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OBESITY AS A FACTOR FOR PROLONGING DISABILITY DUE TO LUMBAR PAIN IN PATIENTS ATTENDED IN A FAMILY MEDICINE UNIT IN MEXICO

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ABSTRACT

Low back pain is a public health problem, it generates an increase in the use of resources and contributes to absenteeism from work. Obese people often require prolonged disability due to this cause. This study was designed to investigate whether obesity contributes to the prolongation of disability due to low back pain. Information from clinical records of patients attending a Family Medicine Unit of the Mexican Institute of Social Security (IMSS) in the city of Tecate, Baja California, Mexico, with a diagnosis of low back pain plus obesity (BMI > 30); Group 1 (Cases; n = 88) and with a diagnosis of low back pain without obesity; Group 2 (Control; n = 170) was included. Several variables such as weight, height, body mass index, age, sex, smoking, occupation and intensity of work activity and pharmacological treatment were also considered. The disability was assessed with a Temporary Certificate for Work and Access to the Subsidy and Aid System. The average number of days of disability for patients in Group

1 was higher than that of Group 2 (7.55 ± 9.45 vs 5.05 ± 7.07, p = 0.0087), like that observed in those who had moderate work activity (12.4 ± 9.02 vs 5.93 ± 6.92, p <0.001) indicating that obesity may have an impact on low back pain and greater possibilities of requiring disability, as well as recurrence. Treatment with more than three drugs was greater in patients with low back pain and obesity than in patients without obesity.

KEYWORDS: Low Back Pain, Obesity, Risk Factor, Disability Evaluation.

1. INTRODUCTION

Low back pain, defined as discomfort or pain in the lumbar area located below the lower edge of the last ribs and the lower fold of the gluteal area, may or may not radiate to one or both legs, compromises the musculoskeletal structures and ligaments, and may or may not cause functional limitation that interferes with daily life activities with a potential impact on work absenteeism.[1]

The WHO defines overweight and obesity as an abnormal or excessive accumulation of fat that affects health. To assess overweight and obesity, the body mass index (BMI) is used, which is a simple indicator that relates weight and height and is calculated by dividing the person's weight in kg by the square of the height in meters (kg/m^2). Obesity, as a chronic, multifactorial and neurobehavioral disease, leads to metabolic, biomechanical and psychosocial alterations that are adverse to health.[2,3]

Disabilities are economic benefits for patients during the time that they are unable to work, either due to a general illness or due to a work-related risk and that requires medical attention. According to the Federal Labor Law, temporary disability is defined as the loss of faculties or skills that partially or totally make it difficult or impossible for a person to perform their job for some time. Partial permanent disability is defined as the decrease in a person's faculties or skills to work, and total permanent disability corresponds to the loss of a person's faculties or skills that makes them unable to perform any job for the rest of their life.[4]

Low back pain is a major public health problem and is common in Western societies due to its high prevalence, impact, magnitude, and socioeconomic repercussions. It affects the working-age population and generates an increase in the use of resources and loss of workdays.

It is reported that 60 to 70% of adults have had some episode of low back pain syndrome at some stage of their life, and up to 18% may be recurrent, increasing the frequency of the problem with age. In people under 45 years of age, it is one of the main causes of physical limitation. In the IMSS, according to some reports, it is the eighth cause of consultation with the Family Doctor and 907,552 attentions for this cause have been registered at the first level of care.[5,6]

Some authors such as Hashimoto et al.[7] conducted a retrospective cohort study in 1,152 Japanese men; the assessments were conducted in 1989, and a significant positive dose-response relationship was demonstrated between the percentage of body fat and the prevalence of persistent low back pain. Similarly, a significant positive dose-response relationship was confirmed between BMI and persistent low back pain. This study suggests that both high body fat percentage and BMI are risk factors for persistent low back pain.

In addition to this, Ewald et al. conducted a randomized clinical trial in 2016, with the aim of estimating the effect of obesity as measured by BMI, on treatment outcomes for low back pain.[8] In this study, 681 participants with low back pain were enrolled. Complete data on the current episode of low back pain as well as the history of low back pain was collected for each participant. An association between obesity and less favorable treatment outcomes was inferred in this study.[8] There appears to be an association (p value ≤ 0.05) between obesity and disability, as well as obesity and more intense subjective pain. People who gained weight (5 pounds or more) were less likely to report improvement in more intense subjective pain. Therefore, it is reasonable to conclude that there is an association between obesity and the prognosis of treatment for low back pain.

