

## Overweight in young adult students: the vulnerability of a distorted self-perception of body image

*Excesso ponderal em adultos jovens escolares: a vulnerabilidade da autopercepção corporal distorcida*  
*Exceso ponderal en adultos jóvenes estudiantes: la vulnerabilidad de la autopercepción corporal distorsionada*

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### ABSTRACT

**Objective:** To analyze overweight in young adult students from the individual dimension of vulnerability, especially its interpersonal and subjective markers. **Method:** An analytical quantitative study was performed with 560 young adults from 26 schools in a capital city in Northeastern Brazil. After obtaining data to administer specific questionnaires, logistic regression was used to identify markers of individual vulnerability. **Results:** In the bivariate analysis, overweight showed a statistically significant association with self-perception of health, satisfaction with body image and self-perception of overweight, the latter remaining in the final regression model. **Conclusion:** It can be mainly concluded that self-perception of overweight is distorted when compared to one's actual body weight and, for this reason, young adults are vulnerable to dysfunctional health states. However, it was confirmed that this health condition must be understood in an individual and contextual perspective.

**Key words:** Overweight; Obesity; Health Vulnerability; Body Image; Young Adult.

### RESUMO

**Objetivo:** analisar o excesso ponderal em adultos jovens escolares a partir da dimensão individual da vulnerabilidade, especificamente de seus marcadores interpessoais e subjetivos. **Método:** delineou-se um estudo analítico, quantitativo, realizado com 560 adultos jovens de 26 escolas de uma capital do nordeste brasileiro. Após obtenção dos dados pela aplicação de questionários específicos, utilizou-se a regressão logística para identificação dos marcadores de vulnerabilidade individual. **Resultados:** na análise bivariada, o excesso ponderal apresentou associação estatística significativa com autopercepção de saúde, satisfação corporal e autopercepção de excesso ponderal, esta permanecendo no modelo final da regressão. **Conclusão:** conclui-se, sobremaneira, que a autopercepção de excesso ponderal sofre distorções em relação à real situação corporal e por isso torna o adulto jovem vulnerável a estados disfuncionais de saúde. No entanto, ratifica-se que o agravo deve ser compreendido numa perspectiva individual e contextual.

**Descritores:** Sobrepeso; Obesidade; Vulnerabilidade em Saúde; Imagem Corporal; Adulto Jovem.

### RESUMEN

**Objetivo:** analizar el exceso ponderal en adultos jóvenes estudiantes a partir de la dimensión individual de vulnerabilidad, especificamente de sus marcadores interpersonales y subjetivos. **Método:** se delineó estudio analítico, cuantitativo, realizado con 560 adultos jóvenes de 26 escuelas de una capital del noreste brasileño. Obtenidos los datos por aplicación de cuestionarios específicos, se utilizó regresión logística para identificar los marcadores de vulnerabilidad individual. **Resultados:** en el análisis

bivariado, el exceso ponderal presentó asociación estadística significativa con autopercepción de salud, satisfacción corporal y autopercepción de exceso ponderal, ésta última se mantuvo en el modelo final de regresión. **Conclusión:** Se concluye sobremanera que la autopercepción del exceso ponderal sufre distorsiones respecto de la real situación corporal, convirtiendo al adulto joven en vulnerable a estados disfuncionales de salud. También se ratifica que la condición debe comprenderse en perspectiva individual y contextual.

**Palabras clave:** Sobrepeso; Obesidad; Vulnerabilidad en Salud; Imagen Corporal; Adulto Joven.

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## INTRODUCTION

Overweight (OW) has become increasingly widespread among young adults at different ages throughout the industrialized world<sup>(1)</sup>. There is evidence of an increase in the prevalence of OW in adolescents and adults in general. Additionally, in the few studies performed with young adults, the frequency of cases of overweight was found to already affect a third of them<sup>(2-4)</sup>, a percentage that varies according to regional aspects. These differences show cultural particularities and the several determinants and conditioning factors involved in this intriguing problem that needs to be approached from different perspectives.

