

Overweight and Obesity Conditions: Prevalence and Associated Risk Factors in Nursing Students in a Public University in Medellín, Colombia

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Objective. This work sought to identify the prevalence of overweight and obesity conditions and the associated factors in nursing students in a public university in Medellín, Colombia. **Methodology.** This was a descriptive cross-sectional study conducted in 2015. The study selected 171 participants through stratified random sampling. A structured questionnaire was applied and weight and height were taken to calculate the body mass index (BMI). **Results.** The prevalence of overweight condition

was 25.1% and obesity at 7.6%. Statistically significant association exists with family background of overweight or obesity conditions (OR = 6.65) and the perception of unhealthy feeding (OR = 3.01). No association was found with cases suggesting anxiety and depression and physical activity. **Conclusion.** A high prevalence was found of overweight and obesity conditions in the population studied, which is why it is recommended to develop self-care programs in university populations, principally in Nursing, given that as future professionals they will be co-responsible for health promotion in individuals and collectives.

Descriptors: cross-sectional studies; obesity; overweight; risk factors; students, nursing.

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Sobrepeso y obesidad: prevalencia y factores de riesgo asociados en estudiantes de Enfermería en una universidad pública de Medellín, Colombia

Objetivo. Identificar prevalencia de sobrepeso y de obesidad y los factores asociados en estudiantes de Enfermería en una universidad pública de Medellín, Colombia. **Metodología.** Estudio descriptivo transversal realizado en 2015. Se seleccionaron 171 participantes por muestreo aleatorio estratificado. Se aplicó un cuestionario estructurado y se tomó peso y talla para calcular Índice de Masa Corporal (IMC). **Resultados.** La prevalencia de sobrepeso fue de 25.1% y de obesidad 7.6%. Existe asociación estadísticamente significativa con antecedentes familiares de sobrepeso u obesidad (OR=6.65) y la percepción de alimentación no saludable (OR=3.01). No se encontró asociación con casos sugestivos de ansiedad y depresión y actividad física. **Conclusión.** Se encuentra una alta prevalencia de sobrepeso y obesidad en la población estudiada por lo que se recomienda desarrollar programas de autocuidado en población universitaria, principalmente en Enfermería, pues como futuros profesionales serán corresponsables de la promoción de la salud en individuos y colectivos.

Descriptor: estudios transversales; obesidad; sobrepeso; factores de riesgo; estudiantes de enfermería.

Introduction

The World Health Organization (WHO) defines overweight and obesity as the abnormal or excessive accumulation of fat that can be harmful to health, and has classified this problem as an epidemic in expansion, given that since 1980 to 2016 obesity has duplicated in the world. (1) In 2014, 39% of adult individuals were overweight and 13% were obese, which has negative repercussions to health because of the direct association between the degree of obesity, comorbidity, and mortality related to this cause. (1) In fact, excess weight is a global public health problem due to its effects on the health of people and their families. (2) According to the results from the Food and Nutrition Security Profile - SAN 2015 from Medellín, (3) 51.5% of the population from 18 to 59 years of age has excess weight

Sobrepeso e obesidade: prevalência e fatores de risco associados em estudantes de Enfermagem numa universidade pública de Medellín, Colômbia

Objetivo. Identificar prevalência de sobrepeso e de obesidade e os fatores associados em estudantes de Enfermagem numa universidade pública de Medellín, Colômbia. **Metodologia.** Estudo descritivo transversal realizado em 2015. Se selecionaram 171 participantes por amostragem aleatória estratificado. Se aplicou um questionário estruturado e se tomou peso e tamanho para calcular Índice de Massa Corporal (IMC). **Resultados.** A prevalência de sobrepeso foi de 25.1% e de obesidade 7.6%. Existe associação estatisticamente significativa com antecedentes familiares de sobrepeso ou obesidade (OR=6.65) e a percepção de alimentação não saudável (OR=3.01). Não se encontrou associação com casos sugestivos de ansiedade e depressão e atividade física. **Conclusão.** Se encontra uma alta prevalência de sobrepeso e obesidade na população estudada pelo qual se recomenda desenvolver programas de autocuidado na população universitária, principalmente em Enfermagem, pois como futuros profissionais serão corresponsáveis da promoção da saúde nos indivíduos e coletivos.

