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Attitudes of University of Applied Health Sciences Students Towards Obese Individuals

[1] Iva Takšić
[1] Morana Radman
[2] Martin Peček

[1] Depatment of Health Psychology, University of Applied Health Sciences, Zagreb, Croatia
[2] Rotim Polyclinic, Zagreb, Croatia

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Author for correspondence:
Iva Takšić
University of Applied Health Sciences, Zagreb, Croatia
E-mail: iva.taksic@zvu.hr

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Abstract

Obesity is the term used to describe the excessive accumulation of body fat in relation to lean body mass. Obesity has many potential causes, such as genetics, alcohol consumption, use of various medications, psychological issues, reduced physical activity, and metabolic diseases. Since healthcare professionals are in daily contact with overweight and obese individuals, they play a crucial role in providing psychological support. The aim of this study was to examine the attitudes of students at the University of Applied Health Sciences towards obese individuals, as well as some determinants in predicting attitudes towards obesity. The study involved 200 students from different years and programs at the University of Applied Health Sciences. The results show that there is a statistically significant difference between male and female students in expressing negative responses, with male students being more prone to expressing more negative attitudes towards obesity. It was also observed that there was no statistically significant difference between full-time and part-time students, and physiological data were not associated with expressing more negative attitudes towards obesity. The most significant predictor in predicting a negative attitude towards obesity was satisfaction with one's own body weight.

Introduction

According to the World Health Organization, obesity is defined as excessive fat accumulation in the body to the extent that it impairs health (1). Data collected from 1975 to 2016 show that the number of obese people has increased many times through years. More than 2 billion adults are overweight, of which more than 650 million are obese, while more than 340 million children and adolescents are obese or overweight. Recent research shows that 38.2 million children under the age of 5 are obese or overweight (2). Croatian Institute for Public Health reported that more than half of adults are overweight, (57.4%) of which 18.7% are obese. Research also showed that in Croatia 16.8% of women in are obese and so are 20.8% of men (3). Studies have found that attitudes toward obesity in both children and adults can be negative and lead to weight stigma (4,5). This stigma can have a negative impact on an individual's psychological well-being and their physical health. For example, research has shown that weight stigma can lead to increased stress, decreased self-esteem, and a decreased quality of life for those who experience it (6-8). In terms of healthcare students, studies have shown that negative attitudes toward obesity can be present among medical students and other healthcare professionals (9,10). This can lead to weight bias in clinical encounters and a lack of appropriate care for obese patients. However, there is also evidence that education and training can help reduce weight bias and improve the quality of care for obese patients (11). Research has also investigated differences in attitudes toward obesity based on age and gender. For example, studies have found that younger individuals may have less negative attitude toward obesity compared to older individuals (12,13). Additionally, research has shown that women tend to hold more negative attitude toward obesity compared to men (13). It is important to note that these findings should be interpreted with caution and more research is needed to fully understand the complex attitudes and beliefs surrounding obesity. It is worth mentioning that weight stigma and discrimination towards individuals who are obese are not acceptable, and health care professionals should strive to provide non-judgmental and evidence-based care. One study conducted in the United States found that college students held more negative attitudes towards obese individuals compared to those who were overweight or of normal weight (9). The study also found that these attitudes were related to weight bias and stereotype endorsement. Another study conducted in the United States found that medical students held implicit biases towards obese individuals and were less likely to provide appropriate care for patients with obesity (14). The study suggested that addressing these attitudes through education and training could improve the quality of care for obese patients. Overall, these studies suggest that negative attitudes towards obese individuals exist among student populations and may impact the quality of care and treatment they receive. It is important to address these attitudes in order to promote inclusiveness and reduce weight bias as obesity is a growing public health concern, and attitudes toward obese individuals can greatly impact the quality of care they receive. Healthcare students, as future providers, play a crucial role in shaping these attitudes. Negative attitudes towards obesity can lead to weight stigma, which can further contribute to the already significant burden of disease faced by individuals living with obesity. It is therefore important to examine attitudes toward obese individuals among healthcare students.

