

Weight Bias in Clinical Care: Assessment of an Interprofessional Session for Health Sciences
Students

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Abstract

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Abstract

Introduction: Weight bias is pervasive within our society and within the healthcare system. Individuals who live in larger bodies and who have experienced weight stigma often delay or avoid seeking care fearing a weight discriminatory experience. Given the detrimental effects that weight bias can have on an individuals' physical and emotional health, it is of outmost importance that interventions to reduce weight bias are incorporated into the training of future health professionals. Efforts to reduce weight bias via education and training can be deemed successful after proper assessment and evaluation of the impact of these interventions is conducted. The purpose of this study was to assess the impact of an educational session on weight stigma among health profession students.

Methods: A retrospective pretest-posttest survey adapted from The Fat Attitudes Assessment Toolkit (FAAT), which includes the Fat Acceptance Scale, was used to assess the impact of the educational session. Questions from the FAAT targeting empathy and health were used in our adapted survey. These specific questions were chosen to assess whether the session effectively changed participants' ideas about health and empathy related to fatness. This survey was intended to evaluate the impact of this interprofessional education session by evaluating whether session objectives were met.

Results: Four main themes arose from participant survey responses: 1) Actionable Items 2) Opportunities for Learning 3) Professional Role and 4) Weight Stigma. These themes point to the impact of the session on educating and raising awareness about weight bias within the health professions represented. Further, quantitative analysis suggests a varied level of difference between pre- and post-test scores. Most notable, the analyses suggest a change in the level of empathy and awareness as it relates to body weight and health, an understanding that body weight is not an appropriate indicator of health, and that regardless of profession (clinical vs public health/social work), the varied level of difference between pre- and post-test scores was consistent.

Conclusion: The qualitative results presented here suggest a varied level of response shift when comparing pre- and post-test scores, indicating the significance and effectiveness of the session. Likewise, the thematic analysis of the results points toward the session's success at meeting the

session's learning objectives. However, these results should be taken as a preliminary step highlighting the importance of education and training on the topic of weight stigma. Further efforts exploring the topic and the effectiveness of training and education on weight stigma can help contribute to the evidence needed to inform the public of the importance of these interventions.

Introduction

Bias is defined as a “prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair.” Weight stigma refers to the negative experiences that individuals with overweight or obesity experience. These experiences are characterized by negative stereotyping and discrimination.¹ Weight bias is pervasive within our society and especially prevalent within the healthcare system.^{1,2,3} Individuals who live in larger bodies face stigma from healthcare providers and may avoid or delay healthcare to avoid having unpleasant, weight discriminatory experiences.^{1,2,3,4}

Acknowledging and validating patients' fear of having unpleasant experiences with healthcare providers can help change the narrative surrounding patient noncompliance, contributing to the health disparities faced by individuals with overweight or obesity. Acknowledging that patients in larger bodies have experienced weight stigma can help shift the perspective away from a focus on weight, to one that fosters humility, respect, and inclusion.⁵ Instead of focusing on weight or questioning why patients seem to be “noncompliant”, or why patients are refusing to follow weight loss advice, it is necessary to consider the ways in which healthcare providers are actively contributing to weight stigma. It is also essential to investigate and actively work to stop this perpetuation of weight stigma.

Studies have identified both implicit and explicit biases among students in health care professions.⁶ For example, a descriptive study by George and colleagues assessed nursing students' unconscious weight bias.⁷ After taking the Implicit Attitudes Test (IAT) on the Harvard Project Implicit website, nursing students who predicted themselves neutral towards overweight, demonstrated an unconscious bias towards obese individuals.⁷ Further, even though registered dietitians (RDs) have more frequent interactions with overweight and obese patients, they are not immune to weight bias.⁸ Puhl and colleagues were interested in researching whether this weight bias was also present among dietetic students. Weight bias among dietetics students across the country was assessed via The Fat Phobia Scale.⁸ The results confirmed the prevalence of a moderate level of fat phobia among dietetic students.⁸ This fat phobia associated with weight-biased attitudes led dietetic students to make assumptions about health behaviors in patients with obesity despite having evidence that the patients were otherwise healthy.⁸

Healthcare students/professionals may believe they are free of weight bias and, as a result, are unaware of their implicit weight-biased attitudes.⁷ This is of concern considering that current health profession students are the future of our healthcare system. Thus, it is of utmost importance that weight bias is assessed among health profession students. Understanding how weight bias is present among health profession students can help develop interventions to reduce weight-biased attitudes that may present in future professional practice and negatively affect patient's quality of care.⁶

Efforts to reduce weight bias must be incorporated into the training and education of future health professionals. These efforts can be any intervention that focuses on raising awareness about weight bias and its detrimental effects. Something as simple as an educational session on the topic can be the first step to tackling the issue. After implementing such an intervention, it would be helpful to assess how effective an educational intervention is among health profession students.

