









Anxiety, sleep quality, and binge eating in overweight or obese adults*

Ansiedade, qualidade do sono e compulsão alimentar em adultos com sobrepeso ou obesidade
Ansiedad, calidad del sueño y compulsión por comer en adultos con sobrepeso u obesidad

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ABSTRACT

Objective: To analyze the relationship of anxiety to binge eating and sleep quality in overweight or obese adults. **Method:** Transversal study, conducted between May 2015 and January 2017, with an intentional sample composed of literate individuals of both sexes, aged 20 to 59 years, who presented body mass index higher or equal to 25 kg/m². State-Trait Anxiety Inventory, Binge Eating Scale, and Pittsburgh Sleep Quality Index were employed. Pearson or Spearman correlation coefficient was adopted for data analysis, according to its distribution. **Results:** The sample comprised 130 individuals. The overall and young adults' samples presented a positive correlation between anxiety and binge eating scores ($p=0.0011$) and sleep quality score ($p=0.0081$). Adults who were 45 or older presented an inverse relation between age and anxiety ($p=0.0003$). **Conclusion:** The overall sample and young adults who presented higher anxiety state had higher indexes of binge eating and a worse sleep quality, whereas for middle-aged adults, higher age was related to a lower anxiety score. Brazilian Registry of Clinical Trials (*Registro Brasileiro de Ensaios Clínicos*): nº RBR-47kfxh

DESCRIPTORS

Anxiety; Obesity; Overweight; Binge-Eating Disorder; Insomnia; Nursing Care.

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INTRODUCTION

The worldwide prevalence of obesity has been increasing among adults both in developed and developing countries, having tripled since 1975⁽¹⁾. The WHO estimates that, in 2016, more than 1.9 billion adults older than 18 years were overweight worldwide, out of which 650 million were obese⁽¹⁾.

In Brazil, data from the Surveillance of Risk and Protection factor for Chronic Diseases by Telephone Inquiry (*Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico do Brasil – Vigitel*) from 2016 show that the prevalence of excess weight was 52.8%, being higher among men (57.7%) than women (50.5%), whereas the prevalence of obesity was 18.9% and slightly higher in women (19.6%) than in men (18.1%)⁽²⁾.

Excess weight is an important risk factor for non-communicable chronic diseases (NCCD), as well as cardiovascular diseases (mainly coronary artery disease and cerebrovascular accident), which were the leading cause of death in 2012 worldwide⁽¹⁾. Following this worldwide trend, the NCCD were responsible for approximately 72.7% of deaths registered in the System of Information on Mortality (*Sistema de Informações sobre Mortalidade – SIM*) in Brazil from 2000 to 2011. The most frequent among the analyzed causes of death were cardiovascular diseases (30.4%), neoplasia (16.4%), respiratory diseases (6%) and diabetes (5.3%). Collectively, these four diseases represent 79.8% of deaths by NCCD in Brazil⁽³⁾.

However, obesity is associated with an increased risk of morbidity and mortality and reduced life expectancy, contributing to negative health outcomes and physical disabilities, as well as individual and social harm and growing expenses with treatment of its consequences. It is estimated that 2 to 6% of expenses with health treatment worldwide are dedicated to conditions related to obesity⁽¹⁾.

Due to the seriousness of NCCD as a theme and its impact on health systems and society, the United Nations (UN) included these diseases in their new priority agenda, named “Sustainable Development Goals”, in 2015. The proposed goals include a one-third reduction in premature mortality from NCCD by prevention and treatment, promoting mental health and well-being, until 2030⁽⁴⁾.

It is thus necessary to ensure that investigations, plans, policies, and investments be directed, with urgency and priority, at this group of illnesses, to provide a proper response to the current challenges.

The required actions and investments were given nationwide priority through the Plan of strategic action for fighting NCCD. Goals and commitments to be adhered to by Brazil were established, preparing the country for the challenges posed by NCCD and their risk factors for the following years⁽⁵⁾.

The relevance of the epidemic of excess weight for Brazilian public health is thus undeniable, as is the urgency

of searching for more capability and competence for the effective treatment of this condition.

