Prevalence Of Low Back Pain And Its Association With Body Mass Index Among Office Workers.

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Abstract

AIM: To find the prevalence of Low Back Pain and its association with Body Mass Index among office workers
OBJECTIVE: To find the prevalence of low back pain and to find the association between low back pain and BMI
MATERIALS AND METHOD: Nordic Questionnaire was taken on target population. A random sample of office workers population of 150 persons aged 20 to 60 years were included who work on desktop. The total population of the sampling area was 150. The sampling area was representative of the total with regard to most socio-demographic variable (accountant, bankers, data entry workers, receptionist in hospital)
RESULT: A total of 150 participants showed the prevalence of LBP was about 55%. The results show high BMI subjects had moderate to severe backpain compared to lower BMI subjects. This demonstrates that the higher the BMI, the greater the pain.
CONCLUSION: The present study concludes that there was a significant association between BMI and Low back pain with the prevalence of 55%.

KEY WORD: Low Back Pain, Obesity, Office Workers

INTRODUCTION

Today, sedentary lifestyle has become omnipresent, as an increasing number of individuals spend extended periods in a seated position at work as well as during leisure time [6]. Simultaneously, the prevalence of low back pain (LBP) has increased among office workers in general. Low back pain (LBP) is a symptom, not a disease. Low back pain is a pain that manifests itself in the lumbar region and may also include the sciatic nerve [2] . This may be due to degenerative processes of the spine axis, various trauma, occupational position, and congenital malformations. It can be caused by a strain of the muscle, arthritis, and degeneration of the bony vertebrae. Comorbid factors with psychological disorders and multiple medical problems, including obesity, smoking, lack of exercise, increasing age, and lifestyle factors, are considered as risk factors for LBP [8]. The etiology of LBP is not fully understood but is assumed to be of multi-factorial origin, indicating that individual, physical, and psychosocial factors can contribute to their development and persistence [7].

LBP is acute when symptoms have been present for up to 1 month, sub-acute when symptoms have been present for 1 to 3 months, and chronic if the symptoms have been present for more than 3 months [4]. People who develop chronic LBP are much less likely to recover from their symptoms or return to work; a situation that should clearly be prevented [4] . Back pain in the lumbar area is a widespread problem in the world's population, approximately 70-80 % of the people suffer from it at least once in their lifetime [8] . Since LBP represents the third leading cause of self-perceived disability due to various diseases and indicates a major economic burden to society, identifying risk factors, especially within the office environment, appears to be of high importance for implementing suitable prevention programs [3].

A variety of factors have inconsistently been found to be associated with LBP, and the increased risk has been small. One of these factors, obesity, is a potential target for prevention strategies, and therefore, it has been the focus of several studies in the field [9] . Obesity is a growing public health concern. Globally, the number of overweight or obese people is dramatically increasing [11]. Obesity contributes substantially to the burden of chronic medical conditions, and these medical conditions place a high economic burden on the health care systems [11] . Obesity is recognized as a major public health problem, and its prevalence is increasing rapidly in westernized countries [9] . Obese individuals are at higher risk of developing a wide spectrum of chronic diseases such as diabetes, cardiovascular disease, cancer, and musculoskeletal disorders, such as spinal problems [9] . Body weight, an important factor related to spinal loading, has been associated with several signs of lumbar disc degeneration (LDD), including disc space narrowing and decreased signal intensity of the lumbar intervertebral discs [9] . Large population studies in Europe, for instance, have 7 consistently demonstrated a link between obesity and chronic low back pain, and two independent and well-conducted surveys each found that obese individuals with a body mass index (BMI) >30 are 1.7 10 times more likely to develop disabling back pain compared to healthy weight individuals [10].

In the present day, life has gradually become more automated, computer use has increased, physical activity has reduced, and exposure to various kinds of diseases and musculoskeletal disorders has become an important health concern []. Of these, low back pain is experienced by more than 80% of the total population, especially office workers who need to use a keyboard while maintaining a static position for prolonged periods [12] . Office workers share several behavioral patterns: they work in a sitting position without moving for long periods of time; they only use a few specific muscles of their arms, wrists, and hands; and they tend to adopt poor body posture [4] . These working patterns generate musculoskeletal disorders and can lead to discomfort or pain [4] which can have an impact on quality of life [5]. Office workers are specifically engaged in clerical or administrative work. It is also found that they have sedentary work with computer minimum 7hr/day. Regarding work-related risk factors, accumulated computer usage has been linked to increased risk of LBP. Sitting for more than half a workday in combination with awkward postures or frequently working in a forward bent position has been found to increase the likelihood of having LBP. Poor workstation ergonomics has been shown to significantly contribute to the development of LBP [7] . Moreover, physical inactivity is thought to make office workers prone to physical deconditioning, which is characterized by lower physical capacity and reduced muscle strength [4].