Despite the innumerable studies that have approached this theme, we observed that they deal with aspects mainly associated with individuals in a behavioral way and especially in the adult population<sup>(5-7)</sup>. In recent years, studies have indicated that OW is associated with three main dimensions: 1) socioeconomic and demographic, 2) nutritional, and 3) interpersonal and subjective<sup>(5,8-14)</sup>. The latter dimension has been rarely approached and requires a more in-depth discussion, as it influences decision-making in health.

In this regard, the interpersonal perspective has approached the social and support networks and relationships in general as potential factors that trigger obesogenic behavior<sup>(14)</sup>. In contrast, the subjective perspective considers self-perception of health and satisfaction with body image to be associated with the existing standard of beauty and construction of the perfect body image by young adults, surrounded by the influence of modern society, which coexists with innumerable debates about the beauty industry. Current disorders related to body image such as anorexia, vigorexia and obesity seem to be more and more present and they are a concern among health professionals and the scientific community<sup>(15)</sup>.

Satisfaction with body image is associated with the construction of such image. This construct is complex, as it is multidimensional, and its formation and development are influenced by several factors, such as cultural, social, neurological and psychological ones<sup>(15)</sup>. Body perception determines how an individual behaves when caring for their own body; social pressure to have a slim body according to the existing standards of beauty is responsible for the onset of dissatisfaction with one's body weight and size, especially among younger individuals. Thus, it makes sense that to support them to develop the decision-making process associated with their way of life, followed by a team of professionals from several areas.

The professional approach must occur in different spaces and in distinct ways, so that aspects associated with the subjective dimension can be explored and thus prevent distortions in one's body image or self-perception of health. In the sphere of primary health care, such approach is made possible by the existence of the *Programa Saúde na Escola* (PSE – School Health Program), which places health professionals in the school environment, aiming to perform interventions for health promotion and the identification of health problems at an early stage.

In this program, the performance of a multi-professional team stands out, where nurses are members qualified to identify problems, plan and implement the required health care, so that there are effective interventions in the school environment with a focus on OW and its interpersonal and subjective aspects. As a result, nursing care aimed at school communities must also be regulated in the nursing consultation, which should consider the need to discuss relevant OW aspects, in addition to proposing interventions related to clinical care.

In this sense, nurses can be facilitators in the search for young adults' health, as their qualification is closely associated with health education with regard to several issues, whether they are cultural, social, subjective or related to lifestyle.

## OBJECTIVE

In view of what has been described, the present study aimed to analyze overweight in young adult students according to markers of individual vulnerability, particularly those connected to interpersonal and subjective aspects as a way to contribute to nursing actions in this population group.

## METHODS

### Ethical aspects

The present study was approved by the Research Ethics Committee of the Ceará State University, following ethical and legal principles during all its stages, in accordance with the recommendations from Resolution 466/2012<sup>(16)</sup>.

### Study design, place and duration of study

An analytical quantitative study was performed in schools of Ceará State Department of Education, in the city of Fortaleza, CE, Northeastern Brazil. Study participants were young adult students of this city, aged between 20 and 24 years, according to the World Health Organization (WHO) and Brazilian

legal age<sup>(17-18)</sup>, regularly included in educational institutions or those for adolescents and young adults. It should be emphasized that the data on such young adults were obtained between July and October 2014, the period that corresponded to the research data collection.

### Study sample and inclusion and exclusion criteria

Considering the fact that the number of young students was unknown, the study sample was defined according to the calculation for infinite populations. For the purposes of such calculation, a pilot study was performed with 100 young adult students to determine the prevalence of the phenomenon of overweight. After this analysis, the prevalence of the phenomenon obtained was 37%, a value incorporated into the sample calculation, defined by the following equation:  $n = (z^2_{5\%} \times P \times Q) / e^2$ , where: **n** is the sample; **z** is the distribution value at a significance level of 5% (1.96); **P** is the prevalence of the phenomenon (37%); **Q** (63%) is the complementary percentage of P ( $Q = 100 - P$ ); and **e** is the sampling error (4%). Based on the results of this calculation, a total of 560 young adult students comprised the study sample. They came from 26 schools (15% of the total number) located in six regionalization units of the city. Schools were randomly selected, while students were selected by convenience.