Since obesity is a complex and multifactorial disease, its treatment is difficult to manage due to involving lifestyle changes regarding nutrition and practice of physical exercise. It is thus necessary to investigate factors related not only to weight, but also to pathologies and/or associated symptoms in diverse cultures and scenarios, always seeking to improve the quality of life of these individuals.

In addition to the mentioned associations, evidence shows that obesity is related to an increased risk of developing other disorders, such as anxiety disorders and depression⁽⁶⁻⁷⁾. It is also associated to compulsive behavior⁽⁸⁻⁹⁾, which is characterized by recurrent episodes of consumption of abnormal amounts of food associated to suffering and the absence of compensatory behavior⁽¹⁰⁾. Unbalanced sleep is also a sign commonly associated to obesity, mainly characterized by short sleep duration⁽¹¹⁾, which is also related to binge eating in these individuals⁽¹²⁻¹³⁾.

Despite the demonstrated associations, it is necessary to unveil the behavior of these variables, accounting for the different age groups, with an increasingly individualized outlook, respecting the sociocultural differences of our population. The objective of this study was thus to analyze the relation of anxiety with binge eating and sleep quality in overweight or obese adults.

METHOD

DESIGN OF STUDY

Cross-sectional, descriptive study.

SCENARIO

The study was conducted between May 2015 and January 2017 in a municipality in inland São Paulo state. The intentional sample comprised 130 literate individuals of both sexes, aged 20 to 59 and presenting a BMI higher or equal to 25 kg/m² who participated in a randomized clinical trial whose objective was identifying whether treatment with flower therapy would change the degree of anxiety of overweight or obese individuals.

This study's logistics were executed with support from the Clinical Research Unit of a public education institution, including promotion and subject recruitment and booking, as well as provision of rooms and equipment for data collection.

DATA COLLECTION

Anthropometry was carried out in individuals with no shoes and wearing light clothes. Their height was measured with an anthropometer with maximum height of 204 cm, fixed in a digital scale with a maximum capacity of 200 kg used for measuring body weight. The BMI was calculated with weight and height measurements,

according to the following formula: $BMI = \text{weight (kg)} / \text{height}^2 \text{ (m)}$. The BMI cut points adopted are those suggested by the WHO, i.e., individuals were considered overweight if their BMI was between 25 and 29.9 kg/m² and to present obesity grade I between 30 and 34.9 kg/m², obesity grade II between 35 and 39.9 kg/m², and obesity grade III above 40 kg/m² (14).

Age, sex, race, marital status, number of children and education were registered for sociodemographic characterization. In the clinical profile, tobacco use, hypertension and diabetes were identified.

Anxiety was evaluated by the State-Trait Anxiety Inventory (STAI) (15), which consists of two scales, one of trait anxiety, which requires subjects to describe how they generally feel, and a scale of state anxiety, for which the subjects were instructed to indicate how they feel at that moment. These scales are independent, have different connotations, and can be evaluated as indicators of a single type of anxiety. This study thus adopts only the scale of state anxiety (transient cognitive and affective condition). The values attributed to the scale items were summed up and the levels of anxiety of the individuals were classified according to obtained score: Low – scores between 20 and 34; Moderate – scores between 35 and 49; High – scores between 50 and 64; and Very high – scores between 65 and 80 (15).

The Binge Eating Scale (BES), used to raise data about binge eating, evaluates the severity of binge eating in obese people, being considered a valid tracking device (16). This scale comprises a list of 16 items and 62 statements, from which the most representative of each individual's answer to each item should be selected. Each statement corresponds to a score from 0 to 3, ranging from absence ("0") to maximum severity ("3") of Binge Eating (BE). The final score is the sum of the scores for each item. Individuals whose score is smaller or equal to 17 are considered to have no compulsion; with a score from 18 to 26, they are considered as having moderate compulsion; those with a score higher or equal to 27 are considered to have a severe form (16).