Aim

The aim of this research is to examine attitudes towards overweight individuals among a sample of students from the University of Applied Health Sciences. One of the objectives was to determine whether there were differences in attitudes towards overweight individuals based on gender, mode of study, and type of study. A specific goal was to determine whether attitudes towards overweight individuals among students from the University of Applied Health Sciences could be predicted based on gender, age, type of study, mode of study, BMI, and satisfaction with their own weight.

Research problems:

1. To investigate the attitudes of University of Applied Health Sciences students towards obese individuals.

2. To investigate whether there are differences in attitudes towards overweight individuals among students from the University of Applied Health Sciences based on gender.
3. To examine whether there are differences in attitudes towards overweight individuals between regular and part-time students.
4. To explore whether there are differences in attitudes towards overweight individuals among students from different fields of study.
5. To determine the extent to which variables such as gender, age, type of study, BMI, and satisfaction with one's own weight predict a positive or negative attitude towards overweight individuals.

Methods

Participants

The participants in this study were students of all years and majors at the University of Applied Health Sciences. Participants were invited to complete an online survey through the Student Council of the University of Applied Health Sciences in Zagreb. The survey was completely anonymous and included a sample of 200 participants, students of the University of Applied Sciences, with an average age of 22.79 (SD=5.32). The sample included more women, 125 (62.5%), compared to 75 (37.5%) men. Participants were students of the first, second, and third year of undergraduate studies, as well as the first and second year of graduate studies. There were 97 (48%) regular students, 89 (44.1%) part-time students, and 16 (7.9%) students attending graduate studies. The largest number of student respondents were from the physiotherapy major (N=78), followed by nursing (N=48) and sanitary engineering (N=28), while the fewest respondents were from the radiology major (N=14) and occupational therapy (N=10). The study was approved by the Ethics Committee of the University of Applied Health Sciences.

Procedure

The study was conducted online and lasted from March to June 2021. The questionnaire was created using the "Google Forms" page. Students were invited to participate through the social network Facebook and through the e-mail to representatives of the Student Council of the Zagreb University of Applied Sciences.

Instruments

Demographic data

In addition to the Revised Antifat Attitudes Scale, participants completed data on age, gender, year, major, type of study and year of study. Students were asked for their height and weight to calculate the average body mass index (BMI) in order to relate physiological factors to attitudes towards obese individuals. Body mass index indicates the degree of nutrition and is calculated using an individual's height and weight.

Revised Antifat Attitudes Scale (Revised Anti-Fat Attitudes Scale; Wrench and Knapp, 2008).

The original scale consisted of 12 questions, and Wrench and Knapp added another 12 questions with positive attitudes to create a newer and longer scale (15). This newly constructed scale contains 24 items. The scale consists of two subscales, the first of which relates to the general attitude of the participant towards obese individuals (Revised Antifat Attitudes Scale), and the second to the participant's negative opinions about obese individuals (Dislike Scale of Obese Individuals), but it can also be used as unidimensional (e.g. 16) as it was used in this study. Example questions include: "Obese people make me uncomfortable", "Obese individuals can be just as attractive as thin individuals". Participants were asked to respond to the statements on a scale of 1 (completely disagree) to 5 (completely agree), with a lower number indicating a lower degree of agreement with the statement. Negative statements were recoded as positive, so a higher score indicates fewer negative attitudes towards obese individuals. The reliability of the Scale in this study is α= .89.

