

## Association between Anxiety, Overweight and Obesity in Adults Attached to a Family Medicine Unit

### *Asociación entre ansiedad, sobrepeso y obesidad en población adulta adscrita a una unidad de medicina familiar*

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#### Summary

**Objective:** to evaluate the association between anxiety, overweight and obesity in adults attached to a family medicine unit. **Methods:** An analytical cross-sectional study conducted in the Family Medicine Unit (FMU) no. 77 of the Mexican Institute of Social Security (IMSS), in the State of Mexico, from March to October 2019; the study included adults from 18 to 65 year-old, of both genders, who were overweight or obese. The State-Trait Anxiety Inventory (STAI) was used to determine the degree of anxiety and the Body Mass Index (BMI) was measured. Descriptive analysis was performed with central trend measures and the  $\chi^2$  test was used to analyze the association of variables. **Results:** 282 patients were included, 32 of whom were overweight, 117, had obesity class I, 100, obesity class II and 33, obesity class III. In assessing the degree of anxiety, 37 patients did not report anxiety, 109, had mild anxiety, 88, moderate anxiety and 48, severe anxiety. A statistically significant association ( $p < 0.05$ ) between anxiety, overweight and obesity was determined. **Conclusion:** most patients tested had some degree of anxiety; there is a statistically significant association between anxiety, overweight and obesity; a timely diagnosis and treatment are necessary to avoid future complications associated with the studied variables.

**Keywords:** Overweight, Obesity, Anxiety, Body Mass Index

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## Resumen

**Objetivo:** evaluar la asociación entre ansiedad, sobrepeso y obesidad en derechohabientes mayores de edad adscritos a una unidad de medicina familiar.

**Métodos:** se llevó a cabo un estudio transversal analítico en la Unidad de Medicina Familiar (UMF) no. 77 del Instituto Mexicano del Seguro Social (IMSS), Estado de México, de marzo a octubre de 2019; se incluyó a derechohabientes de 18 a 65 años, de ambos sexos, que presentaran sobrepeso u obesidad. Para determinar el grado de ansiedad se utilizó el Cuestionario de Ansiedad Estado-Rasgo (STAI) y se determinó el índice de masa corporal (IMC). Se realizó análisis descriptivo con medidas de tendencia central y se utilizó la prueba de  $\chi^2$  para analizar la asociación de variables.

**Resultados:** se incluyeron 282 pacientes, 32 de ellos presentaron sobrepeso, 117, obesidad grado I, 100, obesidad grado II y 33, obesidad grado III. Al evaluar el grado de ansiedad, 37 pacientes manifestaron no presentar esta entidad, 109, presentaron ansiedad leve, 88, ansiedad moderada y 48, ansiedad severa. Se determinó una asociación estadísticamente significativa ( $p < 0.05$ ) entre ansiedad, sobrepeso y obesidad. **Conclusión:** la mayoría de los pacientes analizados presentó algún grado de ansiedad; existe una asociación estadísticamente significativa entre ansiedad, sobrepeso y obesidad; es necesario realizar un diagnóstico y tratamiento oportuno para evitar complicaciones futuras asociadas a las variables de estudio.

**Palabras clave:** sobrepeso, obesidad, ansiedad, índice de masa corporal

## Introduction

In 2016, the World Health Organization (WHO) reported that there were

650 million people globally diagnosed with obesity; this figure increased significantly in 2019.<sup>1,2</sup> Anxiety is another condition that has increased significantly worldwide, from 1990 to 2016 there was an increase of 50%; in Mexico the prevalence is of approximately 14.3%.<sup>3</sup>

The relationship between overweight, obesity and anxiety is well known, as a patient in a state of anxiety tends to ingest higher amounts of food and this results in an increase in body mass index (BMI), as well as the presence of other psychological and metabolic diseases that contribute to the increase in morbidity and mortality rates.<sup>4</sup>

Mexico ranks one of the first places in obesity in the world; its etiology is multifactorial, one of the main causes of its manifestation is the alteration in eating habits that condition changes in the body and psychological appearance, this makes the patient to present metabolic disorders and behavioral alterations.<sup>5</sup>

It has been observed that a third of the population in Mexico has problems of anxiety, overweight and obesity, with a higher prevalence in adults between 18 and 65 years, these illnesses will subsequently condition chronic degenerative diseases that will also increase out-of-pocket expenditure.<sup>6-9</sup> For these reasons, it is important to determine this association, in order to avoid the presence of complications in this age range, including: type 2 diabetes mellitus (DM2), systemic high blood pressure, heart disease, dyslipidemia, panic disorder, obsessive-compulsive disorder and risk of suffer metabolic syndrome.<sup>10</sup>

Diagnosis of overweight and obesity can be determined by calculating BMI; to diagnose the presence of anxiety there are several instruments, one of which is the State-Trait Anxiety Inventory (STAI);

the simultaneous assessment of these conditions is of utmost importance, as it has been observed that after an anxiety crisis, there is an increase in BMI that can lead to overweight and obesity.<sup>11</sup>

Given the referred context, the objective of this study was to evaluate the association between anxiety, overweight and obesity in adults attached to a family medicine unit.

## Methods

An analytical cross-sectional study was conducted, authorized by the Local Health Research Committee 1401 and the Ethics and Research Committee 1401-8 of the Mexican Institute of Social Security (IMSS), from March to October 2019, in the Family Medicine Unit (FMU) no. 77; a sample size calculation was performed using the finite population formula. The sample included 282 patients, who were selected non-randomized by convenience, the patients age was from 18 to 65 years who accepted to participate with prior signed informed consent, who knew how to read and write, and who agreed to be sized and weighted to determine their BMI; patients with psychiatric diagnoses, normal or low BMI, as well as pregnant women were excluded; patients who did not answer the applied questionnaires completely were discarded from this study. Upon informed consent, sociodemographic data, anxiety levels and BMI were obtained.