Prior studies have incorporated weight bias training for health professionals. One study focused on delivering a weight bias training for medical school faculty.⁹ This study developed a one-hour, face-to-face workshop on medical weight bias.⁹ This workshop had 4 objectives; participants would complete an explicit weight bias survey before the session, the results of this survey would be compared with previous research, participants would report increased awareness of weight stigma, and participants would be able to list 2 effects of weight stigma on patient outcomes.⁹ After evaluating the results of this study, participants demonstrated a slight increase in awareness of weight stigma.⁹ Additionally, participants also reported learning something from this workshop that they could use to change how they work with patients.⁹ Using information learned from this workshop to educate students, fellows, or trainees was also a reported outcome of this workshop.⁹ Lastly, more than 75% of participants in this study were able to list 2 or more things learned from this workshop on weight bias.⁹

A different study wanted to examine if a day-long professional development model focusing on the delivery of non-stigmatizing health promotion delivery could decrease anti-fat attitudes among health promoters.¹⁰ This professional development model was developed by a team of researchers and health promoters.¹⁰ The participant sample consisted of public health practitioners working in the fields of nutrition, chronic disease prevention, and injury prevention.¹⁰ This study also used different scales to evaluate anti-fat attitudes, an internalization subscale, a sociocultural attitudes about appearance scale, body satisfaction scale, and a self-efficacy to change weight-related social norms scale.¹⁰ Lastly, this study used open-ended questions to obtain feedback about participants' satisfaction with the intervention and its feasibility with their daily practice.¹⁰ The findings of this study reported a significant decrease in participants' anti-fat attitudes and on the internalization of media stereotypes.¹⁰ Additionally, the findings were consistent with significant increases in the sense of self-efficacy to address weight bias.¹⁰

A study focusing on undergraduate kinesiology students used an educational session on the uncontrollable causes of obesity and the harmful effects of weight stigma to assess whether this would reduce both implicit and explicit weight bias immediately after the session and one month after the intervention.¹¹ The educational session for this study was implemented as a lecture on the first day, followed by a group activity discussing clinical scenarios and a reflective writing piece on day three.¹¹ This study included a control group who did not receive the educational session on weight stigma.¹¹ The results of this study demonstrated a significant decrease in the weight-blame component of explicit weight bias immediately after the intervention and at the one-month follow up.¹¹ The social and physical subscales of explicit weight bias did not change.¹¹ This intervention did not successfully reduce implicit weight biased attitudes among the kinesiology students.¹¹

These studies were evaluating the impact of an educational session centered on weight bias among health professionals and health profession students. The first two studies were focused on interprofessional collaboration and execution, while the third study described was specifically for kinesiology students. The use of an educational session seemed to be somewhat successful at reducing anti-fat attitudes. All three studies mentioned the importance of these findings as preliminary results and as a contribution to the growing body of literature supporting the value of educational sessions on weight stigma and weight bias. Likewise, the present study aims to add to this growing body of literature through the evaluation of an interprofessional session on weight stigma in clinical care.

A didactic interprofessional session on Weight Stigma in Clinical Care was offered at the University of Washington. This session was developed as a collaboration among different disciplines, including social work, medicine, and nutritional sciences. This topic is one part of many other offerings provided by the Center for Health Sciences Interprofessional Education Research and Practice at the University of Washington.¹² All offerings focus on the collaborative work of different disciplines by presenting clinical cases, examples of interventions, and tools for ethical decision-making.

The objectives of the Weight Stigma in Clinical Care Session were to: 1. Understand the consequences of weight stigma in healthcare; 2. Explore ethical implications of weight-focused practice and policies; 3. Personalize a weight-neutral approach to speaking with patients about health concerns; and 4. Explore how to partner with interprofessional colleagues to reduce weight stigma and promote health in patients of all body sizes.

The assessment of this session was conducted by administering a survey adapted from The Fat Attitudes Assessment Toolkit (FAAT), which includes the Fat Acceptance Scale. Questions from the FAAT targeting empathy and health were used in our adapted survey. These specific questions were chosen to assess whether the session effectively changed participants' ideas about health and empathy related to fatness. This survey was intended to evaluate the impact of this interprofessional education session by evaluating whether session objectives were met.