Due to their frequency, impact, and costs, both pathologies require a study to determine this interaction. On the other hand, given the wide variability in clinical practice in the prescription of pharmacological and non-pharmacological treatment for low back pain, the present study seeks to identify evidence to determine whether treatment for low back pain should focus more on the identification and management of overweight and obesity than on seeking new pharmacological alternatives for the management of acute low back pain at the primary level of care. At the Family Medicine Unit # 39 (FMU39) in Tecate, Baja California (BC), México, this problem is considered one of the main reasons for consultation. It is an entity that generates expenses for the institution both in pharmacological and non-pharmacological treatment, as well as in the generation of its own disabilities.

2. GENERAL OBJECTIVE

To identify whether obesity is the main and most frequent known factor for the prolongation of disability due to low back pain in patients treated at FMU 39 in Tecate, BC.

2.1. Specific objectives

1. Select the study population diagnosed with low back pain.
2. Classify the population based on the BMI, into groups: Group1 patients diagnosed with low back pain and obesity, Group 2-patients with low back pain without obesity.
3. Identify the days of disability due to low back pain in each of the groups.
4. Identify the frequency of recurrence of disabilities in both groups.
5. Describe known risk factors such as: smoking, sedentary lifestyle, and work activity.
6. Describe the type of pharmacological treatment received in both groups.

3. METHODS

Observational, analytical, cross-sectional, retrospective study with a correlational approach of Cases and Controls. The information of the study population was obtained from the electronic clinical records kept in the Family Medicine Information System of the FMU 39 of Tecate, B.C., with diagnoses in the CIE10 M545 database (low back pain). A "Case" was defined as the record of patients with a basic diagnosis of CIE10 M545 (low back pain) plus obesity and as a "Control" the record of patients with a basic diagnosis of CIE10 M545 (low back pain) without obesity. The study period was from October to December 2021. BMI was established by measuring weight and height, and those with a BMI > 30 were assigned to the obesity group. Using the Temporary Certificate for Work and Access to the Subsidy and Aid System (NSSA), the disability variable was identified. Other variables analyzed were age, sex, smoking, occupation, and intensity of work activity. The protocol was approved by the Local Health Research Committee and registered with the number R-2022-204-037.

4. RESULTS

A total of 259 patients were included in this study, of which one patient was excluded due to lack of BMI data. The 258 patients formed two groups: Group 1 consisted of 88 patients with low back pain and obesity (Cases), while Group 2 consisted of 170 patients with low back pain without obesity (Controls), establishing a 1:1.9 ratio between cases and controls. The mean age of Group 1 was 41.22 ± 11.54 years old, that of Group 2 was 38.7 ± 13.21 years old, with no differences found between the two groups ($p = 0.12$). Regarding smoking, 6/88

patients in Group 1 reported smoking vs 18/170 in Group 2 (Mantel-Haenzel X 2, p = 0.32) with no difference found between the groups.

Work activity was evaluated for both groups according to the following categories: no work activity (student, housewife, retiree) and with light, moderate, heavy work activity. Work activity was documented in 53/88 patients in Group 1. Of the patients who corresponded to the subgroup of no work activity, only 3 patients were in the pensioner/retiree category, the rest (32) did not have documented work activity (Table 1).

In 122/170 patients in Group 2, work activity was documented: The corresponding subgroup of patients without work activity were 15 patients who were in the categories of student (3), housewife (4) and pensioner/retiree (8); the rest of the patients (33) had no work activity documented (Table 1).

Table 1: Frequency of work activity by study group.

Group 1 (n=88)				**Group 2 (n=170)**			
No work activity		**With work activity**		**No work activity**		**With work activity**	
Student	0	Light	14	Student	3	Light	35
Housewife	0	Moderate	37	Housewife	4	Moderate	71
Pensioner/Retiree	3	Heavy	2	Pensioner/Retiree	8	Heavy	16
Note: In Group 1, work activity information was not documented in 32 patients. In Group 2, work activity information was not documented in 33 patients.							

The percentages of the categories that were reported as work activity were compared between the study groups (53 from Group 1 and 122 from Group 2) where it was observed that there were similar percentages in both groups for all categories, with moderate activity predominating (69.8% for Group 1 vs. 58.2% for Group 2) (p = 0.13).

The evaluation of the days of disability by group showed a total of 664 days for Group 1 vs. 858 days for Group 2. The average number of days of disability by group was 7.55 ± 9.45 in Group 1 vs. 5.05 ± 7.07 in Group 2 (p = 0.0087).

When analyzing the average number of days of disability in patients with light activity between the study groups, it was found that the average number of days of disability in Group 1 was 10.92 ± 10.97 vs. 8.4 ± 8.62 in Group 2 (p = 0.45).

However, the average number of days of disability in patients with moderate activity between the study groups showed that the average number of days of disability in Group 1 was 12.4 ± 9.02 vs. 5.93 ± 6.92 in Group 2 ($p < 0.001$).

