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WEIGHT STIGMA AND ITS ASSOCIATION WITH NUTRITIONAL STATUS IN STUDENTS OF HEALTH CAREERS AT A PRIVATE UNIVERSITY IN THE REGION OF ÑUBLE, CHILE

ESTIGMA DE PESO Y SU ASOCIACIÓN CON EL ESTADO NUTRICIONAL EN ESTUDIANTES DE CARRERAS DE SALUD EN UNA UNIVERSIDAD PRIVADA EN LA REGIÓN DE ÑUBLE, CHILE

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ABSTRACT

Introduction: Obesity and overweight are public health problems with important psychological and social consequences, such as weight stigma. According to WHO, 69% of adults with obesity experience stigma from health professionals. However, there are few studies on this stigma in Chile. People with a normal BMI tend to view those with obesity negatively, while those with obesity tend to be more compassionate towards others in the same situation, which reduces stigma. **Objective:** To relate nutritional status (BMI) and the level of weight stigma in university students of health careers in the region of Ñuble, Chile. **Methods:** Observational cross-sectional design. The GAMS-27 scale was applied to assess weight stigma and BMI to evaluate the nutritional status of 156 students of health careers. Chi2 tests of independence and binary logistic regression were applied to evaluate the association between the variables, with the R statistical package version 4.3.0. Results: A statistically significant association was found between weight stigma and nutritional status (p=0.0145). Presenting normal BMI (p=0.0163) and being female (p=0.0156) were associated with a higher probability of presenting weight bias. **Conclusion:** The present study identified a statistically significant association between weight stigma and nutritional status in college students. It is vital to promote education regarding weight stigma in college students to avoid bias and improve respect for future users.

Keywords: Weight prejudice; Nutritional status; Students; Health occupations. (Source: MESH-NLM)

RESUMEN

Introducción: La obesidad y el sobrepeso son problemas de salud pública con importantes consecuencias psicológicas y sociales, como el estigma de peso. Según la OMS, el 69% de los adultos con obesidad experimentan estigma por parte de profesionales de la salud. Sin embargo, hay pocos estudios sobre este estigma en Chile. Las personas con un IMC normal suelen ver a quienes tienen obesidad de manera negativa, mientras que aquellos con obesidad tienden a ser más compasivos hacia otros en la misma situación, lo que reduce el estigma. **Objetivo:** Asociar IMC y el nivel de estigma de peso en estudiantes universitarios de carreras de la salud en la región de Ñuble, Chile. **Métodos:** Diseño observacional de corte transversal. Se aplicó la escala GAMS-27 para evaluar el estigma de peso e IMC para evaluar el estado nutricional de 156 estudiantes de carreras de la salud. Se aplicaron las pruebas de independencia de Ji2 y regresión logística binaria para evaluar la asociación entre las variables, con el paquete estadístico R versión 4.3.0. **Resultados:** Se encontró una asociación significativa entre estigma de peso y estado nutricional (p=0.0145). Presentar IMC normal (p=0,0163) y ser mujer (p=0,0156) se asoció con una mayor probabilidad de presentar sesgo de peso. **Conclusiones:** El presente estudio identificó una asociación significativa entre estigma de peso e IMC en estudiantes universitarios. Es vital promover la educación respecto al estigma de peso en los estudiantes universitarios con el fin de evitar prejuicios y mejorar el respeto hacia los futuros usuarios.

Palabras clave: prejuicio de peso, estado nutricional, estudiantes del área de la salud. (Fuente: DeCS- BIREME)

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INTRODUCTION

Obesity and overweight are significant public health issues globally [1]. Currently, it is estimated that over one billion people worldwide are overweight according to their body mass index (BMI), while approximately 650 million are diagnosed with obesity [2]. In Chile, according to data from the National Health Survey (ENS, by its Spanish acronym) 2016-2017, 31.2% of adults are obese, while 3.2% are classified as morbidly obese, and 39.8% are overweight [1]. This growing epidemic of obesity not only brings physical complications but also entails significant psychological and social effects, among which weight stigma stands out [3].

