Journal of Professional Nursing 35 (2019) 138–146

Contents lists available at ScienceDirect

Journal of Professional Nursing

journal homepage: www.elsevier.com/locate/jpnu

Attitudes Toward Obese People: A Comparative Study of Nursing, Education, and Social Work Students

Rosa Darling*, A. Serdar Atav

Binghamton University, Decker School of Nursing, PO Box 6000, Binghamton, NY 13902, USA

ARTICLE INFO

Keywords:
Attitude
Belief
Obesity
Attitude toward obese person
Beliefs about obese persons

ABSTRACT

Background: Stigmatization and bias toward the obese population has been studied globally in a variety of professional groups, supporting the existence of negative attitudes and weight bias against this population. Attitudes fostering the prevalence of stigmatization undermine the effectiveness and quality of health care. Studies have not compared attitudes and beliefs of graduate and undergraduate students from professional schools within the same university. As an exemplar, this study compared nursing students' attitudes and beliefs toward obese individuals with students' attitudes in other professional schools.

Methods: The Attitudes Toward Obese Persons and Beliefs About Obese Persons scales were administered to undergraduate and graduate nursing students and graduate education and social work students at a US northeastern university.

Results: Analyses indicated students who were younger; in nursing programs; and reported not having a friend or family member who is overweight had significantly worse attitudes than others. Gender, location of residence, perceptions of own body weight, and participating in an exercise regimen were not significant.

Conclusion: Understanding attitudes toward obese people may guide educators as they train nursing, education, and social work students. Reducing negative attitudes, beliefs, and stigmatization is an important starting point in the battle against this growing public health concern.

Introduction

Obesity, a national healthcare challenge, is a known risk factor for comorbid conditions such as cardiovascular disease, diabetes, dementia, and cancer (Trust for America's Health & Robert Wood Johnson Foundation, n.d.). A person who is overweight has a body mass index (BMI) in the 25 to < 30 range. While a BMI of 30 or higher defines obesity, it has been further categorized. Class 1 obesity is defined as a BMI of 30 to < 35, Class 2 obesity is defined as a BMI of 35 to < 40, and Class 3 is a BMI of 40 or higher. The BMI calculation is based on a person's weight in kilograms divided by the square of that person's height in meters (Centers for Disease Control and Prevention, 2016). The National Center for Health Statistics (NCHS) reports a varied pattern of obesity in the United States (US). From 1988 to 2004, obesity in children and adolescents, ages 2 through 19, rose from 10% to 17.1%, stabilized for about 10 years, then rose slightly to 17.2% in the 2013–2014 reporting year. In adults ages 20 and over, however, obesity has steadily increased from 22.9% from 1988 to 1994 to 37.8% from 2013 to 2014. This percentage soars to 70.7% when adults ages 20 and over who are overweight are added to the statistic (National Center for Health Statistics, 2017).

As the rates of obesity dramatically increased, so did the financial cost of obesity. As of 2008, the estimated cost for obesity was $147 billion per year with a 42% ($1429) greater per capita medical spending for obese people than for people of normal weight (Finkelstein, Trogdon, Cohen, & Dietz, 2009). Despite a greater per capita medical spending, the negative attitudes obese patients face have contributed to avoidance of needed medical care, cancelation of appointments, and a delay in seeking preventive care (Obesity Society, n.d.).

Background

Attitudes of stigmatization and weight bias

Obese individuals endure inequality in daily life in several arenas: social, educational, work force, and medical provision. This inequality has made them targets of stigmatization and weight bias. Stigmatization is defined as the attribution of negative perceptions toward individuals based on subtle or overt differences that may include

* Corresponding author.
E-mail addresses: rdarling@binghamton.edu (R. Darling), atav@binghamton.edu (A.S. Atav).

https://doi.org/10.1016/j.profnurs.2018.07.009
Received 30 January 2018; Received in revised form 10 July 2018; Accepted 25 July 2018

race or ethnicity, physical appearance, and physical or mental illness (Obesity Society, n.d.). These perceptions result in the stigmatized person being viewed as having a lower moral character, lower status (The Free Dictionary, n.d.) or undesirable qualities (Goffman, 1963), producing an environment of shame for the one suffering from stigmatization. "Stigma exists when elements of labeling, stereotyping, separating, status loss and discrediting occur in a power situation that allows these processes to occur" (Link & Phelan, 2001, p. 382). In a study that examined occurrences of weight stigma, participants perceived 11.2 episodes of stigmatization within the two-week time frame of the study, over half of which occurred in the home (Vartanian, Pinkus, & Smyth, 2014).

Weight bias occurs with both overweight and underweight people. It refers to negative attitudes and beliefs that are unreasonable toward individuals who are not perceived as being of normal weight (Washington, 2011). According to Townsend (2015), attitudes have an emotional component and are a "frame of reference around which an individual organizes knowledge about his or her world" (p. 125). Beliefs are ideas one trusts or holds to be true. They can be rational or irrational, based on the existence of objective supportive evidence (Townsend, 2015). For the obese population, weight bias encompasses one of two components: the belief that they will be motivated to lose weight when they are shamed and stigmatized or the belief that obesity is due to a lack of self-discipline or willpower (Washington, 2011). All individuals have the right to be treated fairly and with respect, regardless of weight. Unfortunately, the opposite often occurs.

Stigmatization and bias related to the obese population has been studied in a variety of professional groups around the globe with findings that support the existence of negative attitudes and weight bias against the obese population by health care professionals (Budd, Mariotti, Graff, & Falkenstein, 2011), health educators (DeBarr & Pettit, 2016), physical education teachers (Peterson, Puhl, & Luedicke, 2012), health and physical education trainee teachers (Lynagh, Cliff, & Morgan, 2015), nurses (Apelt, Fabish, Laurisch, Paul, & Garms-Homolová, 2012; Garcia, Amankwah, & Hernandez, 2016), Nurse Practitioners (NPs) (Ward-Smith & Peterson, 2016), nursing students (Keyworth, Peters, Chisholm, & Hart, 2013; Waller, Lampman, & Lupfer-Johnson, 2012); dental hygienists (Essex, Miyahara, & Rowe, 2016), marriage and family trainees (Pratt et al., 2016), physiotherapists (Setchell, Watson, Jones, Gard, & Briffa, 2014), Physician's Assistant students, clinical psychology students, and psychiatric residency students (Puhl, Luedicke, & Grilo, 2014), medical students (Andrade et al., 2012; Phelan et al., 2014), and university students (Robinson, Nutr Diet, Ball, & Leveritt, 2014). These attitudes foster the prevalence of stigmatization, undermining the effectiveness of the messages professionals desire to communicate.