To determine the degree of anxiety, the STAI questionnaire that assesses two self-evaluate scales was used to measure two independent concepts of anxiety: status and trait, with 20 questions each; it classifies low anxiety if the score is less than 30, average anxiety from 30 to 40 points and high, more than 44 points.

It has an internal consistency (Spanish adaptation) between 0.9 and 0.93 in anxiety/state and between 0.84 and 0.87 in anxiety/trait.

Patients were weighted and measured to calculate BMI; and classified as follows: overweight of 25-29.9kg/m<sup>2</sup>, class I obesity of 30-34.9kg/m<sup>2</sup>, class II obesity of 35-39.9kg/m<sup>2</sup>, and class III obesity >40kg/m<sup>2</sup>.

Statistical analysis of sociodemographic variables obtained was described by central trend measures, to determine the association between overweight and obesity with anxiety  $\chi^2$  was used, the data processing was carried out with the statistical package SPSS v.23.

### Results

282 patients aged 18 to 65 years were analyzed, an average of 39.78 (from  $\pm$  12.57); according to the gender, more than 50% were female; most patients had class I obesity and some degree of anxiety; the general characteristics of the studied population are shown in Table 1.

Assessing the degree of anxiety, 37 patients reported not presenting anxiety, 109, had mild anxiety, 88, moderate anxiety and 48, severe anxiety. To evaluate the association of the variables studied two groups were divided, the first corresponded to those who reported no anxiety or mild anxiety, the second group corresponding to those who had moderate/severe anxiety. In the case of BMI, overweight was grouped with class I obesity, and class II and III obesity were grouped together. The association analysis was statistically significant ( $p < 0.05$ ), see Table 2.

### Discussion

Several studies have referred a close relationship between obesity and anxiety. In the present work the finding was similar, indicating that these complications should be considered as a binomial that significantly impacts the psychobiological health of patients.<sup>12-14</sup>

**Table 1. Sociodemographic and clinical characteristics of overweight and obese patients**

|            |                      | Frequency | Percentage |
|------------|----------------------|-----------|------------|
| Age Groups | 18-29 years old      | 48        | 17.0       |
|            | 30-41 years old      | 48        | 17.0       |
|            | 42-54 years old      | 86        | 30.5       |
|            | 55-65 years old      | 100       | 35.5       |
| Gender     | Women                | 172       | 61.0       |
|            | Men                  | 110       | 39.0       |
| Schooling  | Elementary           | 103       | 36.5       |
|            | Junior High          | 121       | 42.9       |
|            | High school          | 56        | 19.9       |
|            | Higher level studies | 2         | 0.7        |
| Obesity    | Overweight           | 32        | 11.3       |
|            | Class 1              | 117       | 41.5       |
|            | Class 2              | 100       | 35.5       |
|            | Class 3              | 33        | 11.7       |
| Anxiety    | No Anxiety           | 37        | 13.1       |
|            | Mild anxiety         | 109       | 38.7       |
|            | Moderate anxiety     | 88        | 31.2       |
|            | Severe anxiety       | 48        | 17.0       |

**Table 2. Relation between anxiety, overweight and obesity**

|         |                             | Obesity            |                 |       |
|---------|-----------------------------|--------------------|-----------------|-------|
|         |                             | Overweight/class 1 | Class 2/class 3 | Total |
| Anxiety | No anxiety/<br>mild anxiety | 122                | 24              | 146   |
|         | Moderate/severe             | 27                 | 109             | 136   |
| Total   |                             | 149                | 133             | 282   |

Kings et al.<sup>15</sup> concluded that eating disorders, such as obesity, are explained by a greater presence of anxiety; obese people use the act of tasting, chewing and crushing food as a resource to lower their anxiety levels; hyperphagia compensates for stressful life situations in these patients.

BMI is the most useful tool to measure people for determining overweight and obesity.<sup>15,16</sup> Sibel et al.<sup>17</sup> observed the psychopathological profile of obese patients and identified an 80% increase in the risk of recurrence of the disease or death associated with these conditions; in the same study, sleep disturbance also had an important influence on developing obesity. Various discussions have been presented about whether anxiety can be considered to be the symptom or whether it is the consequence of a psychological and social problem; however, the scenario that influences it to manifest itself is a direct relationship between anxiety and overweight with obesity.<sup>18</sup> This study noted such association by  $\chi^2$  and the result was statistically significant, this demonstrates a high degree of evidence for that association, aspects that have been corroborated by other studies.<sup>19,20</sup>

Mexico ranks first in the world in obesity and overweight and about one person in 15% of adults has anxiety, for these reasons, it is necessary to make a timely diagnosis to control short-and long-term effects caused by both conditions. Diagnosis of anxiety through the use of instruments such as the one used in this study makes it possible to offer treatments available to improve the quality of life of patients and their family.<sup>13,21-23</sup>

One of the main limitations of this study was not being able to determine whether the anxiety of patients was the result of overweight and obesity or vice

versa; this would help to have a more complete picture of the origin and development of both conditions.

### Conclusions

A statistically significant association was detected between the degree of anxiety and nutritional status of the analyzed patients; the determination of the BMI and anxiety are of great importance for the intentional detection of these conditions; it is important to involve nutrition, preventive medicine and family medicine in the reference of these patients to preventing or avoiding comorbidities that affect their quality of life and institutional costs.

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