The following were excluded from this study: young adults who were enrolled in a course but were not present on the data collection day, pregnant women (as there are other parameters to identify overweight in such cases), and those in wheelchairs, as this prevents anthropometric measurements. Next, the sampling plan was organized in sampling units (SU): 1) regions; 2) schools; and 3) students.

### Study protocol

The school administration/coordination was contacted and the data collection days were set up, based on the institutions' availability. Next, visits were made to all classrooms, the research project was explained and young adults in the pre-defined age group were invited to participate. Upon their acceptance, they were sent to a specific room, where research questionnaires were administered and anthropometric measurements were taken.

Data collection was performed in three stages: 1) selection and sensitization of schools; 2) application of instruments for data collection related to vulnerabilities; and 3) verification of anthropometric measurements.

The first instrument included items related to school identification, socio-demographic/economic, interpersonal and subjective characteristics; and physical examination (with objective weight and height measurements). Anthropometric measurements were taken in a standardized way and recorded in a form. These procedures were performed to calculate the BMI, leading to the outcome variable of this study. Upon collection, the data were immediately used to construct the database in a software program. The analysis of overweight according to the concept of vulnerability included the assessment of its individual dimension<sup>(19)</sup>.

The dependent variable was overweight, observed through the BMI in kg/m<sup>2</sup>, calculated using the Quetelet index. The results were categorized into low weight, normal weight, overweight and obesity level 1, 2 and 3, according to the reference values recommended by the WHO<sup>(20)</sup>, and the last four categories were grouped to comprise the outcome of this study.

### Analysis of results and statistics

The independent variables, corresponding to the individual dimension, were investigated according to the variables related to interpersonal and subjective markers. First, the means and standard deviations of quantitative variables and simple and percentage frequencies of qualitative variables were calculated. Subsequently, bivariate and multivariate analytical statistics was used.

In the bivariate analysis, Pearson's chi-square test was performed for the categorical variables, considering a statistical significance level of 5% in all tests. Odds ratio (OD) was calculated to estimate the strength of association of possible markers of overweight, with a confidence interval of 95%.

In the multivariate analysis, logistic regression was the statistical procedure used to adjust potential confounding effects. A value of  $p < 0.20$ , obtained in the bivariate analysis, was adopted for inclusion in the initial regression model, aiming to verify confounding variables.

The criteria established in this stage of the analysis for the variables to remain in the model was the Wald test showing at least one category with a statistical significance of  $p < 0.05$ . Finally, residual analysis was performed to isolate points where the model had low adherence and points that had an undue influence on the model. Additionally, the data entry model used in all stages of regression was the forced entry.

Data were processed, analyzed and shown in tables to help promote and organize the information proposed in the study objectives. Next, the results were discussed according to the reviewed literature on this theme, aiming to produce evidence.

## RESULTS

The majority of participants were aged between 20 and 22 years (79.3%) and the mean age was 21.2 years (+ 1.4). Regarding sex, there was a homogeneous distribution with a slightly higher proportion of females (53.9%). Moreover, 86.2% of participants reported their ethnic group was not white and 92.5% had a religion, 77.7% did not have a partner and 77.9% did not have a child. In terms of parental level of education, young adults stated that 53.9% of fathers and 62.1% of mothers had up to eight years of education. Regarding occupation and income, 64.1% reported studying and working/being a trainee, and 94.1% and 48.8% had an individual and family income of up to two minimum wages per month, respectively.

Other aspects of young adults were shown in Table 1, more specifically those associated with interpersonal and subjective issues. We observed that these markers reveal questions that should be discussed more thoroughly, as nearly

half of participants did not have anybody to talk to (45.4%) and reported feeling dissatisfied with work/school (44.1%) and slightly more than half had difficulty dealing with stress (51.8%). Although on a smaller scale, yet with a significant percentage, 12.1% felt sad/depressed.

Furthermore, Table 1 shows that 57.9% of young adults participated in a certain type of group, 52% had a positive self-perception of health, 30.7% were aware that they were overweight and 53.2% were satisfied with their body. Additionally, 58.9% of young adults had a normal weight, 26.4% were overweight and 9.4% were obese, being included in the outcome of this study.