Among health care professionals, beliefs about obese people have been expressed in various negative ways: care delivery challenges that require extra time and resources (Garcia et al., 2016; Lumley, Homer, Palfreyman, Shackley, & Tod, 2015); overweight or obese as untidy, less successful, and less healthy (Ward-Smith & Peterson, 2016); weakened physician-patient relationships that result in less effective counseling about health issues and less willingness to follow medical recommendations (Gudzune, Beach, Roter, & Cooper, 2013). However, Foster and Hirst (2014) found that midwives were more willing to give advice when they perceived the obese pregnant woman was motivated to change her lifestyle.

Nursing

Nurses provide care for obese patients on a regular basis in the hospital setting. In a literature review that explored the attitudes nurses have toward obese people, Pervez and Ramonaledi (2017) identified factors that contribute to negative attitudes. These factors were lack of knowledge about obesity and its causes, perceptions of obese people, interactions with obese people, and workload challenges when caring for obese people. In a qualitative study, Keyworth et al. (2013) interviewed nursing students who observed that staff nurses have displayed judgmental and discriminatory attitudes toward obese patients.

Education and social work

Negative attitudes are displayed in the educational and social work arenas as well. Lynagh et al. (2015) evaluated prejudice against obesity in a sample of college students training to be physical education (PE) teachers and schoolteachers. Results from the Implicit Association Test indicated that both groups believed that obese children are less healthy and have a lower self-concept. In addition, students training to be PE teachers had significantly lower expectations for obese children in the areas of reasoning and cooperation skills. Peterson et al. (2012) also studied PE teachers and found similar results.

Robinson et al. (2014) found that social work students exhibited a significant level of weight bias. However, those who had received more genetics-related obesity education had more positive attitudes than those who had not received genetics-related education.

Attitudes toward obese persons (ATOP) and beliefs about obese persons (BAOP) scales

ATOP is a questionnaire that measures how positive people's attitudes are toward obese individuals. BAOP measures how strongly a person believes that obesity is not within a person's control (Allison, Basile, & Yuker, 1991). A sample of Chinese registered nurses completed the ATOP and the External Weight Locus of Control Subscale. Results indicated that if they worked in a specialty field instead of in generalist nursing or believed that obesity is beyond a person's control, they were more likely to have a slightly more positive attitude toward obese people (Wang, Ding, Song, Zhu, & Wang, 2016).

Pratt et al. (2016) surveyed marriage and family therapy students using ATOP and BAOP. In their sample, doctoral students compared to master's students reported a stronger belief that obesity is not in the person's control (eta-squared = 0.048).

Ip et al. (2013) found that female medical students had a slightly higher BAOP score than male medical students, indicating that females in this study believe that obesity is less within the person's control. Soto, Armendariz-Anguiano, Bacardí-Gascón, and Cruz (2014) compared attitudes, beliefs, and fat phobia between Mexican medical and psychology students using ATOP, BAOP, and fat phobia scales. They found that psychology students had better attitudes about obese persons and less fat phobia than medical students. They also found a positive correlation between ATOP and BAOP, suggesting that students who had a better understanding of the causes of obesity had more positive attitudes toward people who are overweight or obese. Medical students who were younger had more negative attitudes toward obese people, demonstrating the need for better curricular focus on the multi-faceted causes of obesity.

Demographic variables

In order to assess the attitudes of graduate and undergraduate students toward obese individuals, this study assessed several demographic variables. The literature review has been organized by the variables included in the study.

Gender

Arroyo-Johnson and Mincey (2016) reported data from the National Health Interview Survey, 1997–2012. According to this survey, 38.3% of women in the US are obese compared with 34.3% of men. For both genders, adults ages 40–59 have the highest rates of obesity. Furthermore, the National Health and Nutrition Examination Survey, 2013–2014 data reported that women have almost double the rate of extreme obesity as men (Trust for America's Health & Robert Wood

Johnson Foundation, n.d.). Perception of obesity differs between genders, however. Males who are overweight or obese are less likely to be dissatisfied with their weight than women who are overweight or obese (Tsai, Lv, Xiao, & Ma, 2016).

Age

In agreement with the National Health Interview Survey report, Trust for America's Health and the Robert Wood Johnson Foundation (n.d.) reported National Health and Nutrition Examination Survey data from 2011 to 2014. US adults ages 40–59 had the highest rate of obesity at 41%. This is followed by adults 60 and older at 38.5%, and young adults ages 20–39 at 34.3%. Although obesity rates have stabilized or declined in some areas of the US, the rate of obesity remains a high risk that is associated with comorbid disease and disproportionately occurs in areas with high poverty and adults with lower levels of education.

Program of study and degree program

According to the CDC, college degree attainment is associated with an overall lower prevalence of obesity when compared with less educated adults (Centers for Disease Control & Prevention, 2018). However, when applying to graduate school, obese applicants can be at a disadvantage, especially when a photograph is included with their application. Burmeister, Kiefner, Carels, and Musher-Eizenman (2013) looked at 97 applicants to a psychology graduate program. Applicants with a higher BMI received significantly fewer post-interview offers of admission into the program.

Location of residence

Studies that have assessed obesity rates in rural versus urban locations have divergent findings. According to a study that looked at 2005–2008 data from the National Health and Nutrition Examination Survey, the prevalence of obesity in rural areas is significantly higher than that in urban areas (Befort, Nazir, & Perri, 2012). Hill, You, and Zeollner (2014) conducted a study through a community-academic partnership and found the opposite. When respondents had higher levels of BMI, the severity of obesity was worse for urban versus rural residents. According to Rural Healthy People 2020, nutrition and weight status is the second highest priority among rural residents in the United States (Bolin et al., 2015).

Perceptions about self and others

The perceptions many possess about overweight and obese people have been propagated by photographs and publications in the media. Pearl, Puhl, and Brownell (2012) found that when obese and morbidly obese images are portrayed, attitudes of social distance are more strongly endorsed. Study participants preferred obese images portrayed in a positive way, indicating that a more positive portrayal of obese individuals in the media may be effective in reducing weight stigma. Saguy, Frederick, and Gruys (2014) conducted a study that compared attitudes after reading articles that discussed obesity. Prejudice against obesity was significantly greater in the group that read an article that portrayed obesity as a public health crisis than in the group that read an article about weight-based discrimination. As a follow-up to their original study, Frederick, Saguy, and Gruys (2016) used news articles to study how culture shapes attitudes about health. They found that participants, having read an article that claimed obesity was a result of making bad food and exercise choices, had greater prejudice against obese people, believed that fat people should pay more for insurance, and were more willing to discriminate against obese people.