Methods

Survey Development

The survey for the present study included a combination of demographic questions, Likert scale questions adapted from the validated Fat Attitudes Assessment Toolkit (FAAT), and open-ended questions specific to the session learning objectives.¹³ The FAAT was developed to quantify fat discourse from a perspective of activism and fat acceptance.¹³ The FAAT comprises an eight-factor structure including the following scales: empathy, discrimination, size acceptance, attractiveness, health, complexity, responsibility, and body acceptance.¹³ Out of these different factors, five can be used to form a composite score for the Fat Acceptance Scale.¹³ Furthermore, the empathy and health scales assess a respondent's ability to empathize with the negative experiences of fat people and ideas around weight as an indicator of health.¹³ The entire FAAT was not used in this study; specific questions were selected from the empathy and health scales to align with the session objectives and assessment of the health profession students. The final survey also included a question regarding prior knowledge of the Health at Every Size (HAES) philosophy. The purpose of this question was to help researchers understand if prior awareness of the HAES principles would change baseline attitudes and the impact of the session. HAES is an approach used in healthcare that deviates from a weight-centered approach when treating patients and clients and instead focuses on body acceptance, intuitive eating, and exercise for movement and enjoyment.^{14,15}

The survey design was a retrospective pretest-posttest to assess whether the session had a meaningful impact. Although self-report assessments have limitations given the likelihood of response-shift bias, retrospective pretest-posttests are known to provide more valid results than pretest-posttest comparisons.¹⁵

The final survey consisted of three demographic questions, seven Likert-scale type items, and four-open ended questions. The demographic questions were used to assess participation in the educational session, assess prior knowledge of the HAES approach, and identify participants' field of study. The Likert items were posed as retrospective-pretest-posttest statements that were used to assess fat attitudes and internalized weight bias. Items were posed as statements for which the participants needed to answer based on their agreement or disagreement with the statement. The 7-point Likert scale ranged from strongly disagree (1), disagree, mildly disagree, neither agree nor disagree, mildly agree, agree, strongly agree (7). Lastly, four open-ended questions were included to evaluate the educational session and interprofessional learning objectives. The final survey questions used in this study can be reviewed in Appendix I. The learning objectives for the educational session on weight stigma were:

1. Understand the consequences of weight stigma in healthcare
2. Explore ethical implications of weight focused practices and policies
3. Personalize a weight neutral approach to speaking with patients about health concerns
4. Explore how to partner with interprofessional colleagues to reduce weight stigma and promote health in patients of all body sizes.

Study Setting and Participant Recruitment

The Interprofessional Active Learning Series (iPALS) is an interprofessional education series provided by the Center for Health Sciences Interprofessional Education Research and Practice at the University of Washington. Students from 12 health profession training programs participated in the iPALS series, and this study was focused on the Weight Stigma in Clinical Care iPALS session. The session was held online through the Zoom interface. Participants were able to voluntarily participate in the session, and all participants were required to register for the event before the event date. The event recruited students across the health sciences schools and programs. It should be noted that although participation in the post-session survey for the iPALS Weight Stigma in Clinical Care session was completely voluntary, some of the students who registered to participate in the live session were required to attend to meet program accreditation requirements.

Ethics Considerations and Confidentiality

Study protocols and procedures were approved by the University of Washington Institutional Review Board and granted exempt status. Participation in the survey was voluntary, and survey respondents were informed that the survey was part of a research study. Participants were also informed that choosing not to participate in the research would result in no penalty. Additionally, study participants were reassured that their anonymous responses would be kept confidential, stored on a secure server, and properly disposed of after completion of the data analysis. Lastly, a disclaimer on the survey's landing page stated that completion of the survey indicated consent for participation in the research.

Data Analysis

The survey link was provided for all students who registered for the session; however, attendance at the session was the defining inclusion criterion for the study. Only those who indicated they had attended the session had their survey responses included in the data analysis. The final sample for this study included 86 individuals (N= 86) who attended the session and completed the iPALS evaluation survey. The sample included students representing a total of 8 different health and allied health professions. These professions included dentistry, dietetics, medicine, nursing, pharmacy, rehabilitation therapy, public health, and social work.