Studies of back pain often list obesity as a confounding factor, yet research has failed to consistently demonstrate this association [3,4]. Still, the growing consensus among higher-quality studies supports the presence of a positive association [10] . Recent studies report that seated working periods of longer than 7 h per day significantly increase the risk of LBP (Odds Ratio = 1.89). While evidence of the association between obesity and back pain continues to grow, little is known about the cause-and-effect relationship, and even less is known about the potential mechanisms linking the two. Large population studies in Europe, for instance, have consistently demonstrated a link between obesity and chronic low back pain and two independent and wellconducted surveys each found that obese individuals with a body mass index (BMI) >30 are 1.7 times more likely to develop disabling back pain compared to healthy weight individuals. Therefore, it is essential to examine if BMI is associated with MSD among office workers. If significant correlations exist, it might provide clinicians with an opportunity to identify those likely to develop MSDs

NEED OF THE STUDY.

Evidence supporting an association between obesity and low back pain (LBP) continues to grow; yet little is known about the cause and effect of this relationship. It has been observed that the growing occurrence of Low Back Pain in association with sedentary sitting habits. However, it is yet unclear due to little evidence related to it. Therefore, the purpose of the study is to find the Prevalence of Low Back Pain and its association with Body Mass Index among office workers.

RESEARCH METHODOLOGY

A random sample office workers population of 150 persons aged 20 to 60 years was drawn from Jalgaon (Maharashtra) who work on desktop.

Study Design is Observational. Place of study is Jalgaon, Maharashtra. Target Population for this study is Office Workers (accountant, bankers, data entry workers, receptionist in hospital). Sampling Method used is Convenient sampling. Study Duration last for 6 Month

Samples were included who worked in office (Sitting Job more than 7 hours), more than 1 year of work experience, both genders are included, age between 20-60.

Sample were excluded who had, Recent Injury and Fracture, Pregnancy, Chronic or acute neurological condition affecting the spine or extremities, Presence of Musculoskeletal deformity.

Pain intensity was assessed using Numerical Pain Rating Scale (NPRS). Nordic Questionnaire was used to collect the data.

The collected data was managed & subjected to basic descriptive statistics in MS-Excel. A total number of 150 office workers were included and all participants were asked to fill the questionnaire. Response to the questionnaire questions were determined and presented in tabular and graphics formats.

RESULTS AND DISCUSSION

Table 1: The gender wise distribution of study subjects

Gender	Total Subjects	Percentage
Male	112	75%
Female	38	25%

The chart shows gender distribution of study subjects. There were 75% males and 25% females in the study.

Table 2: The BMI (Body Mass Index) wise distribution of study subjects

BMI	Total Subjects	Percentage
18.4-24.99	57	28%
25-29.99	77	51%
≥30	16	11%

The chart shows BMI wise distribution of study subjects. There were 38% subjects in 18.4 – 24.99 group (normal range), 51% subjects in 25 – 29.99 group (overweight) and 11% subject in ≥30 group (obese).

Table 3: The Pain Severity (NPRS scale) distribution of study subjects.

NPRS Score	Total Subject	Percentage
0-3	72	48%
4-6	43	29%
7-10	35	23%

The chart shows Pain severity distribution of study subjects. There were 48% subjects who had low intensity pain, 29% subjects had moderate intensity pain and 23% subject had maximum (high) intensity pain.

Table 4: Response of Nordic Questionnaire.

Response	Total Subject	Percentage
Positive Response	83	55%
Negative Response	67	45%

The chart shows the positive response of Nordic Questionnaire which is about 55%

Table 5: The Low back pain association with BMI in study subject

BMI	Pain severity (NPRS Scale)		
	0 to 3	4 to 6	7 to 10
18.4-24.99	70	7	1
25-29.99	19	40	19
≥30	0	2	10

- In pain severity range 0 to 3 which is low intensity pain had three group of BMI in that 18.4 – 24.99 group (normal range) has more no. of subjects who have low intensity back pain as compared to overweight (25 – 29.99) and obese (≥30) group .
- In the 4 to 6 pain severity range, which is moderate or medium intensity pain , the BMI group 25 - 29.99 (overweight) has more no. of subjects with moderate or medium intensity low back pain than the 18.4 - 24.99 (normal range) and obese (≥30) groups.
- In the 7 to 10 pain severity range, which is maximum intensity pain, (high intensity pain) the BMI group 25 – 29.99 (overweight) and ≥30 group (obese) has more no. of subjects with maximum intensity low back pain than normal range (18.4 – 24.99) group.
- According to this graph, high BMI subjects had moderate to severe backache compared to lower BMI subjects. This demonstrates that the higher the BMI, greater the pain.