Based on the concept that perceived body size is negatively associated with stigmatization, Himmelstein and Tomiyama (2015) studied the relationship between self-perception, stereotyping, and antifat attitudes. They reported that the more a person believes obesity can be controlled, the greater the prejudice against obese people. Pratt et al. (2016) also found that students who did not perceive themselves as overweight had a stronger belief that obesity is not in the person's control than students who perceive themselves as overweight (eta-squared = 0.024).

Exercise

The struggle of obesity is not unique to the adult world. With the growing percentage of obese youth, it is important to understand attitudes toward obesity and perceptions about how to manage it. Adolescents who struggle with weight and those who care for them have expressed ambivalence and low motivation for implementing dietary and exercise changes (Carcone et al., 2016). Rukavina and Weidong (2011), assessing the perception of adolescents regarding weight control, found that students who believe weight could be controlled believe that obese children could lose weight if they would try to eat less and exercise more.

Beliefs about exercise also contribute to attitudes about obesity. In a sample of exercise students, Chambliss, Finley, and Blair (2004) found three factors that were associated with lower prejudice against obese people. Having a strong belief that obesity is not the person's fault, having a family history of obesity, and having an obese friend were associated with lower prejudice against obese people. However, they also found that students believed that being fat was associated with being lazy, a finding supported by both adolescents and professionals (Andrade et al., 2012; Rukavina & Weidong, 2011; Ward-Smith & Peterson, 2016).

The purpose of our study was to provide an exemplar that assessed the attitudes of graduate and undergraduate students toward the obese population and to compare nursing student attitudes with those of students in other professional fields. While the literature strongly supports the prevalence of negative attitudes that lead to stigmatization and weight bias toward this population, studies that compare attitudes among different professional disciplines within the same University are lacking. Although the students attend different schools within the University, the University's values of unity, identity and excellence apply to all members of the University community; values that do not support stigmatization and bias. To that end, we were interested in assessing the effects of the following factors on attitudes and beliefs about obese people: gender, age, program of study, current degree program, location of residence, perception of one's own body, having a friend or family member they perceive as overweight or obese, and personal activity level. For the factor perception of one's own body, we did not provide definitions for underweight, normal weight, overweight, and obese to the participants. We were interested in how they perceived their bodies, not in how well they perceived that their body fit a pre-defined weight category.

Based on our synthesis of the literature, we hypothesized that females would have more positive attitudes and beliefs (do not believe that obesity is more in the person's control) than males; that older students would have more positive attitudes and beliefs than younger students; that graduate nursing students would have more positive attitudes and beliefs than undergraduate nursing students; and that nursing would have the most negative attitudes and beliefs about obese people when compared with education and social work students. We also hypothesized that rural location of residence, perception of one's own body as overweight or obese, having a family member or friend who is overweight or obese, and not maintaining a strict exercise regimen would result in more positive attitudes and beliefs toward obese people.

Methods

Using a non-experimental ex post facto, cross-sectional design, data were collected at a large University in Upstate New York that has seven different schools and offers graduate and undergraduate education. A convenience sample of 403 graduate and undergraduate nursing students, 35 graduate education students, and 88 graduate social work students was surveyed. Institutional Review Board approval was

obtained prior to administering the surveys.

Instruments

The Attitudes Toward Obese Persons Scale (ATOP) and the Beliefs About Obese Persons Scale (BAOP) were combined and administered in one questionnaire. Permission to use the surveys was obtained from the scale developers. Both of these scales have been used in several different contexts and in several different countries and are considered valid and reliable instruments. The originators of the ATOP and BAOP scales administered them as a combined survey to three groups of participants: 1278 members of the National Association to Advance Fat Acceptance (NAAFA), 52 graduate psychology students, and 72 undergraduate students. Based on the fact that the scale developers combined the surveys and that the scoring was the same for both scales, we did not perceive any difficulties with combining them for our study. The scale developers reported a reliability range for ATOP from 0.80–0.84 and for BAOP from 0.65–0.82 (Allison et al., 1991). For this study, the reliability for ATOP was 0.85 and for BAOP was 0.73, both within the ranges reported in the literature.

Although combined into one survey, these two instruments measure attitudes differently. ATOP measures explicit attitudes and perceptions toward obese individuals by asking how strongly they agree with statements that compare obese people with others in the emotional, physical, social, and professional realms. BAOP measures the strength of explicit beliefs about causes of obesity and the belief that the obese person can control obesity. Items in BAOP address eating patterns, genetic predisposition, food addiction, and lack of willpower.

ATOP is a 20-item scale with six responses ranging from “strongly disagree” (−3) to “strongly agree” (+3). Items 2–6, 10–12, 14–16, and 19–20 were written in the negative direction while the rest of the items were written in the positive direction. For that reason, the negatively framed items were multiplied by −1 before adding the scores. Instructions for calculating the total ATOP and BAOP scores were provided by the scale developers. To calculate the total ATOP score, positive and negative responses were added and 60 was added to that sum (Allison, 2009). Scores range from 0 to 120, with higher scores indicating more positive attitudes (Allison et al., 1991).

BAOP is an 8-item scale that also has six responses ranging from “strongly disagree” (−3) to “strongly agree” (+3). Items 1, 3–6, and 8 were written in the negative direction and were multiplied by −1 before adding the scores. To calculate the total BAOP score, positive and negative responses were added and 24 was added to that sum (Allison, 2009). BAOP scores range from 0 to 48, with higher scores indicating stronger belief that obesity is not under the person's control.

In addition to completing the ATOP and BAOP surveys, demographic data were collected. Demographic variables included gender, age category, program of study, degree program, location of residence, perception of one's own weight, whether they had a close friend or family member who is overweight or obese, and personal exercise regimen.

Data collection

Data collection took place in eight graduate level nursing classes, three undergraduate level nursing classes, and four graduate education classes during the time the classes regularly met. Graduate social work students completed the surveys on a voluntary basis between classes and returned them to a designated box in the secretary's office. Of the 526 students surveyed, 440 completed the questionnaires, yielding an 83.7% participation.

With the exception of graduate social work students, the researcher provided an explanation about the purpose of the study before the questionnaires were passed out. The instructor of record for the class was requested to leave the room to remove any appearance of coercion. Included in the introductory explanation and the cover page was assurance that participation was voluntary, that participants should not include their names since these were anonymous surveys, and that participation or lack thereof would have no effect on their grade for the course. The students placed completed surveys in an envelope so that the researcher did not know who had or had not completed them. The school of social work would not allow class time for students to complete the survey but professors agreed to read the sheet provided at the end of class that introduced the study and invited students to participate. The researcher met with the social work professors, explained the study, and provided the handout for them to read in order to provide participants the same information that the students in nursing and education received. In addition to the explanation about the study, the social work professors instructed graduate social work students where they could obtain the surveys they would complete between classes and where to return them. Once completed, the researcher picked up the surveys.