A mixed-methods study design was utilized to assess the study objectives. Quantitative analysis was used for the Likert scale responses. The Wilcoxon signed-rank test was used to compare pre-post changes for each question. Additional analysis looked at the added impact of prior HAES awareness, as well as the impact of clinical discipline. Specifically, the 8 participating disciplines were grouped into two categories of students based on the underlying frameworks that guide their training: a clinical group (CLIN), and public health/social work (PHSW) group. The clinical group consisted of participants from dentistry, medicine, nursing, pharmacy, and rehabilitation therapy. The public health/social work group consisted of students from the school of public health, which includes dietetics, and social work. The Kruskal-Wallis H test was used to compare the responses by HAES awareness or by CLIN/PHSW alignment. The quantitative analysis was completed in R-studio.¹⁶ A significance level of alpha 0.05 was used for all quantitative analyses.

Qualitative analysis used a multi-step inductive iterative coding process to identify the recurrence of outstanding common themes and subthemes. The qualitative analysis process was carried out in Dedoose, a cloud-based research application, which allowed study members to independently code the qualitative survey data. After the code tree and definitions were developed and finalized, two of the study members independently coded the data. All discrepancies in the code application were resolved and incorporated into the final code application. The codes applied represented the concepts present in the survey responses, and thematic analysis allowed the research team to identify themes and subthemes from the coded responses. After identifying themes and subthemes, the research team selected representative quotes for each theme.

Methodological rigor was assured in this study through a process of continuous movement between study design and implementation. This allowed for alignment across study objectives, data collection, analysis, and interpretation. Verification mechanisms were integrated throughout the process through regular code evaluation, verification, and resolution of discrepancies. The research team regularly engaged in discussion and reflection exercises while consulting scientific literature throughout all study phases to remain aware of personal biases, values, and experiences contributed to the study.

Results

Qualitative Analysis

Themes

Four main themes arose from participant survey responses: 1) Actionable Items 2) Opportunities for Learning 3) Professional Role and 4) Weight Stigma. These themes, along with their corresponding sub-themes, are summarized in Table 1 and discussed in detail below.

Theme #1 Actionable Items

Participants mentioned practices/behaviors that health professionals could take to foster a weight inclusive environment in their future practice. These actionable items included making physical spaces weight neutral and weight inclusive. Examples provided in participants' responses included having chairs that would accommodate any size and ensuring weight-neutral policies, practices, and language. Other ideas supporting this theme highlighted creative efforts from providers, thinking of solutions to remove weight from the list of problems and instead focusing on the patient's best outcome.

One sub-theme emerged: weight inclusivity and neutrality. Participants mentioned the need to create a more inclusive environment for people in larger bodies.

Theme #2 Opportunities for learning

Opportunities for learning represented the set of ideas advocating for training and education around weight stigma for health care students and practicing professionals as continuing education requirements. Similar to the supporting ideas under actionable items, learning opportunities suggest that education and knowledge on weight stigma can be used as a tool to combat the issue. Participants envisioned creating public health interventions that shift messaging and programming away from a weight-centered focus to a focus on other health behaviors, modifications to health professions curricula to include interprofessional training courses on weight stigma; and informing public policy to refocus health campaigns to a weight-inclusive approach.

Public Health Messaging and Weight Stigma Education were two supporting sub-themes that arose to support the Opportunities for Learning code. In these subthemes, it was noted that public health messaging should shift away from focusing on obesity towards a weight-neutral lens. Additionally, the need for more opportunities to educate individuals on weight stigma was identified.

Theme #3 Professional Role

Participants expressed taking leadership within their individual careers to stop the perpetuation of weight stigma in healthcare. The theme of professional role embodies collaborative work, communication, and scope of practice as tools to build from each other's expertise. Respecting the boundaries within an interprofessional team's scope of practice allows professionals to work communicatively and collaboratively to stop the perpetuation of weight stigma.

This theme included four different subthemes. Collaborative Practice highlighted the need to work together and draw from each other's expertise to reduce weight bias. Lack of communication was noted as a problem. Participants reported conflicting professional or personal views, mentioning differences in training and conflicting advice given across professions. Last, Scope of Practice was cited often as a barrier, suggesting limitations to what specific professions can do and the need for referrals.

Theme #4 Weight Stigma

Weight stigma was mentioned as a recurring theme from participants' responses. Supporting sub-themes for this code include Eating Disorders, Interventions that Target Weight Can be Harmful, Offensive Language, Societal Feedback, and Weight is Not a Proxy for Health. In their responses, participants reported that weight stigma has been ingrained in healthcare and may be difficult to counteract, especially when it becomes a recurring issue from different interprofessional team members. This theme also captured those responses expressing that weight stigma and focusing on weight can cause more harm than good. This is especially concerning when dealing with patients who may have a history of eating disorders. The importance of screening for eating disorders was mentioned as an important part of health screenings. Since eating disorders don't have one specific physical manifestation, focusing on health behaviors instead of weight was thought of as a better alternative. Additionally, several responses mentioned that an assessment of health goes beyond just weight and size, and a greater awareness that terms related to body size can be offensive. Societal feedback included the idea that society supports assumptions about people in larger bodies and that there are many societal pressures leading people to feel self-conscious. Last, participants reported that BMI was a poor indicator of health and that not all people with a high BMI are unhealthy.