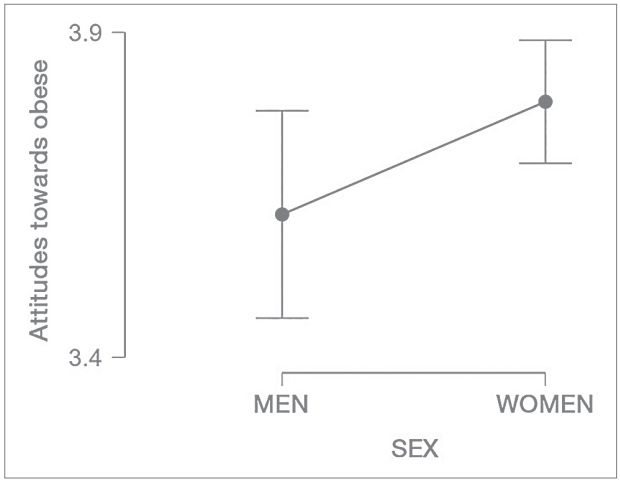
Statistics

The statistical analysis included descriptive and inferential statistics. The results of the Kolmogorov-Smirnov test showed deviations from normal distribution, but within an acceptable range. Since the sample size was sufficiently large, parametric statistics were used. Inferential statistics involved conducting t-tests to examine differences in attitudes towards obese individuals based on gender and study mode. Differences in attitudes based on study program were tested using analysis of variance (ANOVA) and appropriate post hoc tests. Hierarchical regression analysis was performed to examine the predictive ability of demographic variables, BMI, and satisfaction with own weight on attitudes among students. Values were considered statistically significant if they were equal or less than 0.05 ($p \leq 0.05$). IBM SPSS Statistics 25.0 software was used for data analysis.

Results

Descriptive analysis was conducted on the age, height, weight, BMI index, participants' satisfaction with their own weight, and their attitude towards obese individuals.

As it can be seen, altogether student have highly positive attitudes toward obese people. The normal range for body mass index (BMI) is between 18.5 and 24.9. From Table 1, the average of the sample falls within the normal range of BMI (M=23.54; SD=3.72), and the students are relatively satisfied with their weight (M=3.45; SD=1.34). Weight satisfaction will be examined in relation to its predictive role in attitudes towards obese individuals. Prior to that, the difference in attitudes towards obesity will be examined based on the participants' gender. To justify the use of parametric procedures, Kolmogorov-Smirnov tests were conducted, indicating that the distributions of attitude (p=0.19) and weight satisfaction (p=0.33) do not significantly deviate from normal. The first step was to calculate the statistical differences in attitudes towards obese individuals based on gender.

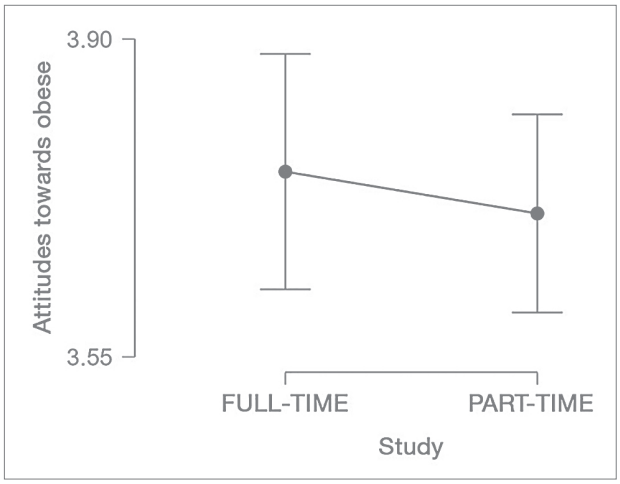


Graph 1. **Differences in attitudes towards obesity based on students' gender**

Table 1. **Descriptive parameters of the variables included in research (N=202)**

	Total	M	SD	Min	Max	Skewness	Kurtosis
Age	202	22.79	5.317	18	50	3.05	10.84
Height (cm)	202	172.33	9.806	153	200	0.41	-0.38
Weight (kg)	202	70.41	15.34	44	130	0.69	0.20
BMI	202	23.53	3.72	15.94	41.03	0.93	1.92
Weight satisfaction	202	3.45	1.34	1	5	-0.46	-1.04
Attitudes toward obese individuals	199	3.73	0.60	1	4.71	-1.31	2.76