Data analysis

All demographic data were analyzed using frequencies to obtain percentages that described the sample. For hypothesis testing, since the sample of participants was not distributed normally, we chose bootstrapping as our method of data analysis. Bootstrapping is a robust method of data analysis that addresses problems that occur due to lack of normality of the sampling distribution. By treating the sample data as a population, bootstrapping takes random samples from that population again and again. The score for each sample is put back into the population before another bootstrap sample is calculated (Field, 2013). For our study, we used the default setting of 1000 random bootstrap samples with an alpha of 0.05.

Two statistical tests were used for data analysis. For the following hypotheses, *t*-test for independent samples was used:

- that females would have more positive attitudes and beliefs (do not believe that obesity is more in the person's control) than males,
- that graduate nursing students would have more positive attitudes and beliefs than undergraduate nursing students, and
- that having a family member or friend who is overweight or obese would result in more positive attitudes and beliefs toward obese people.

Since each of these hypotheses had two groups, this was the appropriate statistical test to assess the effect of the independent variable on ATOP and BAOP scores. For the remainder of the hypotheses, we used Analysis of Variance (ANOVA) with post hoc tests. The hypotheses that we analyzed with ANOVA were:

- that older students would have more positive attitudes and beliefs than younger students (five age categories that were not collapsed into older and younger),
- that nursing would have the most negative attitudes and beliefs about obese people when compared with education and social work students,
- that rural location of residence would result in more positive attitudes and beliefs toward obese people,
- that perception of one's own body as overweight or obese would result in more positive attitudes and beliefs toward obese people, and
- that not maintaining a strict exercise regimen would result in more positive attitudes and beliefs toward obese people.

Categories for each independent variable are included in Table 1.

Table 1
Relationship of demographic variables to ATOP and BAOP scales.

		ATOP scale				BAOP scale			
	n	Mean	SD	t/F	p	Mean	SD	t/F	p
Gender									
Female	371	70.34	16.29	−1.541	.125	18.30	6.23	−0.582	.534
Male	68	67.00	17.17			17.82	6.09		
Age									
< 20	20	65.99	11.93	2.431	.047*	14.35	3.87	6.855	.000*
21–30	310	68.65	16.23			18.06	5.90		
31–40	64	74.46	17.71			18.86	6.19		
41–50	32	73.63	18.45			18.09	6.83		
> 50	13	71.46	11.46			25.39	8.93		
Program									
Nursing	338	68.52	16.57	4.593	.002*	17.16	5.50	22.379	.000*
Social Work	56	77.32	15.82			23.93	7.09		
Education	34	71.46	14.45			19.37	6.54		
Other	10	66.46	12.47			18.80	5.29		
Degree									
Bachelors	251	66.31	15.64	6.913	.001*	16.97	5.26	14.072	.000*
Masters	173	72.87	17.09			20.12	7.00		
PhD	14	75.40	15.09			17.50	6.14		
Residence									
Rural	134	70.19	17.43	0.495	.610	18.82	6.81	1.547	.214
Suburban	230	70.08	15.55			17.74	5.73		
Urban	73	68.02	17.44			18.72	6.49		
Body perception									
Underweight	10	72.34	9.85	2.169	.091	17.90	4.38	1.195	.311
Normal	296	68.45	16.51			17.91	6.14		
Overweight	117	72.94	6.27			18.79	6.36		
Obese	13	69.68	19.34			20.54	7.02		
Overweight friend/relative									
Yes	376	70.72	16.59	7.957	.005*	18.22	6.13	0.000	.988
No	63	64.45	14.62			18.24	6.66		
Exercise regimen									
None	54	70.99	15.58	2.904	.035*	19.41	5.80	2.288	.078
Time available	194	71.82	15.95			18.53	6.27		
1–2/week	59	69.65	15.21			18.61	6.15		
3 or more ×/week	132	66.48	17.66			17.13	6.19		

* $p < .05$.

Results

Description of the sample

Participants were predominantly female (n = 371; 84.5%). Most of the participants were in the 21–30 age group (n = 310; 70.5%) followed by 31–40 (n = 34; 14.5%). Seventy-seven percent were from nursing (n = 338); 12.8% were from social work (n = 56); and 7.8% were from education (n = 34). Ten students (2.3%) did not provide their program. A majority of the students (n = 251; 57.3%) were studying toward a baccalaureate degree, followed by masters (n = 173; 39.5%) and PhD (n = 14; 3.1%). Almost twice as many students lived in suburban areas (n = 230; 52.6%) as rural areas (n = 134; 30.7%) with only 73 students (16.7%) living in urban areas.

In this sample of students, 67.9% (n = 296) perceived themselves to be normal weight, 26.8% (n = 117) overweight, 3% (n = 13) obese, and 2.3% (n = 10) underweight. Of the respondents, 85.6% (n = 376) had a friend or a family member who was perceived as overweight or obese. As well, 44.2% (n = 194) reported an exercise regimen based on time availability; 30.1% (n = 132) exercised at least 3 times per week; 13.4% (n = 59) exercised once or twice a week; and 12.3% (n = 54) reported not having an exercise regimen.

Results for the ATOP and BAOP questionnaires are reported based on the hypotheses. The hypotheses serve as the headings for each section.

ATOP results

Females would have more positive attitudes than males

Males and females did not report significantly different attitudes about obese people. ATOP scores range from 0 to 120, with higher scores indicating more positive attitudes (Allison et al., 1991). For both genders, the scores fell just above the middle range of possible ATOP scores, indicating that neither males nor females possess attitudes that view obese individuals in the most positive light. The mean ATOP score for females was 70.34 (SD 16.29) and the mean for males was 67 (SD 17.17).

Older students would have more positive attitudes and beliefs than younger students

We also looked at the relationship between age categories of the participants and ATOP scores. Participants who were 31–40 years of age reported the most positive attitudes toward obese people. Post hoc testing revealed significant differences in attitudes between participants who were < 20 years of age and students who were in both the 21–30 and 31–40 age categories.

Nursing students would have the least positive attitudes compared with education and social work students

We surveyed students in three different schools at the University who were in different degree programs. When comparing students in nursing with those in education and social work, social work students had significantly more positive attitudes than nursing students. Students in the “other” category were predominately anthropology

students who were taking courses in one of the schools surveyed. Their attitude scores were not significantly different than those of nursing students. Masters students had significantly more positive attitudes than baccalaureate students. Doctor of Philosophy (PhD) students' ATOP scores were not significantly different than the other degree programs.