Table 1. Summary of Key Themes, Subthemes, and Illustrative quotes

THEMES, SUBTHEMES, AND ILLUSTRATIVE QUOTES DERIVED FROM OPEN ENDED SURVEY QUESTIONS (n=XX)	
Theme Description	Illustrative Quote
Theme #1 Actionable Items	
Practices/behaviors that health professionals could take to foster a weight inclusive environment in their future practice.	<i>"Ensuring the space in which I practice is weight inclusive, with respect to the physical environment, policies, practices, language, and more."</i> - Participant 19704458
The need to create a weight inclusive environment.	
1a: Focus on behaviors rather than weight or BMI	<i>"I would encourage healthy habits and a positive attitude than focusing on my patient's weight. I would promote weight neutral, non-diet health</i>

	<i>care in order to improve the health of my patients.” -Participant 19696905</i>
1b: Patient centered care, focusing on the patient first	<i>“Making sure to not look past the patient's primary concern and just giving a lecture about losing weight. Not to sacrifice healthy eating habits, for weight loss. Prescribing therapeutic exercise that is fun and addressing the family's views that may perpetuate their negative body image.”-Participant 19699361</i>
Theme #2 Opportunities for learning	
Opportunities for learning represented the set of ideas advocating for training and education around weight stigma for health care students and practicing professionals as continuing education requirements.	<i>“...Modifications could include modification of health profession graduate school curricula to provide better education on this area and more interprofessional training sessions for students... It could be useful to incorporate topics like weight stigma and weight bias into continuing education courses for different types of health professionals...”- Participant 19696675</i>
2a: Public Health Messaging Shift away from obesity towards a weight neutral lens	<i>“I envision using this content to try to help shift public health messaging and programming away from a focus on obesity and more toward healthy behaviors. At times, I feel like there is an inextricable link between nutrition and weight/obesity in today's society, and I hope to utilize some of the knowledge and strategies learned today to offer an alternative perspective...”- Participant 19696675_</i>
2b: Weight Stigma Education Needs	<i>“As a global health profession I envision using this content to inform policies and strategies that encourage healthy behaviors in an inclusive manner. I have a platform to cause behaviour change and shift mind sets of communities to curb weight stigma.”- Participant 19696176</i>
Theme #3 Professional Role	
Participants expressed taking leadership within their individual careers to stop the perpetuation of weight stigma in healthcare.	<u>See below</u>

3a: Collaborative Practice Across Professions	<i>"The interprofessional teams should work together and adopt various strategies to increase the quality of care for higher weight clients..."- Participant 19696905</i>
3b: Communication and Barriers to Communication	<i>"...For interprofessional practice itself, communication is critical. However, communication may be limited, and those who often hold knowledge on these topics seem less likely to be considered "essential" parts of the care team... as well as seek out opportunities for partnership, either formal or informal, amongst different types of health care professionals."- Participant 19696675</i>
3c: Conflicting Professional or Personal Views that Exist across professions	<i>"Differing perspectives can lead to different goals when working with any client/patient and with a higher weight person, this can show up with one providers primary concern being weight "management" at the detriment of the individuals real needs."- Participant 19696486</i>
3d: Scope of Practice and the need for Referrals	<i>"As a dentist, I tend to build rapport with the patient and usually learn about a patient's battle with their weight but often refer the patient to the PCP. However, as a dentist I can only use motivational interview but not exactly be able to make too many suggestions as there are a lot of other health issues that come into play."-Participant 19696171</i>
Theme #4 Weight Stigma	
Weight stigma was mentioned as a recurring theme from participants' responses. In their responses, participants reported that weight stigma has been ingrained in healthcare and it may be difficult to counteract, especially when it becomes a recurring issue from different members of the interprofessional team. This theme also captured those responses that expressed that weight stigma and focusing on addressing weight can cause more harm than good. This is especially	<i>"Stigma from lots of members of the team and systems not being set up to be inclusive of many body types."- Participant 19696208</i>

concerning when dealing with patients who may have a history of eating disorders.	
4a: Importance of Eating disorders Awareness	<i>"...ask about history of disordered eating regardless of weight..."</i> -Participant 19696255
4b: Interventions that target weight can be harmful	<i>"...Even when we don't intend to stigmatize, still encouraging weight loss can have harmful effects..."</i> - Participant 19701280
4c: Offensive Language Exists in Healthcare	<i>"Obese and overweight are stigmatizing words."</i> -Participant 19696208
4d: Weight is not a proxy for health	<i>"BMI is a poor indicator of health, weight is not indicative of diet/activity level, higher weight individuals can still be completely healthy and have no poor conditions because of weight."</i> - Participant 19696175