Descriptor: estudos transversais; obesidade; sobrepeso; fatores de risco; estudantes de enfermagem.

(32.9% overweight and 18.6% obesity), with the proportion of overweight condition being higher in women than in men (33% versus 11.6%) and in the group 45 years of age and older.

It is also important to bear in mind that the transition from high school to the university implies significant lifestyle changes related to increased academic pressures, changes in relationships with peers, relatives, and friends, and the opportunity to participate in risk behaviors, like abusive consumption of alcohol and drugs. (4) Added to the aforementioned are elements, like changes in the quality of sleep and rest and of feeding routines. (5) A study conducted on nutritional state in adolescents and youth from northeast Mexico, (6) found 31.2% prevalence of overweight condition in university students. In Medellín, a research carried out with nursing students from a private

university⁽⁷⁾ found that 11.14% had excess weight (9% overweight and 1.4% obesity), besides 52% did not do exercise and 17% smoked.

The aim of this study was to identify the prevalence of overweight or obesity conditions and their associated factors in nursing students from a public university in Medellín, which will permit an approach to the reality of the problem in this population and will provide the bases to implement prevention and intervention strategies in the future professionals.

Methods

A descriptive cross-sectional study was conducted in a population of 468 undergraduate nursing students from a public university in Medellín, Colombia. The sample size calculated was 171 subjects, for an expected prevalence of overweight and obesity conditions of 29.6%, obtained through a pilot test performed on 27 volunteer nursing students from different semesters in the university where the study took place, with 5.5% maximum error and 95% CI in the estimations. The sampling method was stratified random for each of the academic semesters proportionate to the number of students during the semester. With the list of students, using the Epidat 4.0 program, the number of students required per semester was randomly selected. In turn, the selection of randomized individuals was increased by 10% to conform a replacement list, for the students selected by the software who did not comply with the inclusion criteria to be changed for one from the list, which permitted complying with the sample. The study selected undergraduate adult nursing students, registered in the second academic period of 2015. Exclusion criteria involved women in the gestation process, as well as those, in spite of being selected in the sample, who due to illness or serious incidents did not attend the university during the period of data collection. At the end of class, the students selected in the randomization were approached. After their signing the informed consent, a structured self-filled questionnaire was applied, adapted from an instrument designed and applied in Mexico in a similar study⁽⁸⁾ and

using prior authorization from the authors, with the commitment to compare results in a later stage. This questionnaire inquires on variables related to data: a) sociodemographic; b) physical activity (moderate intensity aerobic physical activity during at least 30 min in five days per week or of vigorous intensity aerobic physical activity during a minimum of 20 min three days per week),⁽⁹⁾ c) Goldberg scale⁽¹⁰⁾ to identify presumptive symptoms of anxiety and depression.

A nutritionist, researcher from Universidad Autónoma San Luis Potosí in Mexico, standardized the group of researchers in collecting weight and height. A scale and a portable stadiometer (SECA) were used to take measurements. To estimate prevalence of overweight and obesity conditions, the body mass index [weight in kilograms/height in meters²] was calculated and classified according to the parameters proposed by the WHO.⁽¹⁾ Data processing was performed with the SPSS 23 statistical software. Likewise, measures of central tendency and frequencies were calculated; prevalence of overweight and obesity conditions were estimated in the variables inquired on by the questionnaire; and chi-squared and Fisher's exact tests were run (according to the case) to detect statistically significant differences. A logistic regression model was applied for the dependent variable of excess weight (sum of the figures of overweight and obesity conditions), which included the independent variables in their totality in an initial model that later was debugged with successive models where each step eliminated one by one the variables that in the estimation of their coefficients yielded a value of $p \leq 0.10$, seeking a final model that identified the explanatory variables from the variable of excess weight.

The research followed the pertinent principles and ethical norms and was approved by the Research Ethics Committee from the Faculty of Nursing at the university where the study was conducted.

Results

Table 1 illustrates that the general characteristics prevailing in the study sample were: age between

20 and 24 years (56.1%, mean 22 ± 3 , minimum = 18, and maximum = 33); three of every four are women and most are single (93%) and without children (93.6%); four of every five belong to socioeconomic levels two or three. Three percent are identified as indigenous or Afro-descendent and the rest are mestizo. With respect to family background, the most frequent aspects were: high blood pressure (71.3%), hyperlipidemia (63.7%), and excess weight (56.7%). The most reported health conducts included healthy nutrition (42.7%) and physical activity (32.7%), while unhealthy conducts included alcohol consumption (31%) and continue eating even when satisfied (30.4%). Since entering the Faculty, 14.4% of the participants increased their physical activity, while 70.1% diminished it. According to the Goldberg scale, 69.6% of the participants has probable anxiety and 70.2% has probable depression.