In the bivariate analysis of interpersonal and subjective characteristics, there was a statistically significant association with overweight/obesity ( $p < 0.05$ ) in the following groups: self-perception of health, self-perception of overweight and satisfaction with body image. The greatest proportions of

overweight were found in young adults with a negative self-perception of health, those with self-perception of overweight and those who were dissatisfied with their body image. It should be emphasized that 23.3% of participants had a self-perception of overweight, although this nutritional status was not identified after anthropometric measurements were taken. On the other hand, 17.4% were aware of this state, although they were overweight.

Variables needed to have a statistical significance level of  $p < 0.20$  to be included in the stage of logistic regression model. Thus, dissatisfaction with work and participation in groups were also selected for the multivariate analysis (Table 1).

Subsequently, the effect of variables with overweight on interpersonal and subjective characteristics was analyzed and self-perception of overweight remained statistically significant ( $p < 0.05$ ), as shown in Table 2.

**Table 1 –** Uni- and bivariate analysis of interpersonal and subjective characteristics associated with overweight in young adult students, city of Fortaleza, Ceará, Brazil, 2014

| Variables   | Total      | Overweight |            | p            |
|---|------------|------------|------------|--------------|
|   | f (%)      | Yes f (%)  | No f (%)   |              |
| Participation in groups                               |            |            |            |              |
| Yes   | 324 (57.9) | 106 (32.7) | 218 (67.3) | 0.083        |
| No  | 236 (42.1) | 94 (39.8)  | 142 (60.2) |              |
| Someone to talk to                                    |            |            |            | 0.349        |
| Yes   | 306 (54.5) | 104 (34.0) | 202 (66.0) |              |
| No  | 254 (45.4) | 96 (37.8)  | 158 (62.2) |              |
| Capacity to deal with stress <sup>(1)</sup>           |            |            |            | 0.821        |
| Yes   | 266 (47.5) | 96 (36.1)  | 170 (63.9) |              |
| No  | 290 (51.8) | 102 (35.2) | 188 (64.8) |              |
| Sadness/depression <sup>(2)</sup>                     |            |            |            | 0.471        |
| Yes   | 68 (12.1)  | 26 (39.7)  | 41 (60.3)  |              |
| No  | 491 (87.7) | 173 (35.2) | 318 (64.8) |              |
| Satisfaction with work/function <sup>(3)</sup>        |            |            |            | 0.099        |
| Yes   | 304 (54.3) | 100 (32.9) | 204 (67.1) |              |
| No  | 247 (44.1) | 98 (39.7)  | 149 (60.3) |              |
| Self-perception of health <sup>(4)</sup>              |            |            |            | <b>0.032</b> |
| Positive  | 347 (62.0) | 11 (32.0)  | 236 (68.0) |              |
| Negative  | 210 (37.5) | 86 (41.0)  | 124 (59.0) |              |
| Self-perception of overweight ponderal <sup>(5)</sup> |            |            |            | <b>0.001</b> |
| Yes   | 172 (30.7) | 132 (76.7) | 40 (23.3)  |              |
| No  | 386 (68.9) | 67 (17.4)  | 319 (82.6) |              |
| Satisfaction with body image <sup>(6)</sup>           |            |            |            | <b>0.001</b> |
| Yes   | 298 (53.2) | 71 (23.8)  | 227 (76.2) |              |
| No  | 258 (46.1) | 128 (49.6) | 130 (50.4) |              |

Notes: f: Absolute frequency; p: significance level of Pearson's chi-square test. OR: odds ratio; CI: confidence interval. <sup>(1)</sup>: 4 missing; <sup>(2)</sup>: 1 missing; <sup>(3)</sup>: 9 missing; <sup>(4)</sup>: 3 missing; <sup>(5)</sup>: 2 missing; <sup>(6)</sup>: 4 missing.