Quantitative Analysis

For the quantitative analyses, the eight questions that were selected from the Fat Attitudes Assessment Toolkit (FAAT) were evaluated individually. Due to the limited sample size, non-parametric procedures were used for all analyses. To determine if the impact of the iPALS session was also influenced by academic major, respondents were divided into two major groups, the clinical group (CLIN) and the public health/social work (PHSW) group. As previously stated, the clinical group consisted of participants from dentistry, medicine, nursing, pharmacy and rehabilitation therapy. The public health/social work group consisted of students from the school of public health, which includes dietetics, and social work.

The session significantly impacted students' responses to empathy-based questions, specifically questions on awareness of fat people's experience of discrimination, treatment, and judgment (questions 1, 3, 4, Table 2).⁹ The session did not impact how students responded to the question, "It is hard to accept your body if it differs from what the media represents as normal." (Question 2, Table 2). The session significantly impacted students' responses to questions related to health, specifically questions identifying health as not being solely predicted by weight, BMI is a poor indicator of health, fat does not mean unhealthy, and healthy bodies are diverse (questions 5, 6, 7, 8, Table 2).¹²

Table 2: Evaluating the effectiveness of the session at changing students' fat attitudes based on the fat attitudes assessment questions.

Question item	Pre-Session Mean (SD)	Post-Session Mean (SD)	P-Value ^a
Q1. Fat people face discrimination in many areas of life.	6.23±0.83	6.69±0.55	<0.001
Q2 It is hard to accept your body if it differs from what the media represents as normal.	6.35±0.86	6.39±0.91	0.246
Q3. Fat people are treated badly because of the way society depicts fat bodies.	6.14±0.91	6.44±0.82	<0.001
Q4. Concern for health is used as an excuse to judge fat people.	5.51±1.47	5.96±1.42	<0.001
Q5. Health is not predicted solely by body weight.	5.89±1.10	6.53±0.74	<0.001
Q6. Body Mass Index (BMI) is a poor indicator of health.	5.60±1.37	6.45±0.79	<0.001
Q7. Fat people are not necessarily unhealthy.	5.47±1.30	6.24±1.10	<0.001
Q8. Healthy bodies come in all shapes and sizes	5.87±1.26	6.46±0.83	<0.001

^a Wilcoxon signed rank test used for all within-group comparisons.

HAES awareness prior to the session was hypothesized to impact students' responses to fat attitude questions. While prior HAES awareness did not significantly impact all pre-session responses, it did significantly impact how students perceived their pre-session responses to questions related to health, specifically questions identifying health as not being solely predicted by weight, BMI is a poor indicator of health, fat does not mean unhealthy, and healthy bodies are diverse (questions 5, 6, 7, 8, Table 3). Further, prior HAES awareness did impact the change from pre-to post-session responses to questions on awareness of fat people's experience of discrimination, BMI is a poor indicator of health, fat does not mean unhealthy, and healthy bodies are diverse (questions 1, 5, 6, 7, Table 3). The data suggest that prior HAES awareness contributed to higher pre-session scores to the questions, thus reducing the change in response from pre- to post the session (Table 3).

Table 3: Impact of the session according to prior HAES awareness^a

Question	Pre-Session Responses			Post-Session Responses			Change in responses		
	HAES Aware	Not HAES Aware	P-value ^b	HAES Aware	Not HAES Aware	P-value ^b	HAES Aware	Not HAES Aware	P-value ^b
1	6.43±0.87	6.05±0.78	0.125	6.71±0.50	6.67±0.61	0.909	0.28±0.65	0.62±0.67	0.021
2	6.28±1.01	6.43±0.68	0.841	6.19±1.11	6.59±0.63	0.200	-0.07±0.70	0.19±0.62	0.221
3	6.33±0.94	5.92± 0.91	0.089	6.53±0.87	6.32±0.77	0.249	0.21±0.47	0.41±0.72	0.410
4	6.05±0.99	4.97±1.59	0.006	6.43±0.89	5.49±1.66	0.021	0.38±0.59	0.51±0.87	0.490
5	6.33±0.75	5.58±1.15	0.003	6.74±0.49	6.34±0.90	0.072	0.41±0.67	0.76±0.88	0.028
6	6.1±1.18	5.16±1.44	0.001	6.63±0.58	6.23±0.96	0.176	0.53±0.99	1.08±1.17	0.008
7	6.08±1.13	5.01±1.23	<0.001	6.6±0.77	5.88±1.20	0.003	0.53±0.91	0.87±0.93	0.007
8	6.2±1.29	5.71±1.10	0.003	6.65±0.88	6.29±0.80	0.010	0.45±0.90	0.58±0.89	0.051