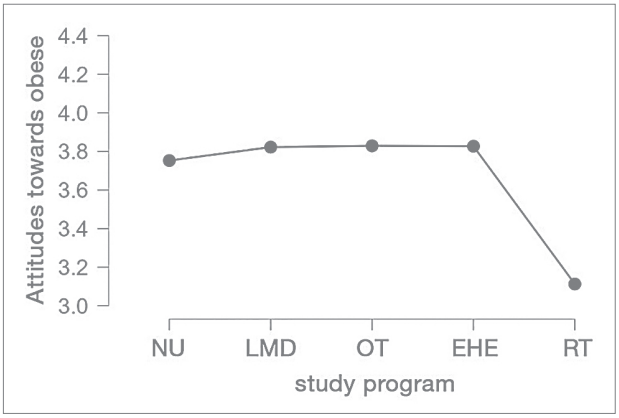
According to the above Graph 1, it is evident that males (M=3.62; SD=0.68) have a less favourable attitude towards obese individuals compared to females (M=3.79; SD=0.53). The conducted t-test has shown that this difference is statistically significant (t = -1.98; *p*=0.05). Males have significantly poorer attitudes towards obese individuals than females at the University of Applied Health Sciences. Further analysis was conducted to determine the differences in attitudes based on whether students are enrolled in a regular or part-time study program. The results are presented in Graph 2.



Graph 2. **Differences in attitudes towards obesity based on the type of study program**

Although students in regular study programs (M=3.75; SD=0.64) show almost the same attitudes towards obese individuals compared to part-time students (M=3.71; SD=0.56), this difference was not found to be statistically significant (t=0.54; *p*=0.59).

Given the larger number of study programs at the University of Applied Health Sciences, an analysis of variance was conducted to examine whether there are any differences in attitudes towards obese individuals at that level. It should be considered that there is a rather large difference in the sizes of the examined groups, so this result should be interpreted with caution. Indeed, the results indicate the existence of a difference among the examined study programs regarding attitudes towards obese individuals; however, it would be ideal if the number of participants in each group were more similar.



Graph 3. **Differences in attitudes towards obese individuals based on study programs**

There are statistically significant differences in attitudes towards obese individuals based on the participants' study programs. Specifically, post hoc analysis (Dunnett test) revealed that radiography students have a significantly more negative attitude towards obese individuals compared to nursing students ($p < .001$). There were no statistically significant differences among other study programs. It is evident that occupational therapy students (M=3.83; SD=0.49) and sanitary engineering students (M=3.83; SD=0.51) have equally high and most positive attitudes.

Table 2. **Attitudes toward obese individuals regarding the study program**

Program	N	M	SD	F (df)	*p*	η^2
Laboratory medical diagnostics	23	3.82	0.60			
Occupational therapy	10	3.83	0.49			
Radiological technology	14	3.11	1.03	4.46 (4)	**.00****	0.08
Environmental health engineering	27	3.83	0.51			
Nursing	125	3.75	0.52			

Considering the obtained results, the significant predictors of attitudes towards obese individuals will be examined. A hierarchical regression analysis was conducted, and the results are presented below. In the first step, demographic data of the participants (age, gender, study program and mode of study) were included as predictor variables, while in the second step, variables of self-weight satisfaction and body mass index were introduced. To meet the assumptions for calculating hierarchical regression analysis, the assumption of no multicollinearity (tolerance and variance inflation factor) was checked, and it was concluded that they are within acceptable values. Tolerance values range from .711 to .952, while variance inflation factor values range from 1.050 to 1.406. The assumption of correlation of residuals was tested using the Durbin-Watson criterion, which showed an acceptable result of 1.963. The results of the hierarchical analysis are presented in the table below.

The results of the first step of the hierarchical regression analysis show that sociodemographic variables such as gender, age, study program, year, and type of study explain 5% of the variance in attitudes towards obese individuals. Among individual contributions, gender stands out, with female gender contributing to a more positive attitude towards obese individuals to a greater extent. In the second step, body mass index and satisfaction with one's own weight were introduced. The explained variance increased by 7% and now accounts for 12%, which is a significant increase. This means that these two variables significantly contribute to explaining attitudes towards obese individuals among students at the University of Applied Health Sciences. Examining individual contributions, satisfaction with one's own weight significantly explains attitudes towards obese individuals. Students who are not satisfied with their own weight have a much more negative attitude towards obese individuals. This finding suggests that body mass index does not predict attitudes towards obese individuals as much as satisfaction with one's own weight does.

