



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 constitute global public health challenges, negatively impacting more than one billion people. They are accompanied by significant psychological and social consequences, including the stigma associated with weight, with severe repercussions on mental and physical well-being. Health professionals are directly involved with this problem; however, few studies address weight stigma in Chile. **Objective:** To examine the association between nutritional status (BMI) and the level of weight stigma in university students of health careers in the region of Ñuble, Chile. **Methods:** Cross-sectional descriptive observational 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. **Conclusions:** 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 constituyen desafíos de salud pública a nivel global, impactando de manera negativa a más de mil millones de personas. Se acompañan de consecuencias psicológicas y sociales significativas, entre las que se destaca el estigma asociado al peso, con repercusiones severas en el bienestar mental y físico. Los profesionales de la salud son quienes están directamente involucrados con esta problemática, sin embargo, existen pocos estudios que aborden el estigma de peso en Chile. **Objetivo:** Examinar la asociación entre el estado nutricional (IMC) y el nivel de estigma de peso en estudiantes universitarios de carreras del área de la salud en la región de Ñuble, Chile. **Métodos:** Diseño observacional descriptivo 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 estadísticamente 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 estadísticamente significativa entre estigma de peso y estado nutricional 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 more than one billion people worldwide are overweight according to their body mass index (BMI), while approximately 650 million are diagnosed with obesity⁽²⁾. This growing epidemic not only brings physical complications but also carries significant psychological and social effects, among which weight stigma stands out⁽³⁾. Weight stigma refers to the discrimination, prejudice, and social stigmatization suffered by individuals with overnutrition, 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⁾. Adopting measures to safeguard the rights of individuals with overweight and obesity is crucial to prevent the injustice and harm derived from stigma^(5,6).

An important aspect in the study of weight stigma is the perception that people have of their own body and that of others. It has been observed that people with normal body mass index (BMI) tend to perceive those with overweight or obesity as lazy or sedentary, lacking willpower or self-discipline, contributing to negative stereotypes⁽⁷⁾. Previous research suggests that those diagnosed with obesity tend to have a more compassionate view towards individuals with the same body condition, which is related to a lower level of weight stigma⁽⁸⁾.

Weight stigma, in addition to impacting the quality of life of individuals with obesity, also involves those who work or study in the health field. In Chile, research on weight stigma among health career students is still limited. Some studies have revealed high levels of stigma and discrimination towards people with obesity among students of Nursing, Medicine, and Nutrition and Dietetics⁽⁹⁻¹¹⁾. These findings are concerning, as they could negatively influence the quality of care and treatment provided by future health professionals to those with overnutrition. Therefore, the objective of this

study is to examine the association between weight stigma and nutritional status in health students at a private university in the Ñuble region, Chile.

METHODS

Study Design

This is a descriptive observational cross-sectional study. The research adheres to the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) checklist⁽¹²⁾.

Population and Sample

A study was conducted with 156 participants, who were students from various health-related fields (Chemistry and Pharmacy, Nutrition and Dietetics, Midwifery and Childcare, Nursing, and Occupational Therapy) to evaluate a statistically significant correlation between the variables 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, given the theoretical classroom settings of the health sciences faculty, excluding laboratories. Each classroom was randomly selected, and all students present in the classroom at that moment were invited to participate.

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

Procedure

The fieldwork was carried out in September and October of the 2023 academic year, in morning and afternoon sessions, over four weeks. The corresponding instructors of each course taught in the theoretical classrooms were contacted to coordinate visits to the selected classrooms. At the beginning of each class, the instructor's permission was requested to explain the study's objective to the students. Students who agreed to participate signed an informed consent form via a QR code, which redirected them to a Google forms

questionnaire 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. Two alternatives were provided in case of technical problems with the QR code, the link, internet connection, or the student's smartphone (temporary smartphone provision or printed questionnaire), but they were not necessary.