Graduate nursing students would have more positive attitudes than undergraduate students

Since nursing was the only school surveyed that had both undergraduate and graduate students, we also looked at the comparison of ATOP scores between the two levels of education. Since the scores were not statistically different, graduate and undergraduate nursing students had the same attitudes about obese people.

Rural location of residence would result in more positive attitudes toward obese people

Location of residence was not significant. There were no differences in attitudes toward obese people among students living in rural, urban, or suburban areas.

Perception of one's own body as overweight or obese and that having a friend or family member who is overweight or obese would result in more positive attitudes toward obese people

Student self-perception as being underweight, normal weight, overweight, or obese was also not significant. However, students who reported having a friend or family member they perceived as being overweight or obese had significantly more positive attitudes about obese people than students who did not perceive having an obese friend or family member.

Not maintaining a strict exercise regimen would result in more positive attitudes toward obese people

Activity level was also significant. Students who exercise based on time availability had a more positive attitude than students who have a strict exercise regimen where they exercise three times per week for 30 min or more. Attitudes did not differ among students who reported not having an exercise regimen or exercising once or twice a week. Please refer to Table 1 for all statistics and calculated probabilities related to the ATOP score.

BAOP results

The range of scores for BAOP is 0–48, with higher scores indicating a stronger belief that obesity is not under the person's control (Allison, 2009). In this study, BAOP scores ranged from 14.35 to 25.39, indicating that there is room for improvement in the belief that obesity is not within the person's control.

Females would have more positive beliefs that obesity is not under the person's control than males

Scores for BAOP were not significantly different between males and females, indicating that they held the same level of belief that obesity is not within the person's control.

Older students would have more positive beliefs that obesity is not under the person's control than younger students

Participants 51 years of age or older had a significantly higher belief that obesity is not within the person's control than participants in each of the other age categories. Table 1 provides means for each of the age categories. Despite having the highest BAOP score, older participants' scores still only fell in the middle range of the BAOP total score at 25.39 (SD 8.93).

Nursing students would have the least positive beliefs that obesity is not under the person's control compared with education and social work students

When evaluating belief that obesity is not within the person's control, social work students had significantly higher scores than nursing or education students. Students in the “other” category did not differ in their beliefs when compared with the other courses of study. Masters students reported a stronger belief than baccalaureate students that obesity is not within the person's control. PhD students' BAOP scores were not significantly different from the other degree programs. An assessment of only graduate nursing students supported the finding that social work masters students still had the highest BAOP score compared with masters nursing and education students. A comparison of undergraduate and graduate nursing students' BAOP scores did not reveal any significance. When looking at the trend of the scores, however, higher levels of education resulted in higher scores.

Rural location of residence would have the most positive beliefs that obesity is not under the person's control

Location of residence was, again, not significant. There were no differences in beliefs toward obese people among students living in rural, urban, or suburban areas.

Perception of one's own body as overweight or obese and that having a friend or family member who is overweight or obese would result in more positive beliefs that obesity is not under the person's control

Perception of one's own body weight and reporting having a friend or family member perceived as being overweight or obese was not significant.

Students who did not maintain a strict exercise regimen would have the most positive beliefs that obesity is not under the person's control

This hypothesis was not supported since reported exercise regimen was not significant. For all statistics and calculated probabilities for the BAOP score, please refer to Table 1.

Discussion

The hypothesis that females would have more positive attitudes and beliefs than males was not supported. Our study found that males and females did not differ in their attitudes and beliefs. In fact, ATOP and BAOP scores fell in the middle range of possible scores, indicating the need for improvement in attitudes and beliefs for both male and female students. In contrast, Tsai et al. (2016) reported that overweight or obese males have more positive attitudes about their weight than overweight or obese women.

Attitudes for both genders can be influenced by media portrayals and news articles. Pearl et al. (2012) supported attitudes of social distance and weight stigma when study participants viewed obese and morbidly obese images. Frederick et al. (2016) reported that participants who read a news article claiming that obesity was related to bad nutrition and exercise choices were more prejudiced against the obese population. Since both genders are exposed to media portrayals, it is not surprising that they possess equally negative attitudes that lead to stigmatization and weight bias.

Students in the 21–30 and 31–40 age categories had significantly more positive attitudes than students < 20 years of age. The literature supports more negative attitudes in younger people (Soto et al., 2014). Since nursing was the only program that included undergraduate students in this study, the sample of students < 20 years of age would have been starting their nursing education. For that reason, they have had limited interaction with obese individuals in the health care setting and may not have been able to interact positively with obese patients.

Belief that obesity is not within the person's control was significantly stronger for students 51 years of age and older. Coupled with the knowledge gained through life experience, as people grow older the expectation of maintaining control over weight may not be as strong.

Since our sample was comprised of both undergraduate and graduate nursing students, the total number of nursing students was much larger than the number of graduate education and social work students. For that reason, we assessed a comparison of only graduate students in addition to a comparison of all students across the three disciplines. Social work students' attitudes and beliefs were consistently more positive. The masters of social work program at this University focuses on social and economic justice for all levels of society, from the individual through community. While social justice is also taught in the nursing and education curricula, the focus may be different.

The literature supports the belief that obese children cannot perform as well scholastically and physically (Lynagh et al., 2015; Peterson et al., 2012). As graduate education students work with school-aged students, they are also exposed to the negative attitudes and weight bias held by the teachers in the schools (DeBarr & Pettit, 2016; Peterson et al., 2012).

Though not statistically significant, it was interesting to note that graduate nursing students had more positive attitudes toward obese people and a stronger belief that factors other than self-discipline and willpower contribute to obesity than undergraduate students. Many graduate students are older and have a broader life experience, contributing to more positive attitudes. Graduate education, encompassing areas of social and health policy, gives students a more comprehensive view of environmental and social contributors to obesity that may be lacking in undergraduate education. The more a person is educated about causes and contributing factors for obesity, the more positive the attitudes and beliefs (Pervez & Ramonaledi, 2017; Robinson et al., 2014).

As undergraduate nursing students work with obese patients in the clinical setting, their attitudes and beliefs may be influenced by the nurses who act as their preceptors and mentors. Keyworth et al. (2013) noted that student nurses observe the behaviors of staff nurses. The extra demands of obese patients can negatively affect the attitudes displayed, thereby perpetuating stigma and weight bias against the obese population.