Also, regarding the nutritional state, 32.7% of those surveyed has excess weight (25.1% overweight and 7.6% obese), 62.6% has normal weight, and 4.7% is underweight. The overweight and obesity conditions vary according to the year coursed, but no clear trend was observed as students advanced in their academic formation, although the overweight prevalence is higher in students coursing the last year (34.2%), surpassing the general prevalence estimated. If we add to this the prevalence of obesity for the same group (7.9%), we have that four of every

10 students upon ending the undergraduate have excess weight. However, no statistically significant association was found between the academic year coursed by the student and the overweight condition or obesity.

Upon inquiring about the family background for chronic diseases, a statistical association was found between family background of excess weight for overweight condition and for obesity. Moving on to the students' health conducts, an association was only observed between obesity and not having healthy nutrition. The prevalence of obesity is higher for students with probable depression than for those with probable anxiety, while for the overweight condition it is higher only with probable anxiety, although said differences are not statistically significant.

Table 2 shows the parameters of the logistic regression model for the dependent variable of excess weight, according the inclusion criteria for the independent variables. The final model shows that, for a significance of 0.1, the explanatory variables of this condition in the population of students are: family background of excess weight (OR = 6.65), unhealthy feeding (OR = 3.01), and alcohol consumption (OR = 6.65). This model manages to correctly predict 73% of the cases, which permits stating that a Nursing student from the population studied who has these three risk factors has 0.73 probability of having excess weight.

Table 1. General characteristics, prevalence of overweight and obesity conditions according to risk factors of 171 nursing students from a public university in Medellín