The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate subjective sleep quality. This instrument comprises 19 items grouped in seven components, each receiving a score from 0 to 3 (17). Its components are, respectively: (1) subjective sleep quality; (2) sleep latency; (3) sleep duration; (4) habitual sleep efficiency; (5) sleep alterations; (6) use of sleeping medication; and (7) daytime dysfunction. The scores of the seven components were summed up to a global score of the PSQI, which ranges from 0 to 21. Scores between 0 and 4 indicate good sleep quality, those from 5 to 10 indicate poor quality, and those higher than 10 indicate a sleeping disorder (17).

DATA TREATMENT AND ANALYSIS

All employed scales have been validated for the Brazilian context (15-17) and were filled by the participants with

researcher guidance at the beginning of the original clinical trial. The information was stored in an Excel (©Microsoft, Redmond, WA, USA) database and analyzed using the software SAS® version 9.4 (Cary, NC, USA), considering a 5% significance level. The sample was characterized through descriptive statistics for data analysis and, for comparison between sexes concerning instrument scores, unpaired t-Student test or Mann-Whitney test was employed, in accordance with data distribution, evaluated through the Shapiro-Wilk test. Correlations between quantitative data were evaluated through the Pearson or Spearman correlation coefficient, depending on data distribution. The correlations were established both for the overall sample and the sample divided by age group, considering young adults (aged under 45) and middle-aged adults (age above or equal to 45). The following classification for the correlation coefficient was also considered: 0.1 to 0.29 (weak), 0.30 to 0.49 (moderate) and higher than or equal to 0.50 (strong). In the analysis by age group, the significance level was corrected according to the Bonferroni criterion. In these analyses, the adopted significance level was 2.5%.

ETHICAL ASPECTS

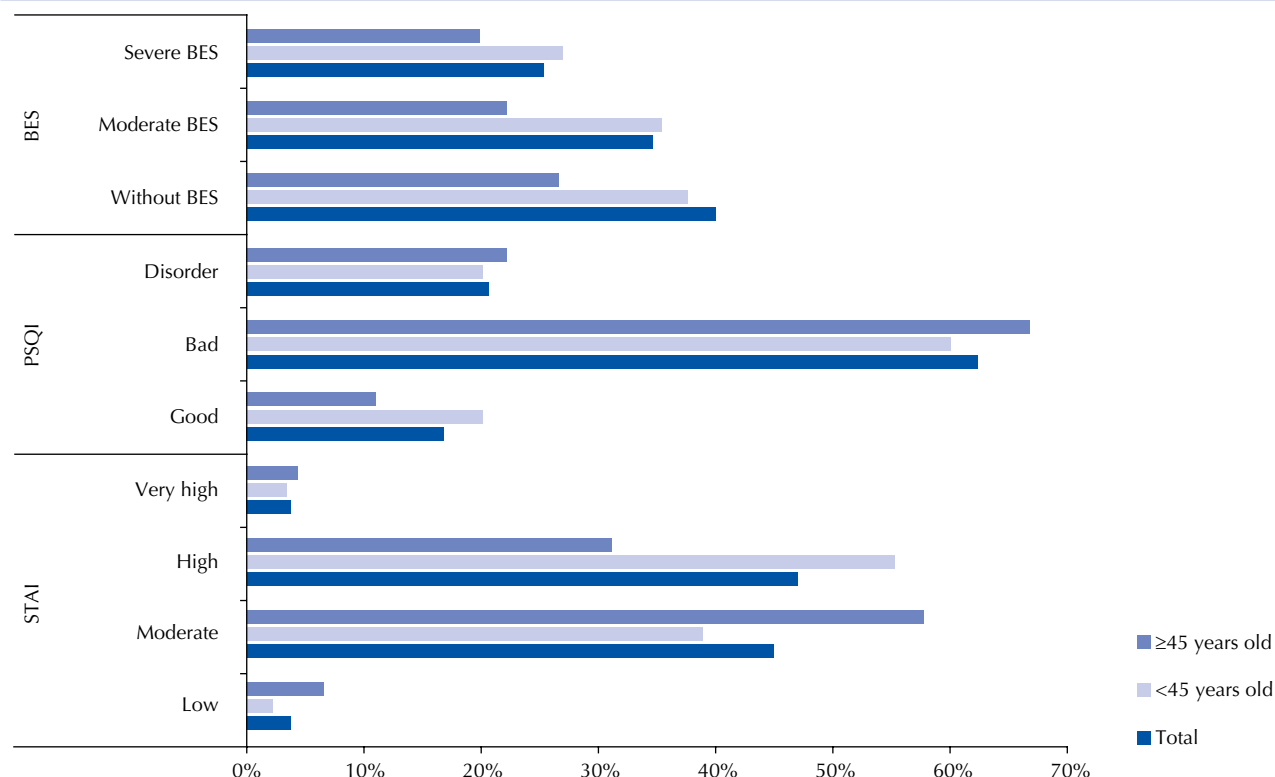
This study was submitted to the Ethics Committee of Faculdade de Medicina de Botucatu and approved in Opinion n. 1.578.653/2015. Participants were informed about the study both verbally and in writing and signed the Informed Consent Form.