Another unexpected finding was that perception of one's own body as overweight or obese did not have an effect on attitudes and beliefs. A possible contributing factor for this finding was that about 70% of our participants perceived themselves as being underweight or normal weight, leaving only 30% that perceived themselves as overweight or obese. While we expected that participants with higher weight would have more positive attitudes and beliefs, the smaller percentage of participants in the higher weight categories may have influenced the outcome. In contrast to the expectation for our study, Pratt et al. (2016) found that students who perceived themselves in the normal weight category had a stronger belief that obesity is not in the person's control. Himmelstein and Tomiyama (2015) found greater prejudice against obese people with stronger belief that obesity can be controlled.

We hypothesized that having a family member or friend who is perceived as overweight or obese would result in more positive attitudes and beliefs toward obese people. This was supported for ATOP but not for BAOP. While having a more positive attitude toward obese people, they did not believe that obesity was outside the person's control. Regardless of age, the belief that a person should be able to control his or her weight is well supported in the literature (Himmelstein & Tomiyama, 2015; Pratt et al., 2016; Rukavina & Weidong, 2011). This substantiates the need for more comprehensive education regarding contributing factors for obesity, such as genetics, (Pervez & Ramonaledi, 2017; Robinson et al., 2014) to help reduce the perpetuation of weight bias and stigmatization.

We were interested in assessing how approach to exercise would affect attitudes and beliefs about obesity. We expected that students who reported not having an exercise regimen would have the most positive attitudes and beliefs about obese people. We found that students who exercise as time allows had significantly higher ATOP scores than students who maintain a strict exercise regimen. There were no differences among BAOP scores for the different categories of exercise regimen. Literature supports the belief that obese people of all ages are less capable of athletic performance and that being overweight and obese is associated with laziness (Andrade et al., 2012; Chambliss et al., 2004; Rukavina & Weidong, 2011; Ward-Smith & Peterson, 2016).

Solutions for stigmatization and weight bias toward the obese population have been suggested in the literature. These solutions are important considerations to help reduce the shame perpetuated by these negative attitudes. Parents should discuss accountability for health with their teens so that they do not feel attacked (Wills & Lawton, 2014). Health care providers should employ a patient-centered approach when discussing causes of obesity, health, and management strategies (Nicholls, Pilsbury, Blake, & Devonport, 2016). This type of approach allows patients to be included in the decisions about their health and can result in greater compliance with health care recommendations.

All students training for professional careers need sensitivity training and practice in communication techniques that promote nonjudgmental approaches when working with the obese population. All members of the healthcare team, as well as students in nursing, education, and social work, benefit from this type of training since they work with obese clients in an intimate way. Without respectful communication between obese patients and healthcare providers, counseling about health concerns is less effective and patients are less willing to follow the medical advice that is provided (Gudzune et al., 2013).

Our hypothesis that nursing students would have the most negative attitudes was supported in this study. It is possible that what nursing students are taught about the physiological and psychological effects of obesity may have influenced them negatively. Nursing courses include didactic content related to the obese population that includes self-perception of health and body image, mobility challenges, and surgical complications more likely to occur with obese patients. Nursing students learn how to communicate therapeutically, but those lessons are more generally applied to the population at large. For the nursing students in our study, these lessons did not generate positive attitudes for the obese individuals for whom they provide care. Through their nursing education, students practice skills in the lab and apply them in simulation scenarios. Including skills and simulations specific to obese patients in both lab and simulation settings could help students develop confidence when providing care in the clinical setting.

Implications for nursing education

Nursing curricula need a stronger focus on training leaders who support social justice for all, regardless of body size. As such, changes need to include education about genetics-related obesity so that nurses are more likely to support the view that obesity is not completely related to poor choices about diet and exercise (Robinson et al., 2014). In addition, there is a need to expand training in skilled communication techniques since student nurses lack confidence in discussing weight management with patients (Fillingham, Peters, Chisholm, & Hart, 2014; Keyworth et al., 2013). As nursing instructors and professionals, we need to model positive attitudes (Blake & Harrison, 2013; Foster & Hirst, 2014) and all personnel need to be engaged in obesity management techniques to ensure proper communication and safe care provision (Engström, Skytt, Ernsäter, Fläckman, & Mamhidir, 2013).

Through the combined efforts of federal, state, and local agencies, strategies for obesity prevention have been developed. Among them is offering more healthy foods and beverages in the schools and through the Child and Adult Care Food Program (Trust for America's Health & Robert Wood Johnson Foundation, n.d.). In addition, they offer healthy food options, toolkits, and expert technical assistance for establishing wellness plans. All of this is important, but obesity is so pervasive that it is difficult to reach all who can benefit from these strategies. One of the goals of these programs is to build partnerships among public health

and healthcare providers, schools and universities, community agencies, faith-based organizations, and service agencies to meet the needs of the communities (Trust for America's Health & Robert Wood Johnson Foundation, n.d.). Bachelor prepared nursing students work in the community as part of their public health clinical experience. Encouraging nursing students to participate in school and community based health fairs that teach school-aged children and adults about the effects of obesity as well as the benefits of healthy eating and exercise, and that incorporate fun physical activities would provide a positive approach that is individually or small group focused. At the graduate level as a culminating project, nursing students could design and implement community based programs that address healthy eating, exercise, and meal planning, and assess their effectiveness. Opportunities like these provide undergraduate and graduate students with practical applications for the didactic content they learn and may reduce negative attitudes and beliefs that lead to stigmatization and weight bias.

Although a pervasive healthcare challenge, stigmatization and weight bias have not been addressed well in the public health arena. The idea that obesity should be within a person's control and propagating weight stigma as a weight loss incentive has been accepted in the social realm for many years (Puhl & Heuer, 2010). Consequences of weight stigma at the individual level include unhealthy eating patterns accompanied by reduced physical activity, stress-induced illness, and lower rates of health and preventive care utilization. Consequences at the public health level include social inequalities, increased health disparities, and impaired obesity prevention efforts (Puhl & Heuer, 2010). Promotion of “health” instead of “weight” through campaigns to prevent obesity is a valuable first step in addressing obesity at all levels of society.

Limitations of this study include having a convenience sample from schools that are part of the same University. A comparison of undergraduate education and social work students was not possible since the University only has graduate programs in these disciplines. Another limitation was that the questionnaires were administered differently. Since the social work school would not allow class time to administer the questionnaires, the findings may have been impacted. Finally, the sample for this study was not normally distributed. To address the non-normal distribution, 1000 random samples were analyzed through the robust method of data analysis called bootstrapping.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declarations of interest

None.

References

Allison, D. B. (2009). *Handbook of assessment methods for eating behaviors and weight-related problems: Measures, theory, and research.* Thousand Oaks, CA: Sage Publications.