| Variables | Total | | Overweight | | | Obesity | | |
|--------------------------------------|----------|------|------------|------|----------|----------|-------|----------|
| | <i>n</i> | % | <i>n</i> | % | <i>p</i> | <i>n</i> | % | <i>p</i> |
| Gender | | | | | | | | |
| Masculine | 44 | 25.7 | 11 | 25.0 | 0.979 | 3 | 6.80 | 0.999* |
| Feminine | 127 | 74.3 | 32 | 25.2 | | 10 | 7.90 | |
| Age Group | | | | | | | | |
| 18-19 | 46 | 26.9 | 11 | 23.9 | 0.406 | 2 | 4.30 | 0.526 |
| 20-24 | 96 | 56.1 | 22 | 22.9 | | 8 | 8.30 | |
| 25-29 | 23 | 13.5 | 9 | 39.1 | | 3 | 13.00 | |
| 30 or more | 6 | 3.5 | 1 | 16.7 | | 0 | 0.00 | |
| Marital status | | | | | | | | |
| Single | 159 | 93.0 | 39 | 24.5 | 0.391 | 12 | 7.50 | 0.884 |
| Married | 10 | 5.8 | 4 | 40.0 | | 1 | 10.00 | |
| Divorced | 2 | 1.2 | 0 | 0.0 | | 0 | 0.00 | |
| Number of children | | | | | | | | |
| 0 | 160 | 93.6 | 41 | 25.6 | 0.587 | 12 | 7.50 | 0.708 |
| 1 | 7 | 4.1 | 2 | 28.6 | | 1 | 14.30 | |
| 2 | 3 | 1.8 | 0 | 0.0 | | 0 | 0.00 | |
| Socioeconomic level | | | | | | | | |
| 1 | 10 | 5.8 | 3 | 30.0 | 0.777 | 1 | 10.00 | 0.709 |
| 2 | 53 | 31.0 | 12 | 22.6 | | 3 | 5.70 | |
| 3 | 82 | 48.0 | 22 | 26.8 | | 7 | 8.50 | |
| 4 | 16 | 9.4 | 4 | 25.0 | | 1 | 6.30 | |
| 5 | 4 | 2.3 | 0 | 0.0 | | 1 | 25.00 | |
| Year coursed | | | | | | | | |
| 1 st | 43 | 25.1 | 10 | 23.3 | 0.188 | 3 | 7.00 | 0.585 |
| 2 nd | 42 | 24.6 | 6 | 14.3 | | 5 | 11.90 | |
| 3 rd | 48 | 28.1 | 14 | 29.2 | | 2 | 4.20 | |
| 4 th | 38 | 22.2 | 13 | 34.2 | | 3 | 7.90 | |
| Physical activity | | | | | | | | |
| Yes | 56 | 32.7 | 16 | 28.6 | 0.511 | 4 | 7.10 | 0.999* |
| No | 113 | 66.1 | 27 | 23.9 | | 8 | 7.10 | |
| Healthy nutrition | | | | | | | | |
| Yes | 73 | 42.7 | 14 | 19.2 | 0.121 | 0 | 0.00 | 0.001* |
| No | 98 | 57.3 | 29 | 29.6 | | 13 | 13.30 | |
| Continues eating even when satisfied | | | | | | | | |
| Yes | 52 | 30.4 | 7 | 13.5 | 0.141 | 17 | 32.70 | 0.068* |
| No | 118 | 69.0 | 6 | 5.1 | | 26 | 22.00 | |
| Probable anxiety | | | | | | | | |
| Yes | 119 | 69.6 | 31 | 26.1 | 0.68 | 11 | 9.20 | 0.348* |
| No | 52 | 30.4 | 12 | 23.1 | | 2 | 3.80 | |
| Probable depression | | | | | | | | |
| Yes | 120 | 70.2 | 28 | 23.3 | 0.402 | 12 | 10.00 | 0.111* |
| No | 51 | 29.8 | 15 | 29.4 | | 1 | 2.00 | |
| Current smoker | | | | | | | | |
| Yes | 10 | 5.8 | 3 | 30.0 | 0.715 | 2 | 20.00 | 0.171* |
| No | 160 | 93.6 | 40 | 25.0 | | 11 | 6.90 | |
| Alcohol consumption | | | | | | | | |
| Yes | 53 | 31.0 | 17 | 32.1 | 0.162 | 7 | 13.20 | 0.114* |
| No | 118 | 69.0 | 26 | 22.0 | | 6 | 5.10 | |
| FB [†] High blood pressure | | | | | | | | |
| Yes | 122 | 71.3 | 31 | 25.4 | 0.788 | 11 | 9.00 | 0.692* |
| No | 25 | 14.6 | 7 | 28.0 | | 1 | 4.00 | |
| FB Diabetes Mellitus | | | | | | | | |
| Yes | 54 | 31.6 | 12 | 22.2 | 0.375 | 4 | 7.40 | 0.999* |
| No | 79 | 46.2 | 23 | 29.1 | | 6 | 7.60 | |
| FB Hyperlipidemia | | | | | | | | |
| Yes | 109 | 63.7 | 32 | 29.4 | 0.403 | 11 | 10.10 | 0.459* |
| No | 28 | 16.4 | 6 | 21.4 | | 1 | 3.60 | |
| FB Excess weight | | | | | | | | |
| Yes | 97 | 56.7 | 33 | 34.0 | 0.005 | 11 | 11.30 | 0.018* |
| No | 44 | 25.7 | 5 | 11.4 | | 0 | 0.00 | |

(*): Probability value when applying Fisher's exact test; (†) FB: family background

Table 2. Parameters estimated in the logistic regression for the variable of excess weight in nursing students from a public university in Medellín, Colombia

| Variables | B | Standard error | Wald | GL | P | OR | CI _{95%} OR |
|------------------------------------|-------|----------------|-------|----|--------|------|----------------------|
| Family background of excess weight | 1.89 | 0.53 | 12.59 | 1 | <0.001 | 6.65 | 2.33-18.96 |
| Unhealthy feeding | 1.10 | 0.41 | 7.24 | 1 | 0.007 | 3.01 | 1.34-6.73 |
| Alcohol consumption | 0.74 | 0.40 | 3.36 | 1 | 0.067 | 2.10 | 0.95-4.64 |
| Constant | -3.01 | 0.61 | 24.50 | 1 | <0.001 | 0.04 | - |