A WHO report indicates that 54% of adults with obesity report being stigmatized by their coworkers, and 69% of adults with obesity report experiences of stigma from healthcare professionals [3]. Weight stigma refers to the discrimination, prejudice, and social stigmatization experienced by individuals with excessive malnutrition, with severe implications for their mental and physical well-being, including decreased self-esteem, depression, anxiety, and even social exclusion [4]. In the Chilean context, although there is legislation prohibiting discrimination, weight stigma is not considered a protected aspect [5]. The adoption of measures to safeguard the rights of people with overweight and obesity is crucial to prevent injustice and harm arising from stigma [5,6].

An important aspect in the study of weight stigma is the perception people have of their own body and that of others. It has been observed that individuals with a normal BMI tend to perceive those with overweight or obesity as lazy or sedentary, with a lack of willpower or self-discipline, which contributes to negative stereotypes [7]. Previous research suggests that those diagnosed with obesity tend to have a more compassionate view toward individuals with the same body condition, which is associated with a lower level of weight stigma [8]. Weight stigma, besides impacting the quality of life of people with obesity, also involves those who work or study in the health field.

In Chile, research on weight stigma among health students is still limited. Some studies have revealed high levels of stigma and discrimination towards people with obesity among Nursing, Medicine, and Nutrition and Dietetics students [9-11]. These findings are concerning, as they could negatively influence the quality of care and treatment that future health professionals provide to those with excessive malnutrition. Therefore, the objective of this study is to examine the association between weight stigma and nutritional status among health students at a private university in the Ñuble region, Chile.

METHODS

Study Design

Observational cross-sectional design. The research adheres to the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) guidelines [12].

Participants

A study was conducted with 156 participants, who were students from various health-related fields (Chemistry and Pharmacy, Nutrition and Dietetics, Obstetrics and Childcare, Nursing, and Occupational Therapy) to evaluate a statistically significant correlation between the variables of nutritional status and weight stigma of at least 0.334 as reported by Bastías et al., 2022 [13]; with a statistical power of 80% and a confidence level of 95%. The sample selection was through probabilistic cluster sampling, based on the theoretical classrooms of the health sciences faculty, excluding laboratories. Each classroom was randomly selected, and all students present in the classroom at that time were invited to participate.

Regular students, of different academic levels, of both sexes, and of any nationality were included. Exclusion criteria were students in professional practice internships, students with a history of bariatric surgery, and self-reported eating disorders (ED) to avoid potential biases in the study results [7].

Each selected subject who wanted to participate in the study signed an informed consent, indicating the voluntary nature of their participation, the study's objective, measurement methods, application tools, and potential risks of the measurements. Additionally, the possibility to contact the study authors to report any situation of interest, request information, and inform about the withdrawal from the study at any stage of the fieldwork, without giving justification or expecting any loss of benefits. This research was authorized by the Scientific Ethics Committee (CEC N° 2023-50, dated 19.07.23) of the Universidad Adventista de Chile.

Procedure

Fieldwork was carried out in September and October of the 2023 academic year, in morning and afternoon sessions, over four weeks. Corresponding course instructors of each theoretical classroom were contacted to coordinate visits to the selected classrooms. At the beginning of each class, permission from the instructor was requested to explain the study's objective to the students. Students who agreed to participate signed an informed consent via a QR code, which redirected them to a Google Forms survey with three sections: the first with information about the research, the second with personal and anthropometric data (measured by the researchers), and the third with a questionnaire on attitudes towards obesity (GAMS-27 OPS).

The form was self-administered, and all questions were mandatory. The BMI evaluation procedure included collecting data on weight in kilograms (kg) and height in meters (m). Measurement instruments used were SECA brand, provided by the university. Participants were weighed barefoot and in light clothing on a properly calibrated SECA digital scale. Height was measured using a SECA stadiometer, with participants barefoot, standing, and with their back straight against the device, ensuring the head was in the Frankfort plane. Two alternatives were provided in case of technical problems with the QR code, link, internet connection, or students' smartphones (temporary smartphone or printed questionnaire delivery), but they were not needed.

Instruments

- Personal Background Questionnaire: This instrument was developed by the study researchers and was not validated in a pilot sample. Its objective was to collect self-reported personal, academic, and anthropometric data evaluated by the researchers. All data were included in an Excel database.