Allison, D. B., Basile, V. C., & Yuker, H. E. (1991). The measurement of attitudes toward and beliefs about obese persons. *International Journal of Eating Disorders, 10*(5), 599–607.

Andrade, A. D., Ruiz, J. G., Mintzer, M. J., Cifuentes, P., Anam, R., Diem, J., ... Roos, B. A. (2012). Medical students' attitudes toward obese patient avatars of different skin color. *Studies in Health Technology and Informatics, 173*, 23–29. https://doi.org/10.3233/978-1-61499-022-2-23.

Apelt, G., Fabish, A., Laurisch, E., Paul, J., & Garms-Homolová, V. (2012). A qualitative study on Nurses LT < GT > GT < GT > : Attitudes towards obese clients in long-term care. *Nursing Science, 14*(6), 324–333.

Arroyo-Johnson, C., & Mincey, K. D. (2016). Obesity epidemiology trends by race/ethnicity, gender, and education: National Health Interview Survey, 1997–2012. *Gastroenterology Clinics of North America, 45*(4), 571–579. https://doi.org/10.1016/j.gtc.2016.07.012.

Befort, C. A., Nazir, N., & Perri, M. G. (2012). Prevalence of obesity among adults from rural and urban areas of the United States: Findings from NHANES (2005–2008). *The Journal of Rural Health, 28*(4), 392–397.

Blake, H., & Harrison, C. (2013). Health behaviours and attitudes towards being role models. *British Journal of Nursing, 22*(2), 86–94.

Bolin, J. N., Bellamy, G. R., Ferdinand, A. O., Vuong, A. M., Kash, B. A., Schulze, A., & Helduser, J. W. (2015). Rural Healthy People 2020: New decade, same challenges. *The Journal of Rural Health, 31*, 326–333. https://doi.org/10.1111/jrh.12116.

Budd, G. M., Mariotti, M., Graff, D., & Falkenstein, K. (2011). Health care professionals' attitudes about obesity: An integrative review. *Applied Nursing Research, 24*, 127–137.

Burmeister, J. M., Kiefner, A. E., Carels, R. A., & Musher-Eizenman, D. R. (2013). Weight bias in graduate school admissions. *Obesity, 21*(5), 918–920. https://doi.org/10.1002/0by.20171.

Carcone, A. I., Barton, E., Eggly, S., Brogan Hartlieb, K. E., Thominet, L., & Naar, S. (2016). Exploring ambivalence in motivational interviewing with obese African American adolescents and their caregiver: A mixed methods analysis. *Patient Education and Counseling, 99*, 1162–1169. https://doi.org/10.1016/j.pec.2016.02.008.

Centers for Disease Control & Prevention (2016). Defining adult overweight and obesity. Retrieved from https://www.cdc.gov/obesity/adult/defining.html, Accessed date: 4 July 2018.

Centers for Disease Control & Prevention (2018). Adult obesity facts. Retrieved from https://www.cdc.gov/obesity/data/adult.html, Accessed date: 5 July 2018.

Chambliss, H. O., Finley, C. E., & Blair, S. N. (2004). Attitudes toward obese individuals among exercise science students. *Medicine & Science in Sports & Exercise, 36*(3), 468–474. https://doi.org/10.1249/01.MSS.0000117115.94062.E4.

DeBarr, K., & Pettit, M. (2016). Weight matters: Health educators' knowledge of obesity and attitudes toward people who are obese. *American Journal of Health Education, 47*(6), 365–372. https://doi.org/10.1080/19325037.2016.1219282.

Engström, M., Skytt, B., Ernsäter, A., Fläckman, B., & Mamhidir, A. (2013). District nurses' self-reported clinical activities, beliefs about and attitudes towards obesity management. *Applied Nursing Research, 26*, 198–203.

Essex, G., Miyahara, K., & Rowe, D. J. (2016). Dental hygienists' attitudes toward the obese population. *The Journal of Dental Hygiene, 90*(6), 372–378.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles, CA: Sage.

Fillingham, A., Peters, S., Chisholm, A., & Hart, J. (2014). Early training in tackling patient obesity: A systematic review of nurse education. *Nurse Education Today, 34*, 364–404. https://doi.org/10.1016/j.nedt.2013.06.020.

Finkelstein, E. A., Trogdon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical spending attributable to obesity: Payer-and-service-specific estimates. *Health Affairs, 28*(5), w822–w831. https://doi.org/10.1377/hlthaff.28.5.w822.

Foster, C. E., & Hirst, J. (2014). Midwives' attitudes towards giving weight-related advice to obese pregnant women. *British Journal of Midwifery, 22*(4), 254–262.

Frederick, D. A., Saguy, A. C., & Gruys, K. (2016). Culture, health, and bigotry: How exposure to cultural accounts of fatness shape attitudes about health risk, health policies, and weight-based prejudice. *Social Science & Medicine, 165*, 271–279. https://doi.org/10.1016/j.socscimed.2015.12.031.

Garcia, J. T., Amankwah, E. K., & Hernandez, R. G. (2016). Assessment of weight bias among pediatric nurses and clinical support staff toward obese patients and their caregivers. *Journal of Pediatric Nursing, 31*, e244–e251. https://doi.org/10.1016/j.pedn.2016.02.004.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity.* New York: Simon and Schuster.

Gudzune, K. A., Beach, M. D., Roter, D. L., & Cooper, L. A. (2013). Physicians build less rapport with obese patients. *Obesity, 21*(10), 2146–2152. https://doi.org/10.1002/oby.20384.

Hill, J. L., You, W., & Zeollner, J. M. (2014). Disparities in obesity among rural and urban residents in a health disparate region. *BioMed Public Health, 14*, 1051. https://doi.org/10.1186/1471-2458-14-1051.

Himmelstein, M., & Tomiyama, A. J. (2015). It's not you, it's me: Self-perceptions, antifat attitudes, and stereotyping of obese individuals. *Social Psychological and Personality Science, 6*(7), 749–757. https://doi.org/10.1177/1948550615585831.

Ip, E. H., Marshall, S., Vitolins, M., Crandall, S. J., Davis, S., Miller, D., ... Spangler, J. (2013). Measuring medical student attitudes and beliefs regarding obese patients. *Academic Medicine, 88*(2), 282–289. https://doi.org/10.1097/ACM.0b013e31827c028d.

Keyworth, C., Peters, S., Chisholm, A., & Hart, J. (2013). Nursing students' perceptions of obesity and behavior change: Implications for undergraduate nurse education. *Nurse Education Today, 33*, 481–485. https://doi.org/10.1016/j.nedt.2012.05.016.

Link, B., & Phelan, J. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*, 363–385.