RESULTS

The sample comprised 130 individuals, most of whom were female (80.8%), with a mean age of 39.4 ± 10.1 years, and out of which 85 (65.4%) were in the 20 to 44 years old age group (young adult) and 45 (34.6%) were between 45 and 59 years old. Most individuals self-identified as white (70.8%), and 26.2% as brown. Regarding schooling, 34.6% reported having completed high school, followed by 36.9% of graduates and 15.4% of post-graduates. Concerning marital status, 62.3% reported being married or living with someone and the mean number of children was 1.3 ± 1.1.

The mean BMI was 33.71 kg/m² ± 5.72, with 34.6% of subjects classified as overweight, 29.2% as presenting grade I obesity, 20.8% as grade II obesity, and 15.4% as grade III obesity. Hypertension was reported by 32.3% of participants, whereas diabetes was reported by 16.9%, and tobacco use, by 6.4%.

Regarding the scales adopted in the study, 96% of participants were verified to have at least a moderate anxiety level per STAI classification, with a mean 49.81 (±9.86), 83% presented poor sleep quality per PSQI global scale, with a mean 7.69 ± 3.2, and 60%, binge eating, per BES evaluation, with a mean score of 20.5 ± 9.0. Patient distribution according to scale classification and age group is presented in Figure 1.



STAI: State-Trait Anxiety Inventory; PSQI: Pittsburgh Sleep Quality Index; BES: Binge Eating Scale. Note: (n=130).

Figure 1 – Participant distribution in percentage according to classification by the scales adopted in the study, distributed by age group and overall sample – Botucatu, SP, Brazil, 2015-2017.

By comparing the scales and considering the overall sample, a direct relation was found, demonstrated by the positive value of the correlation coefficient, indicating that individuals presenting a higher state of anxiety had higher binge eating scores and worse sleep quality. When analysis was conducted by age group, the same correlation was found for young adults, as well as an inverse relation between age and anxiety in middle-aged adults, i.e., the higher the age in this category, the lower the

anxiety score, which is demonstrated by a strong correlation coefficient of -0.5134 and a p-value of 0.0003. No other relation was found for this age group, as shown in Table 1.

Participant sex presented no significant difference regarding the scales, with a p-value of 0.7440 for STAI and 0.8740 for BES, obtained through unpaired Student's t test, and a p-value of 0.6393 for PSQI, obtained through the Mann-Whitney test.

Table 1 – Correlation between scores of age, anxiety state (STAI), sleep quality (PSQI) and binge eating in overweight or obese adults, distributed by age group and total sample – Botucatu, SP, Brazil, 2015-2017.

Variable	Group	STAI	PSQI	BES
Age	Total	-0.2207** (p=0.0116)	0.0291** (p=0.7422)	-0.0847** (p=0.3378)
	<45 years	-0.0436** (p=0.6918)	0.0554** (p=0.6143)	-0.0913** (p=0.4059)
	≥45 years	-0.5134** (p=0.0003)	0.0095** (p=0.9504)	-0.2003** (p=0.1870)
STAI	Total		0.2789** (p=0.0013)	0.2832* (p=0.0011)
	<45 years		0.2853* (p=0.0081)	0.3619* (p=0.0007)
	≥45 years		0.1075* (p=0.4820)	0.1364* (p=0.3716)
PSQI	Total			0.2524** (p=0.0038)
	<45 years			0.2893* (p=0.0072)
	≥45 years			0.1000* (p=0.5135)

STAI: State-Trait Anxiety Inventory; PSQI: Pittsburgh Sleep Quality Index; BES: Binge Eating Scale; p = p-value

* Pearson correlation coefficient

** Spearman's rank correlation coefficient

DISCUSSION

This study identified a positive correlation between the scores for anxiety, sleep quality and binge eating in the general sample and in young adults, as well as an inverse relation between age and anxiety in adults who were 45 or older; i.e., in this category, the older a person was, the lower the anxiety score.