The instrument contained 10 closed-ended questions that allowed obtaining the following variables: sex, presence or absence of an eating disorder (ED), history of bariatric surgery, age, nationality, studied field, year of study (1st year- 4th year), and type of university residence. The BMI evaluation included collecting data on weight in kilograms (kg) and height in meters (m).

- GAMS 27- Obesity Prejudice Scale (OPS): Developed by Ercan et al.[14], it was used to evaluate negative attitudes towards excess weight. The screening proved to be highly reliable, showing a Cronbach's α coefficient of 0.85. The 27 questions of the OPS have a 5-point Likert scale, with options ranging from "strongly agree" to "strongly disagree." Scores range from 27 to 135, with higher scores representing more negative attitudes towards obesity. A score between 27 and 68 indicates no prejudice, between 68.01 and 84.99 indicates a predisposition to prejudice, and a score between 85 and 135 indicates weight bias[10]. The instrument is available in Supplementary Material 3.

Statistical Analysis

A descriptive analysis of qualitative variables such as sex, nationality, field of study, place of residence, and generation was performed; and quantitative variables such as weight, height, BMI, and age. For qualitative variables, frequency and percentage tables were made, and for quantitative variables, proportion calculations were performed. For the analysis of the association between primary and secondary variables, the Chi-square test of independence with MonteCarlo simulation and the proportions test were used. The statistical program used for the analysis was R software version 4.3.0. To evaluate the association between weight stigma with nutritional status and sex, a logistic regression test was used.

RESULTS

A sample of 156 students was analyzed. Table 1 shows that women represented 72.43% of the participants. 43.58% reported an age between 21-23 years; 96.79% were Chilean; 30.76% indicated studying Occupational Therapy, and 92.94% reported not living in university residence. Table 2 shows that 50.64% of the participants were classified with a normal nutritional status.

Table 1. Distribution of the sample by sociodemographic characteristics.

Sociodemographic characteristics	n=156	%
Sex		
Female	113	72.43%
Male	43	27.56%
Age		
18-20	65	41.66%
21-23	68	43.58%
24-26	16	10.25%
27-29	5	3.20%
≥30	2	1.28%
Nationality		
Ecuadorian	1	0.64%
Peruvian	1	0.64%
Venezuelan	1	0.64%
Bolivian	2	1.28%
Chilean	151	96.79%
Degree		
Nutrition and Dietetics	33	21.15%
Midwifery and Childcare	26	16.66%
Chemistry and Pharmacy	13	8.33%
Occupational Therapy	48	30.76%
Nursing	36	23.07%
Place of residence		
Internal*	11	7.05%
External	145	92.94%
Year of Study		
First year	51	32.69%
Second year	28	17.94%
Third year	40	25.64%
Fourth year	37	23.71%

Table 2. Distribution of the sample by nutritional status and sex.

Nutritional status	Male	Female
Underweight	2 (1.27%)	5 (3.18%)
Normal	22 (14.01%)	57 (36.3%)
Overweight	17(10.83%)	35 (22.30%)
Obesity *	2 (1.28%)	16 (10.25%)

* For this nutritional status, the three categories (mild, moderate, and severe) were combined.

When studying the potential association between nutritional status (BMI) and weight stigma (Table 3), it was found to be statistically significant (p=0.0145). The post hoc test for proportion differences revealed that normal nutritional status was significantly associated with the presence of weight bias (p=0.016). Using logistic regression (Table 4), it was found that students with a normal BMI were significantly associated with having weight bias (p=0.0163), with a magnitude of OR=6.27 (95% CI: 1.52 – 32.86). After adjusting for sex and field of study, the statistically significant association between normal nutritional status and weight bias remained, with p=0.0028 (Table 5).

Table 3. Association between weight stigma and nutritional status.

Nutritional status	Weight stigma No predisposition	With predisposition	Weight bias
Underweight	0	3	4
Normal	5	51	23[a b]
Overweight (ref 1)	7	41	4[a]
Obesity (ref 2)	3	10	5[b]

Chi-square test of independence. Chi2=15.67; p=0.0145 (p-value obtained with Monte Carlo simulation, 2000 replicates).
Post hoc test of differences in weight bias proportions (reference: no predisposition).
Reference groups for nutritional status comparison: a: overweight, and b: obesity (underweight category was not used due to zero cases in one cell):a: p=0.016; b: p=0.4900

Table 4. Logistic regression of weight bias vs. normal nutritional status and sex.