^a All values shown as mean $\pm$ standard deviation.

^b *P* values were determined using Kruskal-Wallis *H* test for between-group comparisons of prior HAES vs. No HAES awareness pre-iPALS session, post-iPALS session, and for the change scores pre- to post-iPALS session.

Clinical versus public health/social work identity impacted baseline response to awareness of fat people's experience of discrimination, the judgement of fat people, identifying health as not being solely predicted by weight, fat does not mean unhealthy, and healthy bodies are diverse (questions 1, 4, 5, 7, 8, Table 4). For each of these questions, the public health and social work students rated their pre-session attitudes higher than the clinical students. Interestingly, there was a different pattern in how the session impacted students' perceived change in response from pre- to post the session, with clinical students showing a grater increase in response to awareness of fat people's experience of discrimination, treatment and judgement of fat people, and that health is not solely determined by weight (question 1, 3, 4, 5, Table 4).

Table 4: Session response differences between professions ^a

Question	Pre-Session Responses			Post-Session Responses			Change in responses		
	Clinical ^b	PH/SW ^c	P-value ^d	Clinical ^b	PH/SW ^c	P-value ^d	Clinical ^b	PH/SW ^c	P-value ^d
1	6.06±0.85	6.89±0.32	<0.001	6.64±0.60	7±0	0.003	0.55±0.72	0.11±0.32	0.010
2	6.28±0.95	6.47±0.51	0.797	6.35±0.97	6.41±0.71	0.747	0.07±0.68	-0.38±1.82	0.235
3	5.97±0.93	6.72±0.46	0.001	6.35±0.85	6.72±0.57	0.044	0.37±0.62	0.00±0.34	0.015
4	5.21±1.51	6.56±0.51	<0.001	5.76±1.49	6.67±0.77	0.003	0.54±0.71	0.11±0.68	0.046
5	5.70±1.14	6.56±0.62	0.002	6.48±0.78	6.78±0.43	0.128	0.75±0.89	0.22±0.43	0.013
6	5.51±1.42	6.06±1.06	0.114	6.44±0.82	6.56±0.62	0.689	0.94±1.14	0.50±0.92	0.128
7	5.29±1.25	6.28±1.07	0.001	6.13±1.07	6.78±0.55	0.004	0.83±0.97	0.50±0.71	0.224
8	5.69±1.25	6.5±1.04	0.003	6.34±0.87	6.94±0.24	0.001	0.62±0.96	0.44±0.86	0.399

^a All values shown as mean $\pm$ standard deviation.

^b Clinical Professions included dentistry, medicine, nursing, pharmacy, physical therapy, occupational therapy, speech therapy.

^c PH; students in the school of Public Health, including health administration and dietetics. SW: social work students.

^d *P* values were determined using Kruskal-Wallis *H* test for between-group comparisons of Clinical Professions vs. PH and SW pre-iPALS session, post-iPALS session, and for the change scores pre- to post-iPALS session.

Discussion

The goal of our study was to assess the impact of an educational session on weight stigma among health profession students. Participants' responses to the open-ended questions highlighted four themes: Actionable Items, Opportunities for Learning, Professional Role, and Weight Stigma. These themes bring forth recurring ideas about fat attitudes. These themes were recurrent and consistent throughout participants' responses, pointing to the impact of the session on educating and raising awareness about weight bias within the health professions represented. Further, quantitative analysis suggests a varied level of difference between pre- and post-test scores. Most notably, the analysis suggests a change in the level of empathy and awareness related to body weight and health, and an understanding that body weight is not an appropriate indicator of health. This was supported by the consistent varied level of difference between pre- and post-test scores regardless of profession (clinical vs public health/social work). Overall, based on the interpretation of these results, three out of the four objectives of the session were met. Therefore, we suggest that offering interprofessional educational sessions on weight bias may be an effective strategy to address weight bias among health science students.