Variables and Instruments

Personal Background Questionnaire: This instrument was developed by the researchers of this study. Its objective was to collect self-reported information on personal, academic, and anthropometric data evaluated by the researchers. It contained 10 closed-ended questions that allowed obtaining the following variables: sex, presence or absence of eating disorder (ED), history of bariatric surgery, age, nationality, field of study, year of study (1st year-4th year), type of university residence, and finally weight in kilograms (kg) and height in meters (m) with SECA brand measuring instruments provided by the university.

GAMS 27- Obesity Scale: The GAMS 27- Obesity Prejudice Scale (OPS) developed by Ercan et al. (14) was used to assess negative attitudes towards overweight. The screening proved to be highly reliable, showing a Cronbach's alpha coefficient of 0.85. The 27 questions of the OPS have a 5-point Likert scale, with the options "strongly agree", "agree", "undecided", "disagree", and "strongly disagree". Scores range from 27 to 135, where higher scores represent greater negative attitudes towards obesity. A score between 27 and 68 indicates absence of prejudice, between 68.01 and 84.99 indicates 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 was performed on qualitative variables such as sex, nationality, field of study, place of residence, and generation; and quantitative variables such as weight, height, BMI, and age. Frequency tables, percentages, and 95% confidence intervals were calculated for qualitative variables, and proportion calculations were done for quantitative variables. To analyze the relationship between primary and secondary variables, the Chi-square test of independence with Monte Carlo simulation and the proportion test were used. The statistical program used for the analysis was R 4.3.0 software. Logistic regression was used to assess the relationship between weight stigma, nutritional status, and sex.

Ethical Aspects

Each selected subject who wanted to participate in the study signed an informed consent, which indicated the voluntary nature of their participation, the study's objective, measurement methods, application tools, and potential risks of the measurements. Additionally, the possibility of contacting the study authors to report any situation of interest, request information, and inform about withdrawal from the study at any stage of the fieldwork, without justification or loss of benefits, was indicated. This research was authorized by the Scientific Ethical Committee (CEC No. 2023-50, dated 19.07.23) of the Universidad Adventista de Chile.

RESULTS

A sample of 156 students was analyzed. Table 1 shows that women accounted for 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 the university residence. Table 2 shows that 50.64% of the participants were classified with 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. $\chi^2=15.67$; $p=0.0145$ (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 examine the association between weight stigma and nutritional status in a sample of university students pursuing health-related careers. A statistically significant association was found between those with normal nutritional status (BMI) and the presence of weight stigma, compared to those with overnutrition. These findings align with existing evidence on the levels of stigmatization observed in other health professions (7,9,10,15,16).

A recent study evaluating weight-related bias attitudes among health professionals showed that they maintain both implicit and explicit bias attitudes towards individuals with obesity (17). This increases health care inequalities, leads to lower utilization of health services, and interferes with treatment (18).

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 causal inferences or longitudinal changes between variables. Second, the data were based on self-reports, which may introduce potential information biases such as selection and confirmation bias. Third, there is a lack of consensus in the international literature on how to define and measure weight stigma, which complicates the comparison and generalization of findings (19-21). In particular, it is essential to distinguish between internalized weight stigma, which is a form of negative self-perception that affects 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 overnutrition (20-23). These conceptual differences can create confusion and misinformation among those interested in this field of research (24).

Despite these limitations, this research opens the discussion in the realm of human capital formation in careers aimed at serving the community, which seeks 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. It is also suggested to delve deeper into the study of internalized, perceived, and caused weight stigma; concepts that are often confused or overlapped in scientific literature. This way, knowledge and evidence about this social phenomenon affecting the overnourished population and future nutrition and dietetics professionals, as well as other health careers that work directly with patients, can be generated.

CONCLUSION

In conclusion, the results showed a significant association between nutritional status and weight stigma. The findings suggest that nutritional status and sex may be important factors to consider in evaluating weight bias. It is vital to promote education regarding weight stigma among university students to prevent prejudice and enhance respect towards future users.

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