**Table 2** – Multivariate analysis of interpersonal and subjective characteristics associated with overweight in young adult students, city of Fortaleza, Ceará, Brazil, 2014

| Variables                       | Crude OR (95%CI)    | Adjusted OR (95%CI)               |
|---------------------------------|---------------------|-----------------------------------|
| Participation in groups         |                     |                                   |
| Yes                             | 0.74 (0.52-1.04)    | 0.654 (0.42-1.01) <sup>(a)</sup>  |
| No                              | 1                   | 1                                 |
| Someone to talk to              |                     |                                   |
| Yes                             | 1                   | -                                 |
| No                              | 1.18 (0.83-1.67)    | -                                 |
| Capacity to deal with stress    |                     |                                   |
| Yes                             | 1                   | -                                 |
| No                              | 0.96 (0.68-1.36)    | -                                 |
| Sadness/depression              |                     |                                   |
| Yes                             | 1.21 (0.72-2.04)    | -                                 |
| No                              | 1                   | -                                 |
| Satisfaction with work/function |                     |                                   |
| Yes                             | 1                   | 1                                 |
| No                              | 1.34 (0.95-1.90)    | 1.11 (0.72-1.71) <sup>(b)</sup>   |
| Self-perception of health       |                     |                                   |
| Positive                        | 0.68 (0.48-0.97)    | 1.22 (0.77-1.93) <sup>(c)</sup>   |
| Negative                        | 1                   | 1                                 |
| Self-perception of overweight   |                     |                                   |
| Yes                             | 15.71 (10.11-24.42) | 16.25 (9.70-27.20) <sup>(d)</sup> |
| No                              | 1                   | 1                                 |
| Satisfaction with body image    |                     |                                   |
| Yes                             | 0.32 (0.22-0.46)    | 0.95 (0.58-1.55) <sup>(e)</sup>   |
| No                              | 1                   | 1                                 |

Notes: <sup>(a)</sup>  $p=0.056$ ; <sup>(b)</sup>  $p=0.638$ ; <sup>(c)</sup>  $p=0.404$ ; <sup>(d)</sup>  $p=0.001$ ; <sup>(e)</sup>  $p=0.835$ .

## DISCUSSION

In view of the increasing prevalence of overweight cases, there are innumerable questions about this process and individual and social aspects have an influence on it. According to Santiago et al.<sup>(4)</sup> and Florêncio<sup>(21)</sup>, there are determinants of overweight that are associated with markers of family dimension and clinical and interpersonal questions. Thus, the multi-determination of this health condition is confirmed and we understand the need for a complex and solution-based health care network.

Apart from the socio-demographic questions that arose from the studies previously mentioned, other markers of vulnerability are also permeating this space where young adults are included and discussions about interpersonal and subjective issues can be made. In fact, markers such as satisfaction with work/school (OR=1.34; [0.95;1.90];  $p=0.099$ ), self-perception of health

(OR=0.68 [0.48;0.97];  $p=0.032$ ), self-perception of overweight (OR=15.71; [10.11;24.42];  $p=0.001$ ) and satisfaction with body image (OR=0.32; [0.22;0.46];  $p=0.001$ ) were found to be associated with overweight in the bivariate analysis. However, only self-perception of overweight remained in the final model (OR=16.25; [9.70;16.20];  $p=0.001$ ).

Although not remaining in the final model, self-perception of health and satisfaction with body image were significantly associated with overweight, indicating a complex construction of perception of body image. Corroborating this situation, Moreira et al.<sup>(22)</sup> identified an association between nutritional status and self-perception of health in young adult students in a city of Northeastern Brazil. Those who were overweight/obese showed a lower chance of having a positive self-perception of health when compared to the remaining groups. This suggests that young adults are aware of the fact that being overweight can affect their health negatively, although the construction of the perception of and satisfaction with their body image may vary. This recognition provides room for health promotion interventions and, in the school environment, it enables discussions about the adoption of ways of living that gather significant transformations in young adults' perception of their body image.

Regarding satisfaction with their body image, many overweight young adults reported feeling dissatisfied,

as shown in Table 1. This is already reported during adolescence, as revealed by Branco et al.<sup>(23)</sup>. They observed that satisfaction with body image was associated with nutritional status ( $p<0.001$ ) in adolescents of both sexes. Additionally, dissatisfaction was even found among eutrophic adolescents, although mainly among those who were overweight or obese.

