a systematic review of twin studies. *Spine J* . 2015;15: 1106-17.
- 18 .Mirtz T, Greene L. Is obesity risk factor for low back pain? An example for us- ing the evidence to answer a clinical question. *ChiroprOsteopat*. 2005; 13: 2.
- 19 .Toda Y, Segal N, Toda T, Morimoto T, Ogawa R. Lean body mass and body fat distribution in participants with chronic low back pain. *Arch InternMed*. 2000 Nov 27; 160(21): 3265-3269.
- 20 . Melisa J, Kontakis G, Volakakis E, Tsepelis T, Alegakis A, HadjipavlouA. The effect of Surgical Weight Reduction on Functional Status in Morbidly Obese Patients with Low Back Pain. *Obes Surg*. 2005 Mar; 15(3): 378-381.
- 21 .Liuke M, Solovieva S, Lamminen A, *et al*. Disc de- generation of the lumbar spine in relation to over- weight. *Int J Obes (Lond)*. 2005;29:903-8.
- 22 .Leboeuf-Yde C, Kjaer P, Bendix T, Manniche C. Self- reported hard physical work combined with heavy smoking or overweight may result in so-called Modic changes. *BMC MusculoskeletDisord* 2008;9:5.
- 23 .Manchikanti L, Pampati V, Singh V, Beyer C, Damron K, Fellows B. Evaluation of Role of Facet Joints in Persistent Low Back Pain in Obesity: A Controlled, Prospective, Comparative Evaluation. *Pain Physician*. 2001; 4(3): 266-272.
- 24 . McCarthy L, Bigal M, Katz M, Derby C, Lipton R. Chronic Pain AndObe- sity in the Elderly: Results from the Einstein Aging Study. *J Am Geriatr Soc*. Jan 2009; 57(1): 115-119.
- 25 .Battie MC, Videman T, Gill K, *et al*. 1991 Volvo Award in clinical sciences. Smoking and lumbar in- tervertebral disc degeneration: an MRI study of iden- tical twins. *Spine (Phila Pa 1976)* 1991;16:1015-21.
- 26 .Mattila VM, Saarni L, Parkkari J, Koivusilta L, Rim- pela A. Early risk factors for lumbar discectomy: an 11-year follow-up of 57,408 adolescents. *Eur Spine J* 2008;17:1317-23.