The purpose of the current study was to examine the prevalence of Low Back Pain and its association with Body Mass Index among office workers. We used the NPRS scale to evaluate the severity of the low back pain and Nordic questionnaire of low back pain for prevalence in a sample of 150 individuals employed as office workers. The result of the current study found that there is association between low back pain and body mass index. This study found that participants with higher BMIs, that is those who are overweight or obese, had increased pain severity than participants in the normal range BMI.

Rationale for the low back pain association with body mass index is that in general, obesity or overweight might be positively associated with LBP because excessive body weight could have mechanical ill effects on the back caused by excessive weight-bearing. So far, the mechanisms underlying the association between obesity or overweight and LBP are not fully known. Obesity or overweight may increase the risk of LBP, for example, because of lumbar disc disorders, through mechanical load. It has been suggested that mechanical load is the principal factor initiating the degenerative process in the lumbar spine. In addition to mechanical load, obesity or overweight may cause LBP via low grade systemic inflammation.

It is well known that adipose tissue is metabolically active and produces adipokines as well as pro and anti-inflammatory cytokines. Leptin, in addition to affecting energy balance, stimulates the synthesis of pro inflammatory cytokines and nitric oxide; that is, it is directly linked to pain modulation. Moreover, experimental studies on animals suggest that leptin may increase pain sensitivity.

Conclusion: The present study concludes that there were significant association existed between BMI and Low back pain with the prevalence about 55%

LIMITATIONS
▪ The study included a small sample size because of limited population.
▪ Selected samples were from Jalgaon city only.
▪ The study involved Bankers, Accountants, Receptionist at hospital only.

FUTRURE SCOPE
▪ Study can be revised including larger sample size.
▪ Study can involve IT professionals, call centers employ.
▪ Sample can be revised from other districts or states

REFERENCES

1. Shariat, Ardalan, et al. "Prevalence rate of neck, shoulder and lower back pain in association with age, body mass index and gender among Malaysian office workers." Work 60.2 (2018): 191-199.

2. Ikiko Tsuritani *, Ryumon Honda, Yuka Noborisaka, Masaaki Ishida, Masao Ishizaki, Yuichi Yamada (2002): Impact of obesity on musculoskeletal pain and difficulty of daily movements in Japanese middle-aged women. Elsevier Science Ireland Ltd.

3. Bontrup, Carolin, et al. "Low back pain and its relationship with sitting behaviour among sedentary office workers." Applied ergonomics 81 (2019): 102894.

4. del Pozo-Cruz, Borja, et al. "Musculoskeletal fitness and health-related quality of life characteristics among sedentary office workers affected by sub-acute, non-specific low back pain: a cross-sectional study." Physiotherapy 99.3 (2013): 194-200.

5. F. Ghezelbash a, A. Shirazi-Adl a,n , N. Arjmand b , Z. El-Ouaaid a,c , A. Plamondon c , J.R. Meakin(2016): Effects of sex, age, body height and body weight on spinal loads: Sensitivity analyses in a subject-specific trunk musculoskeletal model. Elsevier Ltd.

6. Bontrup, Carolin, et al. "Low back pain and its relationship with sitting behaviour among sedentary office workers." Applied ergonomics 81 (2019): 102894.

7. Janwantanakul, Prawit, et al. "Development of a risk score for low back pain in office workers-a cross-sectional study." BMC musculoskeletal disorders 12.1 (2011): 1-8.

8. Ibrahimi-Kaçuri, Dafina, et al. "Low back pain and obesity." Medical Archives 69.2 (2015): 114.

9. Dario, Amabile B., 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." The spine journal 15.5 (2015): 1106-1117.

10. Smuck, Matthew, et al. "Does physical activity influence the relationship between low back pain and obesity?" The Spine Journal 14.2 (2014): 209-216.

11. Shiri, Rahman, et al. "The association between obesity and low back pain: a meta-analysis." American journal of epidemiology 171.2 (2010): 135-154.

12. Hong, SoungKyun, and DooChul Shin. "Relationship between pain intensity, disability, exercise time and computer usage time and depression in office workers with non-specific chronic low back pain." Medical hypotheses 137 (2020): 109562