Ninety-six percent of participants presented at least moderate anxiety by the STAI-state score. This differs from the literature in its extremely high prevalence. In a systematic review of this theme, the prevalence of anxiety varied between 54% and 71% in these individuals⁽⁶⁾. Such finding is explained by the fact that the initial clinical trial enrolled overweight or obese individuals who considered themselves to be anxious. This relation between anxiety disorders and weight gain is believed to be due to hypothalamic-pituitary-adrenal axis dysfunctions which contribute to unbalanced appetite and subsequent weight gain in stressed individuals. These symptoms may not only increase appetite, but also stimulate the desire for high-sugar and high-fat foods⁽⁹⁾.

Eighty-three percent of this study's subjects presented poor sleep quality according to their PSQI global score. This is in accordance with epidemiological evidence indicating that amount and quality of sleep are associated to obesity^(11,18-19). Many potential mechanisms have been proposed for the sleep-obesity relation: sleep deprivation leads to a reduction in leptin and thyroid-stimulating hormone (TSH) secretion, leading to increased ghrelin levels and a reduction in glucose tolerance in human beings, including an increase in hunger and appetite; short sleep duration has been associated to fatigue and reduced physical activity, leading to a reduced source for calorie spending; sleep deprivation provides more eating opportunities and may affect food quality judgments⁽¹⁸⁻²⁰⁾.

A British study which aimed at examining the association between sleep disorders, quality of life, anxiety and depression found out that these variables were highly prevalent among severely obese individuals and more than two thirds of them reported poor sleep quality⁽¹⁹⁾. They also reported that sleep quality and daytime sleepiness were significantly associated to mood disorder (depression and anxiety) and compromised quality of life⁽¹⁹⁾, inferring a triad among obesity, anxiety and sleep disorder, similarly to what the present work demonstrates for its youngest population.

A study conducted in Australia evaluated 19,648 young adults and associated the mean self-reported sleep duration to psychic suffering, including anxiety. Its findings show that the risk increased 14% for every one less hour of sleep, considering the recommended eight hours. Individuals who slept six hours per night were twice as likely to experience psychic suffering than those who slept for eight hours. Every one less hour of sleep led to a 5% increase in the chance that people continued to suffer with the psychological problem for more than a year. No relation was found for people who slept up to nine hours a night⁽²¹⁾.

In the present study, there was no difference between sexes regarding scores; however, 80.8% of the study sample

was female. The highest rates of moderate anxiety and poor sleep quality were observed to be those of the middle-aged group, whose age coincided with the feminine climacteric period, even though these scores did not seem to correlate with age.

An analytical and cross-sectional Brazilian study sought to estimate the prevalence of reduced sleep quality and associated factors in 819 climacteric women, most of whom were between 46 and 65 years old. This study related the intense symptoms of the climacteric period with compromised sleep quality. Likewise, variables such as anxiety and moderate to severe depression were also associated with poor sleep quality in this population⁽²²⁾.

The prevalence of BED among individuals participating in weight loss programs was reported in the literature as varying between 16% and 51.6%^(12-13,23-24), which was lower than the prevalence found in the present study, since 60% of individuals suffered with binge eating according to the BES. The high variation of these estimates in the literature is partially explained by the heterogeneity of the studied populations, the generally small sample, and use of different methods for detecting compulsions. An Italian study which aimed at estimating the prevalence of compulsive behavior in nearly 7,000 obese individuals showed a 17% rate, with a higher percentage in women as compared to men, reducing as age increased and increasing with BMI⁽²⁴⁾.