Discussion

This research with Nursing students from a public university from the city of Medellín found that excess weight was at 32.7% (25.1% overweight and 7.6% obesity), data much higher than that reported by the study conducted with students from a private university in the same city where 9% was overweight and 1.4% were obese;⁽⁷⁾ and somewhat lower than those reported in Nursing students from Universidad Autónoma de San Luis Potosí in Mexico,⁽⁸⁾ 35.29% (25.49% overweight and 9.8% obese). By gender, the proportion is similar for overweight condition and higher for obesity in women; similar to the information found in the Mexico study already cited. It is of general knowledge that excess weight in nurses influences upon the care they offer.⁽¹¹⁾

Upon analyzing the year of study and the prevalence of overweight or obesity conditions, a higher proportion was observed of overweight condition during the last year, however, there is no clear upward trend, which contrasts with a study carried out with Chilean students who report increased BMI per year of study.⁽¹²⁾ Regarding family background for overweight and obesity conditions, it was found that 34% of the students with overweight condition and 11.3% with obesity had family background with these conditions, higher prevalence than students who did not have overweight or obesity conditions. These results are similar to those found in a study with Mexican university students.⁽¹³⁾

With respect to cigarette smoking, a 5.8% proportion was found in the students surveyed. Compared to a research conducted with students

from a public university in Mexico, this proportion resulted lower to what they reported, where smoking was at 20%, 13 and also lower than that reported in Nursing students in Medellín at 17%.7 Besides, it was evidenced that 30% of the students who smoked were overweight and another 20% were obese, higher proportions in relation to those who did not smoke. Kim *et al.*,⁽¹⁴⁾ reported that direct association exists between smoking and obesity, which is why current smokers are at higher risk than non-smokers. Furthermore, it is known that individuals who are overweight and smoke increase the risk of developing some non-communicable chronic diseases, among them cardiovascular diseases.⁽¹⁵⁾ With respect to alcohol consumption, the study shows its association to excess weight, as it has also been shown by the systematic review by Sayon *et al.*,⁽¹⁶⁾ on this theme.

According to this study, another prediction factor for overweight and obesity conditions is physical activity. The percentage of students with overweight and obesity conditions who do not engage in physical activity is much higher compared to the percentage of those who do practice it. Furthermore, it is of concern that two of every three participants in the study do not practice recommended physical activity, a figure over 52% of the students from a private university in Medellín do not perform exercise.⁽⁷⁾ In addition, it was found that seven of every ten students from this research report having diminished their physical activity upon entering the university, data above 56% of the students from the health area in San Luis Potosí in Mexico.⁽⁸⁾ Sarma *et al.*,⁽¹⁷⁾ in the data analysis of research in this regard, reached the conclusion that after controlling some socioeconomic factors, physical activity was related to reduced BMI. Also,

healthy nutrition is a protection factor to keep from developing overweight and obesity conditions. According to this research work, 57.3% of the participants did not follow a healthy nutrition, a value equal to that reported in a study conducted with Chilean university students.⁽¹⁸⁾ These data are alarming when considering that the study group are young adults who are being trained in Nursing. According to Reed,⁽¹¹⁾ healthy feeding helps nurses diminish stress on their health.

Another finding worth highlighting is that related to anxiety and depression, which shows that 69.6% of the students surveyed have cases suggesting anxiety, and 70% show cases suggesting depression, according to the Goldberg scale. These percentages are higher than those found in Mexican students⁽¹⁹⁾ with symptoms of depression at 20.4% and anxiety at 2.76%; likewise, 28.9% have presumptive symptoms of anxiety and 30.6% have presumptive symptoms of depression. In addition, the same study from Mexico City⁽¹⁹⁾ proposes that personal characteristics, like impulsiveness, low self-esteem, anxiety, and depression were found in nearly half the students with obesity and overweight conditions.

In conclusion, there is a high prevalence of excess weight in the population of Nursing students from a public university in Medellín and it is noted that the proportions of healthy habits are not the best, which could – over time – propitiate the development of non-communicable chronic diseases, a situation that poses a challenge for the institutions in charge of the formation of future professionals. It is recommended for higher education institutions to carry out integral interventions aimed at self-care and the social responsibility of their students for them, as future educators in health, to contribute to diminishing this phenomenon. Finally, as stated by Rodríguez *et al.*,⁽²⁰⁾ Nursing students today are being trained as caregivers of individuals and collectives for which, besides knowledge, they need to acquire and promote lifestyles that generate their own health conducts to care for others.

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