Only 2 patients in Group 1 had heavy activity, who had 9 and 29 days of disability. In Group 2, there were 16 patients with heavy activity and the mean number of days of disability was 8.25 ± 6.9 days, making it impossible to make a statistical comparison. The number of disability recurrences ranged from 0 to 7 recurrences. The frequency and percentage of recurrences by study group are shown in Table 2.

Table 2: Frequency of disability recurrences by study group.

Number of Recurrences	Group 1 (n=88)		Group 2 (n = 170)	
	Frequency	Percentage	Frequency	Percentage
0	36	40.9	76	44.7
1	12	13.6	40	23.5
2	14	15.9	23	13.5
3	15	17.1	16	9.4
4	5	5.7	9	5.3
5	2	2.3	1	0.6
6	3	3.4	4	2.4
7	1	1.1	1	0.6
Median of both groups was 1 P = 0.14 (U Mann Whitney)				

When evaluating the mean number of recurrences for moderate work activity between the groups, it was observed that Group 1 had a mean of 2.54 ± 1.36 vs. 1.35 ± 1.26 disability events in Group 2 ($p < 0.001$).

The two patients in Group 1 who had heavy activity showed 2 and 6 disability recurrences, while the 16 patients with heavy activity in Group 2 showed an average of 2.12 ± 1.78 disability events.

Regarding the type of treatment received by patients, regardless of the study group, they were grouped into analgesics (paracetamol, metamizole, non-steroidal anti-inflammatory drugs (diclofenac, ketorolac, meloxicam, piroxicam, sulindac, indomethacin), steroids (dexamethasone, prednisone), vitamins, antiepileptics (carbamazepine and gabapentin), centrally acting muscle relaxants (methocarbamol).

27.3% of patients in Group 1 received three or more drugs (analgesic, nonsteroidal anti-inflammatory drugs and steroids) vs. 15.3% of patients in Group 2 who received similar regimens, this difference being statistically significant (p = 0.02). In the comparative analysis of the five most frequently used drugs (analgesics, non-steroidal anti-inflammatory drugs, steroids, anticonvulsants and vitamins) a difference was observed statistically significant between groups (p = 0.03). Table 3 describes the frequency of drug use by study group.

Table 3: Frequency of drug used by study group.

Group of Drugs	Group 1 (n=88)		Group 2 (n= 170)	
	Frequency	Percentage	Frequency	Percentage
Non-narcotic analgesics	59	67.1	110	64.7
nonsteroidal anti-inflammatory drugs	82	93.2	144	84.7
Steroids	28	31.9	35	20.6
Centrally acting muscle relaxants	1	1.1	0	0
Vitamins	10	11.4	4	2.4
Anticonvulsants	12	13.6	11	6.5
. Patients received more than one drug for pain management.				

The type of moderate work activity and its possible association with the use of more than 3 drugs (analgesics, nonsteroidal anti-inflammatory drugs and steroids) in the study groups was analyzed and an OR of 2.55 (95% CI 1.06 to 6.0) p = 0.03 was obtained. The use of the 3 drugs in patients with light work activity was similar in both groups (p >0.05). Of the two patients with heavy work activity in Group 1, only one patient had more than 3 drugs compared to the 16 patients in Group 2 who had heavy work activity 2 received more than 3 drugs (p >0.05).

5. DISCUSSION

88 patients were included in Group 1, corresponding to patients with low back pain and obesity. Group 2 was made up of 170 patients with low back pain without obesity.

Group 1 and Group 2 were similar in mean age (41.22 ± 11.54 vs 38.7 ± 13.21 years, p = 0.12). There was also no difference in the groups in relation to smoking.

The work activity that predominated in both groups was classified as moderate activity in 69.8% for Group 1 and 58.2% for Group 2, being similar and without statistical difference, p = 0.13.

The days of total disability overall were higher in Group 2, since it constituted a greater number of patients for this group; however, when analyzing the average days of disability in patients with moderate activity, the mean of Group 1 (low back pain plus obesity) was higher than that of Group 2 (12.4 ± 9.02 vs 5.93 ± 6.92, p <0.001), indicating that obesity may have an impact on low back pain and therefore greater possibilities of requiring disability.

Treatment with the use of more than three drugs that included non-narcotic analgesics, nonsteroidal anti-inflammatory drugs, and steroids was also higher in patients with low back pain and obesity than in patients without obesity. In univariate analysis it was observed that patients with low back pain and obesity were 2.55 times more likely to require more than three drugs. In addition, patients with low back pain and obesity also required anticonvulsants and vitamins.

6. CONCLUSION

In conclusion. Recurrence of disabilities was higher for patients with low back pain plus obesity, this finding being statistically significant.

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