Among factors contributing to compulsive behavior, stress is highlighted, since it activates the hypothalamic-pituitary-adrenal axis. This activation leads to an increase of cortisol in plasma, which elevates the energetic metabolism, stimulating food consumption. The anxiety condition caused by stress usually leads individuals to seek food for comfort, trying to meet the energy needs of the chronic stress response network⁽²⁵⁾.

Deficits in emotion regulation processes are a broadly used, common explanation for the development and maintenance of BED. Patients suffering from BED supposedly have difficulties in managing their negative emotions and use binge eating to cope with such feelings and finding relief. A systematic review resulted in 18 experimental studies which examined the effect that triggers negative emotions in binge eating or their effects in subsequent relief, finding evidence that negative emotion functions as a trigger of binge eating in the group with BED, as opposed to the obese group without BED⁽²⁶⁾.

A study involving obese patients with BED evaluated their rest-activity circadian rhythm (RAR), sleep quality, showing actigraphic evidence of cycle disturbance and of sleep behavior disorder in these patients when compared to a control group without BED⁽²⁷⁾. Although sleep disorders could be reasonably attributed to weight excess/obesity and related to reduced daily physical activity, the interruption of RAR was specific to individuals with BED, showing that excess consumption and long-lasting changes in eating behavior in patients with BED may contribute to a reduced circadian amplitude⁽²⁷⁾.

Corroborating these results, a Canadian study compared insomnia symptoms in individuals with BED and

in those with no record of eating disorders. The results of this study provide evidence of sleeping difficulties in the presence of BED. Also, anxiety and depressive symptoms mediated the relation between the insomnia symptoms and binge eating, showing the importance of mood, anxiety and sleeping difficulties for the comprehension and treatment of binge eating⁽¹³⁾.

The participants age range was broad in the present study and one found a significant inverse correlation between older age (45 or older) and anxiety. A cross-sectional study conducted with 148 students, aged 19 to 54, from a major Canadian university had the objective of investigating the impact of contextual determinants perceived by students in their self-reported mental health and how these impacts varied with depression, anxiety and stress. Participant age was found to be a significant predictor of moderate and severe anxiety score in the final model. A significant association between younger age (25 or less) and anxiety was also found, which was inferred to be an indication of the uncertainty that younger students feel regarding their studies and their future in comparison with older adults, who may be enrolled for continuing education after being established in a career⁽²⁸⁾.

An epidemiological psychiatric cohort study conducted with the general population of Holland (n =4,528)⁽²⁹⁾ evaluated the prevalence, characteristics and the three-year course of subthreshold anxiety disorder in adults and compared them to those of a group without anxiety and a group with anxiety disorder. Young adults were found to have rates of 32.4% for subthreshold anxiety and 37.9% for anxiety disorder. For middle-aged adults, these were 25.1% e 19.6%, respectively, corroborating the present study.

This study's results show the high prevalence of symptoms associated to obesity and the importance of valuing these issues to support nursing clinical practice in providing care to overweight adults according to their age group. They also open new areas of investigation which may be incorporated into the approach for obesity treatment and prevention. Considering that this disease has multifactorial causes, the conduction of multi- and interdisciplinary work is essential; and the nurse, as part of this team, must grasp strategies which contribute with preventive and non-pharmacological treatment of excess weight, valuing integrative and/or complementary health practices while encouraging lifestyle changes.

RESUMO

Objetivo: Analisar a relação da ansiedade com a compulsão alimentar e a qualidade do sono em adultos com sobrepeso ou obesidade. **Método:** Estudo transversal, realizado entre maio de 2015 e janeiro de 2017, com amostra intencional composta por indivíduos de ambos os sexos, alfabetizados, com idade entre 20 e 59 anos, que apresentavam índice de massa corporal maior ou igual a 25 kg/m². Utilizaram-se o Inventário de Ansiedade Traço-Estado, Escala de Compulsão Alimentar Periódica e Questionário de Padrão do Sono de Pittsburgh. Adotaram-se o coeficiente de correlação de Pearson ou Spearman na análise dos dados, de acordo com a distribuição destes. **Resultados:** A amostra foi constituída por 130 indivíduos. A amostra geral e os adultos jovens apresentaram correlação positiva entre os escores de ansiedade e os de compulsão alimentar (p=0,0011) e qualidade do sono (p=0,0081). Adultos com 45 anos ou mais apresentaram relação inversa da idade com a ansiedade (p=0,0003). **Conclusão:** A amostra geral e adultos jovens que apresentaram maior estado de ansiedade tinham maiores índices de compulsão alimentar e pior qualidade do sono. Contrariamente, nos adultos de meia-idade, quanto maior a idade, menor o escore de ansiedade. Registro Brasileiro de Ensaios Clínicos: nº RBR-47kfxh