Discussion

The aim of our research was to examine the attitudes of University of Applied Health Sciences students towards obese individuals and overweight individuals, as well as to investigate whether there is a statistically significant difference in attitude based on gender, mode of study, and type of program. One of the objectives was also to determine whether variables such as gender, age, field of study, type of program, BMI, and satisfaction with one's own weight can be used as predictors of attitudes towards obese individuals in our sample. Our research showed that male students have significantly more negative attitudes towards obese individuals compared to female par-

Table 3. **Hierarchical regression analysis scores for attitudes toward obese people**

Predictor	β	R	R^2	ΔR^2	F
Step 1					
Sex	.19**				
Age	.07				
Study programme	-.04	.227	.052	-	**2.08****
Year of study	.09				
Undergraduate/Graduate	.08				
Step 2					
Sex	.21**				
Age	.05				
Study programme	-.06				
Year of study	.04	.350	.122	.071	**7.64****
Undergraduate/Graduate	.08				
BMI	.07				
Personal Weight Satisfaction	**-.27****				

ticipants. These findings are consistent with other studies. Specifically, men believe that obesity is a lack of willpower, as well as a lack of control over one's weight, which leads to more negative attitudes towards obese individuals (13). Additionally, a study conducted in the United States by Himmelstein (17) revealed that men had a higher tendency to stigmatize obesity compared to women and were less supportive of policies and practices that combat the stigmatization of obese individuals. The same result was found in a study conducted on students in Osijek by Kovačević (18), where male students expressed a higher degree of prejudice than female students. Another objective of the research was to highlight the difference in attitudes towards obese individuals based on the mode of study. Although not significant, there was a slight difference in attitude, indicating that regular students showed more positive attitudes than part-time students. This aspect of the hypothesis was experimental as there are no known references to such results, and it would be interesting to explore some of the differences in attitudes towards obese individuals because regular and part-time students differ mostly in age, which was examined in this case, but also in whether they are employed or not. Namely, employed students more frequently come into contact with different patient profiles, including obese individuals, so it would be worthwhile to investigate whether there are differences between employed students in their field and unemployed students regarding attitudes towards obese individuals. After considering the difference in the mode of study, we wanted to examine whether there are differences in attitudes towards obese individuals based on the type of program that students are enrolled in. Analysis of variance revealed that students in the radiology program have significantly more negative attitudes than students in the nursing program. A study conducted on Australian radiologists showed that most participants exhibited implicit biases towards obese individuals when encountering an obese person coming for a radiological procedure. Most of the implicit biases involved blame and intolerance towards obese individuals. Another study on radiology students (19) mentioned the difficulties encountered by students because they did not learn how to modify radiological imaging for obese individuals during their practice due to technical difficulties that can arise from the patient's excessive body weight. They also stated that it became easier for them to approach obese patients after their practice supervisor instructed them on clear radiological techniques for examining obese patients. Such a lack of practical education can cause fear among radiologists in the workplace when examining obese patients due to the lack of skills they did not learn during their practice, leading to the perception of experiencing discrimination against obese patients. In the same study, some students reported the expression of negative attitudes by their practice supervisors towards obese patients. A hierarchical regression analysis was conducted to determine the extent to which body mass index (BMI) and body satisfaction contribute to attitudes toward obese individuals, while isolating the influence of demographic variables. As previously mentioned, significant differences were found in participants' attitudes toward obese individuals based on gender and type of study. Through hierarchical analysis, we aimed to examine whether BMI and body satisfaction significantly predict attitudes toward obesity, while controlling for other known predictors. In the first step, only gender was found to be a significant predictor of attitudes toward obesity, confirming the previous finding that female participants exhibited more positive attitudes toward obese individuals compared to male participants. After considering the effects of predictor variables in the first step of the analysis, BMI was not found to be a significant predictor, whereas participants' body satisfaction had a negative significant impact on attitude prediction. Specifically, the significant negative beta weight of body satisfaction indicates that participants expressing lower satisfaction with their body weight had more positive attitudes toward obese individuals, whereas those expressing higher levels of body satisfaction had more negative attitudes toward obesity. This result can be explained by the fact that participants who have no issues with body perception and show satisfaction with their body weight are less understanding of the problem of obesity and are more likely to adopt a critical attitude toward obese individuals. A study conducted on students in Osijek (18) did not find BMI or body satisfaction to be significant predictors. Another study (20) conducted on 184 healthcare professionals revealed that nearly 50% of the respondents witnessed some form of discrimination against obese individuals by their colleagues. The most common forms of inappropriate behaviour included mocking appearance (96.6%), expressing disgust and aversion (96.2%), lack of reaction to offensive remarks (92%), or frighteningly warning

patients about the need for weight loss. This study concluded that most discriminatory behaviours were a result of inadequate education among healthcare professionals about the causes and issues related to obesity.