Confirming the onset of this dissatisfaction during adolescence, which continues until the beginning of adulthood, the level of dissatisfaction with one's body image was found to be higher among women since adolescence, in a cohort study performed in the United States. The results of the present study suggest that personal, behavioral and socio-environmental factors from adolescence to adulthood influence the risk of overweight among those who are young adults<sup>(24)</sup>.

Despite such associations, what is evident is the way the distortion of one's body image begins. Analyses showed that

young adults with a normal BMI perceived themselves to be overweight, although the opposite should also be emphasized, i.e. overweight individuals with a perception of normal weight. Despite the fact that this question should be raised in the environment where it was studied, such distortion is not only frequent in this group of students, but in children and adolescents of both sexes at different ages.

In a cohort study performed with young adults, which associated perception of body image with nutritional status, such association varied according to sex, level of education and physical activity. Women underestimated their body weight (81.6%) more frequently than men (78.2%); the frequency of overestimation of body weight increased as the level of education rose from eight years to nine-to-11 years of school, while the same occurred with the group that underestimated their body weight. The analysis of physical activity level showed that participants who overestimated their weight were those who performed the lowest level of physical activity (58.6%)<sup>(25)</sup>.

This distortion can occur between childhood and adolescence, reflecting questions related to mental health that need to be discussed. In a study performed with adolescents, the majority of those who were eutrophic, overweight and obese had an adequate perception of their body image, with a significant association ( $p < 0.001$ ) between nutritional status and self-perception of body image. The Kappa test showed an agreement of 66.01%, overestimated disagreement of 28.34% and underestimated disagreement of 5.65% for the actual nutritional status. However, for both sexes, the real perception of their condition is distorted; there are more cases of overestimation among girls ( $\kappa = 43.45\%$ ), whereas there are more cases of underestimation ( $\kappa = 5.65\%$ ) of one's actual condition among boys ( $p = 0.705$ )<sup>(23)</sup>.

When there are discrepancies between perception and reality, repercussions on one's self-esteem will undoubtedly follow, as being different from the current social standards observed has been regarded as one of the main causes of dissatisfaction with body image<sup>(26)</sup>. Moreover, self-perception of overweight is associated with body image. Therefore, the development of a healthy body image is an important factor related to physical, social and emotional well-being.

Young adults' awareness of their health status, particularly their perception of body image, frequently results from how the media sets the standards of beauty, which is then made subjective by the population. Greater access to the media during adolescence has been associated with an increase in body

weight and less physical fitness during adulthood, dissatisfaction with body image, inability to control body weight and risk behavior for eating disorders<sup>(27)</sup>.

The closeness between schools and health services provided by the public health care network could improve access to the information obtained from means of communication, enabling young adults to become more aware of their health and nutritional status, while being less influenced by the standards of beauty set by the media. It is clear that reflection on these aspects should be investigated in the future, taking into consideration the markers of contextual vulnerability (social and programmatic).

Interpersonal and subjective questions are found to constantly establish close relationships with the ways of life young adults experience. It is in this perspective that schools, as a space that enables inter-sectorial interventions, can facilitate the relationship between education and health and bring new and broader views into this institution which provides many resources, while lacking initiatives capable of responding to the actual needs of its students-individuals.

Although relevant questions were raised to discuss overweight, the present study showed some limitations as it had a cross-sectional design, where exposure and outcome were simultaneously observed. This design prevented the identification of a causal relationship between variables, not enabling us to infer whether perception of overweight preceded or followed the presence of this condition, thus revealing the need for further research in this area.

## CONCLUSION

Self-perception of overweight was affected by distortions compared to one's actual body image and, for this reason, it caused young adults to be vulnerable to dysfunctional health conditions. However, the model predicted here indicates that other markers are also associated with the previously described nutritional status, confirming that such condition is multi-factorial, determined and conditioned by different issues, whether they are individual and/or contextual. Based on what has been described, nurses must develop health promotion activities inside schools, including questions related to overweight, especially in terms of raising discussions about corporeality and body image. These approaches can improve young adults' self-esteem, when dealt with openly and facilitated by health professionals, and the participation of nurses is essential in school health programs.

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