DESCRIPTORIOS

Ansiedade; Obesidade; Sobrepeso; Transtorno da Compulsão Alimentar; Insônia; Cuidados de Enfermagem.

In addition to these strategies, an integrative review about obesity interventions by nurses in Primary Health Care shows that interventions based on motivational techniques through the internet directed at teenagers, associated with conventional counselling performed by nurses, may lead to better indicators of weight loss than isolatedly. Phone calls have also led to a high overall satisfaction in adult individuals, showing the importance of communication directed at each age group and emphasizing that actions should be directed at individuals, families, and communities⁽³⁰⁾.

This study's limitations are related to type of study, considering the fact that variables were collected in a single moment, making it difficult to establish a temporal relation between the events and to consider whether the relation between them was causal or not. Other limitations included the age group range and the predominance of women in the sample, which does not imply that findings in other populations should be ruled out. Considering the objectives established by the Sustainable Development Goals, one suggests that other studies be developed with male and female individuals in different age groups, including intervention proposals, so that more efforts are combined for controlling the epidemic of excess weight, leading to a subsequent decrease in premature mortality due to NCCD.

CONCLUSION

In this study, the prevalence of minimally moderate levels of state anxiety in overweight or obese adults was 96%. Comparing anxiety with sleep patterns and binge eating, a positive correlation was found among the overall sample and in young adults, as well as an inverse relation between age and anxiety in adults who were 45 or older; i.e., the higher the age for this category, the lower the anxiety score. No differences were found between sexes regarding scale scores; however, 80.8% of the study sample was female and the highest rates of moderate anxiety and poor sleep quality were observed in middle-aged groups, whose age coincides with the climacteric period.

Thus, analysis of variables related to excess weight or obesity provides nurses with a foundation for elaborating and planning extended approaches for treating obesity, aiming at preventing this clinical condition which represents a major risk factor for non-communicable chronic diseases.

RESUMEN

Objetivo: Analizar la relación entre la ansiedad y la compulsión por comer y la calidad del sueño en adultos con sobrepeso u obesidad. **Método:** Estudio transversal, realizado entre mayo de 2015 y enero de 2017, con una muestra intencional compuesta por individuos de ambos sexos, alfabetizados, de edades comprendidas entre 20 y 59 años, con un índice de masa corporal mayor o igual a 25 kg/m². Se utilizaron el Cuestionario de Ansiedad Estado Rasgo, la Escala de Atracción y el Índice de Calidad de Sueño de Pittsburgh. En el análisis de los datos se adoptó el coeficiente de correlación de Pearson o Spearman, según su distribución. **Resultados:** La muestra constaba de 130 individuos. La muestra general y los adultos jóvenes presentaron una correlación positiva entre las puntuaciones en ansiedad y compulsión por la comida ($p=0,0011$) y de la calidad del sueño ($p=0,0081$). En los adultos de 45 años o más se verificó una relación inversa entre la edad y la ansiedad ($p=0,0003$). **Conclusión:** La muestra general y los adultos jóvenes con mayor estado de ansiedad tenían mayores puntuaciones en compulsión por la comida y peor calidad del sueño. Por el contrario, en los adultos de mediana edad, cuanto mayor era la edad, menor era la puntuación en ansiedad. Registro Brasileño de Ensayos Clínicos: n° RBR-47kfxh

DESCRIPTORES

Ansiedad; Obesidad; Sobrepeso; Trastorno por Atracción; Insomnio; Atención de Enfermería.

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