Lumley, E., Homer, C. V., Palfreyman, S., Shackley, P., & Tod, A. M. (2015). A qualitative study to explore the attitude of clinical staff to the challenges of caring for obese patients. *Journal of Clinical Nursing, 24*, 3594–3604. https://doi.org/10.1111/jocn.13016.

Lynagh, M., Cliff, K., & Morgan, P. J. (2015). Attitudes and beliefs of nonspecialist and specialist trainee health and physical education teachers toward obese children: Evidence for “anti-fat” bias. *Journal of School Health, 85*(9), 595–603.

National Center for Health Statistics (2017). Health, United States, 2016: With chartbook on long-term trends in health. Hyattsville, MD. Retrieved from https://www.cdc.gov/nchs/data/hus/hus16.pdf#053, Accessed date: 4 July 2018.

Nicholls, W., Pilsbury, L., Blake, M., & Devonport, T. J. (2016). The attitudes of student nurses towards obese patients: A questionnaire study exploring the association between perceived causal factors and advice giving. *Nurse Education Today, 37*, 33–37. https://doi.org/10.1016/j.nedt.2015.11.009.

Obesity Society. (n.d.). Obesity, bias, and stigmatization. Retrieved from http://tosconnect.obesity.org/obesity/resources/facts-about-obesity/bias-stigmatization (Last accessed July 6, 2018).

Pearl, R. L., Puhl, R. M., & Brownell, K. D. (2012). Positive media portrayals of obese persons: Impact on attitudes and image preferences. *Health Psychology, 31*(6), 821–829. https://doi.org/10.1037/a0027189.

Pervez, H., & Ramonaledi, S. (2017). Nurses' attitudes towards obese patients: A review of

the literature. *Nursing Times, 113*(2), 42–45.
Peterson, J. L., Puhl, R. M., & Luedicke, J. (2012). An experimental assessment of physical educators' expectations and attitudes: The importance of student weight and gender. *Journal of School Health, 82*(9), 432–440.
Phelan, S. M., Dovidio, J. F., Puhl, R. M., Burgess, D. J., Nelson, D. B., Yeazel, M. W., ... van Ryn, M. (2014). Implicit and explicit weight bias in a national sample of 4,732 medical students: The medical student CHANGES study. *Obesity, 22*(4), 1201–1208.
Pratt, K. J., Palmer, E., Cravens, J. D., Ferriby, M., Balk, E., & Cai, Y. (2016). Marriage and family therapy trainees' reports of explicit weight bias. *Journal of Marital and Family Therapy, 42*(2), 288–298. https://doi.org/10.1111/jmft.12116.
Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: Important considerations for public health. *American Journal of Public Health, 100*(6), 1019–1028. https://doi.org/10.2105/AJPH.2009.159491.
Puhl, R. M., Luedicke, J., & Grilo, C. M. (2014). Obesity bias in training: Attitudes, beliefs, and observations among advanced trainees in professional health disciplines. *Obesity, 22*(4), 1008–1015. https://doi.org/10.1002/oby.20637.
Robinson, E. L., Nutr Diet, M., Ball, L. E., & Leveritt, M. D. (2014). Obesity bias among health and non-health students attending an Australian university and their perceived obesity education. *Journal of Nutrition Education and Behavior, 46*(5), 390–395. https://doi.org/10.1016/j.jneb.2013.12.003.
Rukavina, P. B., & Weidong, L. (2011). Adolescents' perceptions of controllability and its relationship to explicit obesity bias. *School Health, 81*(1), 8–14.
Saguy, A. C., Frederick, D., & Gruys, K. (2014). Reporting risk, producing prejudice: How news reporting on obesity shapes attitudes about health risk, policy, and prejudice. *Social Science & Medicine, 111*, 125–133. https://doi.org/10.1016/j.socscimed.2014.03.026.
Setchell, J., Watson, B., Jones, L., Gard, M., & Briffa, K. (2014). Physiotherapists demonstrate weight stigma: A cross-sectional survey of Australian physiotherapists. *Journal of Physiotherapy, 60*, 157–162. https://doi.org/10.1016/j.phys.2014.06.020.
Soto, L., Armendariz-Anguiano, A. L., Bacardí-Gascón, M., & Cruz, J. (2014). Beliefs, attitudes and phobias among Mexican medical and psychology students towards people with obesity. *Nutrición Hospitalaria, 30*, 37–41. https://doi.org/10.3305/nh.2014.30.1.7512.
The Free Dictionary. (n.d.). Medical dictionary: Stigmatization. Retrieved from http://medical-dictionary.thefreedictionary.com/stigmatization. (Last accessed January 29, 2018).
Townsend, M. C. (2015). *Psychiatric mental health nursing: Concepts of care in evidence-based practice* (8th ed.). Philadelphia, PA: F. A. Davis.
Trust for America's Health & Robert Wood Johnson Foundation. (n.d.). The state of obesity: Obesity rates & trends overview. Retrieved from https://stateofobesity.org/obesity-rates-trends-overview. (Last accessed July 6, 2018).
Tsai, S. A., Lv, N., Xiao, L., & Ma, J. (2016). Gender differences in weight-related attitudes and behaviors among overweight and obese adults in the United States. *American Journal of Men's Health, 10*(5), 389–398. https://doi.org/10.1177/1557988314567223.
Vartanian, L. R., Pinkus, R. T., & Smyth, J. M. (2014). The phenomenology of weight stigma in everyday life. *Journal of Contextual Behavioral Science, 3*, 196–202. https://doi.org/10.1016/j.jcbs.2014.01.003.
Waller, T., Lampman, C., & Lupfer-Johnson, G. (2012). Assessing bias against overweight individuals among nursing and psychology students: An implicit association test. *Journal of Clinical Nursing, 21*, 3504–3512. https://doi.org/10.1111/j.1365-2702.2012.04226.x.
Wang, Y., Ding, Y., Song, D., Zhu, D., & Wang, J. (2016). Attitudes toward obese persons and weight locus of control in Chinese nurses: A cross-sectional survey. *Nursing Research, 65*(2), 126–132. https://doi.org/10.1097/NNR.0000000000000145.
Ward-Smith, P., & Peterson, J. A. (2016). Development of an instrument to assess nurse practitioner attitudes and beliefs about obesity. *Journal of the American Association of Nurse Practitioners, 28*, 125–129.
Washington, R. L. (2011). Childhood obesity: Issues of weight bias. *Preventing Chronic Disease, 8*(5), A94.
Wills, W. J., & Lawton, J. (2014). Attitudes to weight and weight management in the early teenage years: A qualitative study of parental perceptions and views. *Health Expectations, 18*, 775–783. https://doi.org/10.1111/hex.12182.