Variable	B	SE	p-value	OR	95% CI
Nutritional Status					
Normal	1.84	0.76	0.0163	6.27	1.52 – 32.86
Overweight + Obesity (Ref)					
Sex					
Female	2.04	0.84	0.0156	7.69	1.60 – 47.41
Male (Ref)					

B: beta coefficient; SE: standard error; OR: odds ratio; 95% CI: 95% confidence interval for OR.
The reference group for the dependent variable is "no predisposition."

Table 5. Logistic regression of weight bias vs. normal nutritional status, adjusted for sex and field of study.

Nutritional status	B	SE	p-value	OR	95% CI
Normal	3.23	1.08	0.0028	25.25	3.87 – 311.41
Overweight + Obesity (Ref)					

B: beta coefficient; SE: standard error; OR: odds ratio; 95% CI: 95% confidence interval for OR.
The reference group for the dependent variable is "no predisposition."

DISCUSSION

The main objective of this study was to verify the association between weight stigma and nutritional status in a sample of university students enrolled in health-related fields. A statistically significant association was found between students with normal nutritional status (BMI) and the presence of weight stigma, compared to those students who had excess malnutrition. Additionally, it was observed that being female was associated with a higher likelihood of presenting weight bias. These findings are consistent with existing evidence on the levels of stigmatization observed in other health professions [7,9,10,15,16].

A possible explanation for this association could be that individuals with a normal BMI tend to perceive obesity as a personal failure or behavioral problem, reflecting an internal weight-related bias[17]. Furthermore, factors associated with the female gender, such as social and cultural norms promoting stricter beauty standards than for men, and the internalization of stigma, influence women's perception and experience regarding their body weight [18-20]. A recent study evaluating weight-related bias attitudes among health professionals showed that they maintain both implicit and explicit bias attitudes towards people with obesity [21]. This increases health care inequalities, leading to lower utilization of health services and interfering with treatment [21]. The absence of associations between weight stigma and overweight or obesity in this population may be due to various factors, such as differences in self-perception of weight not being considered negative; the presence of coping mechanisms against stigma; internalization of stigma as something normal; and other confounding factors, such as high social support or elevated self-esteem [20,22,23].

It is important to highlight some limitations of this research that should be considered when interpreting the results. First, the cross-sectional design does not allow for the inference of causal relationships or longitudinal changes between variables. Second, the data were based on self-reports, which may introduce potential information biases, such as selection bias and confirmation bias.

Third, there is a lack of consensus in the international literature on how to define and measure weight stigma, making it difficult to compare and generalize the findings [24-26]. In particular, it is necessary to distinguish between internalized weight stigma, which is a form of negative self-perception affecting eating by making it more restrictive and can generate depressive symptoms; experienced weight stigma, which can act as a motivator or inhibitor of eating behaviors; and caused weight stigma, which implies that the stress generated by exposure to stigmatizing situations increases food intake and unhealthy behaviors in individuals with excess malnutrition[25,27,28]. These conceptual differences can create confusion and misinformation among the public interested in this field of research[18].

Despite these limitations, this research opens the discussion in the field of human capital being trained in careers aimed at serving the community, seeking empathetic professionals in many areas, including body perception. Implementing educational and preventive strategies that promote a positive body image and a respectful attitude towards body diversity is crucial. Furthermore, it is suggested to delve deeper into the study of internalized, perceived, and caused weight stigma; concepts that are often confused or masked in scientific literature. In this way, it will be possible to contribute to the generation of knowledge and evidence on this social phenomenon that affects the population with excess malnutrition and future professionals in nutrition and dietetics and other health careers who work directly with patients.

CONCLUSION

In conclusion, this study provides evidence on the association between nutritional status (BMI) and weight stigma in university students in health-related fields, highlighting the importance of addressing weight stigma to avoid prejudice and improve respect towards users. Future studies should consider longitudinal designs and diverse methodologies to deepen the understanding of weight stigma, its associated factors, and its effects on health and psychological well-being.

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