Prejudices against obese individuals can lead to poor healthcare for obese patients. Negative attitudes of healthcare professionals can discourage obese individuals from seeking healthcare due to the negative attitudes and discrimination they experience from healthcare workers. The aim of this study was to examine the general attitudes of students of the University of Applied Health Sciences toward obese individuals while also exploring specific determinants of those attitudes. Examining the average values on the Revised Antifat Attitudes Scale it was found that students generally hold positive attitudes, although there are differences among certain study programs. Increased education of students about minority groups, in this case, obese individuals, should certainly be a priority in the education of future healthcare professionals. Working on oneself to achieve body satisfaction is a significant predictor of attitudes toward obese individuals, according to the results of this study. The limitation of the study lies in the small sample size, uneven distribution of participants by gender, and a smaller number of participants from certain study groups. However, this research aimed to highlight the need for increased investigations into attitudes toward obese individuals among students, in order to introduce education aimed at reducing negative attitudes toward individuals with compromised health conditions due to obesity. Additionally, it is important to include the reasons for obesity in education, where students should be educated to reduce blame on obese individuals for their condition and focus on providing concrete assistance to help them overcome it.

Conclusion

Based on this research, student at the University of Applied Health Sciences showed generally high positive results toward obese people. The results of this study indicate gender differences among students at the University of Applied Health Sciences, with female students showing significantly more positive attitudes towards obese individuals than male students. Additionally, the findings show that students in the radiological technology program exhibit significantly more negative attitudes compared to students in other study programs. Ultimately, after controlling for demographic variables, the most significant predictor of a positive attitude towards obese individuals was a lower level of satisfaction with one's own appearance, while body mass index (BMI) was not a significant predictor of attitude. In conclusion, although students generally demonstrated positive attitudes towards obese individuals, this research highlights the necessity of including information on the causes and prevention of obesity in the education of future healthcare professionals across all study programs.

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STAVOVI STUDENATA ZDRAVSTVENOG VELEUČILIŠTA PREMA PRETILIM OSOBAMA

Sažetak

Pretilost je izraz koji se upotrebljava za opisivanje prekomjernog nakupljanja tjelesne masti u odnosu na nemasnu tjelesnu masu. Pretilost ima mnogo potencijalnih uzroka, poput genetike, konzumacije alkohola, uzimanja raznih lijekova, psihičkih problema, smanjene tjelesne aktivnosti i metaboličkih bolesti. Budući da su zdravstveni radnici svakodnevno u kontaktu s osobama s prekomjernom tjelesnom težinom i pretilošću, imaju ključnu ulogu u pružanju psihološke podrške. Cilj ovog istraživanja bio je ispitati stavove studenata Zdravstvenog veleučilišta o pretilim osobama, kao i neke odrednice u predviđanju stavova prema pretilosti. U istraživanju je sudjelovalo 200 studenata Zdravstvenog veleučilišta, različitih smjerova i godina studija. Rezultati pokazuju da postoji statistički značajna razlika između studenata i studentica u izražavanju negativnih odgovora, pri čemu su studenti skloniji izražavanju negativnijih stavova prema debljini. Također je uočeno da ne postoji statistički značajna razlika između redovitih i izvanrednih studenata, a fiziološki podaci nisu povezani s izraženijim negativnijim stavovima prema pretilosti. Najznačajniji prediktor u predviđanju negativnog stava prema pretilosti bilo je zadovoljstvo vlastitom tjelesnom težinom.

Ključne riječi: pretilost, stavovi prema pretilim osobama, studenti zdravstvenih studija