The first learning objective of the session was to understand the consequences of weight stigma in healthcare. Participant responses demonstrated a general understanding of the consequences of

weight stigma through the answers provided to the health-related questions. The responses to these questions suggest that participants agreed with the idea that weight/BMI is not an appropriate indicator of health and that people who are categorized as "fat" are not necessarily unhealthy. Additionally, through the emergent theme of Weight Stigma, participants expressed concern with the ways in which weight stigma is present within healthcare. As highlighted previously in this study, weight bias is pervasive among health profession students even when students' awareness of said bias is not present.^{6,7,8}

The second learning objective was focused on exploring the ethical implications of weight-focused practices and policies. The results did not explore direct evidence on the ethical implications of weight-focused practices and policies. However, the results suggest that students' empathy towards fat people (as evidenced by responses to items 1-4) improved. Some of this can be evidenced by the theme Opportunities for Learning. Throughout this theme, participants expressed that new knowledge on weight stigma could be used for educational purposes or public health messaging. It is assumed that through education and awareness, people are more likely to respond to the issue of weight stigma and empathize with those most affected. This education and awareness on the topic can help open the path for weight stigma to be an important part of the training of healthcare professionals. Future sessions should directly include content on the ethical implications of weight-focused practices and policies. Previous research has described ethical considerations for weight bias present in health care professions, noting that holding negative biases against individuals in larger bodies is a violation of the ethical principles that are incorporated into the professional practice of nursing and medicine, which focus on beneficence, nonmaleficence, and respect for persons.^{17,18}

The third learning objective was focused on developing a personalized weight-neutral approach to speaking with patients about health concerns. Accordingly, a frequent message that surfaced through participants' responses included the use of a weight-neutral approach as highlighted in the theme of Actionable Items. This idea focused on using weight-neutral language when speaking to patients/clients about health concerns. Participants noted the influence and significance of advocating for patients and for leading a more weight-neutral practice as healthcare professionals. This role of an advocate also emphasized a patient-first approach where care delivered would be highly individualized and non-presumptuous. Participant responses suggest that there is value in being understanding and considerate to provide the best care possible for all patients regardless of size, and especially for patients who may have experienced prior weight stigma.

The last learning objective mentioned partnering with interprofessional colleagues to reduce weight stigma and promote health in patients of all body sizes. Additional considerations for interprofessional collaboration arose as a recurrent theme among participant responses. The idea that collaboration between different professions could help to reduce weight stigma was expressed in the theme of Professional Role. Participants noted that open communication with other healthcare team members would allow for a clear path with which to educate, raise awareness, and stop the perpetuation of weight stigmatizing experiences faced by people in larger bodies. The individual skills and expertise of each discipline represented among the

participants were also used as tools to combat weight stigma through the promotion of individualized care and referral to other professions as necessary. These findings expressed through the Professional Role theme align with prior research, pointing to the idea that weight discrimination can be reduced through an informative, educational, and collaborative effort, including media, educators, and health professionals.¹⁹

HAES is an approach used in healthcare that deviates from a weight-centered focus when treating patients and clients and instead focuses on body acceptance, intuitive eating, and exercise for movement and enjoyment.^{11,12} It is assumed that those who have been exposed to this framework have different ideas about the relationship between health and weight. It was hypothesized that the responses of those who had previously heard of or been exposed to HAES would be slightly less impactful than those who had never heard of this approach. The findings of this study demonstrate that those participants who had prior HAES awareness had increased awareness of fat people's experience of discrimination, BMI as a poor indicator of health, fat does not mean unhealthy, and that healthy bodies are diverse

Health profession students are often unaware of their negative attitudes or biases against individuals in larger bodies.⁶⁻⁸ Given that health care disciplines tend to place emphasis on weight for the assessment of healthcare conditions, it can be assumed that this emphasis on weight is warranted. However, this assumption often leads to the oversimplification of health advice and unsolicited weight loss recommendations regardless of the patient's condition. As described in the introduction, focusing on weight loss alone as a solution lacks consideration and can be very harmful. Thus, it was assumed that those healthcare students who received clinical training but had no prior exposure to the HAES paradigm would be the most impacted by this session.

Limitations

This study has several limitations. Firstly, the ethical objective component was not directly assessed with the Likert or open-ended questions in this evaluation. Although valuable ethical considerations arose and were consistently present throughout participants' responses, we cannot confidently say that students understood the ethical implications of weight bias in clinical care. Regarding the survey distributed after the session, although the FAAT tool was used as a starting point, not all of the questions from the FAAT were included in our final survey. As such, we cannot suggest or make general claims about fat acceptance since this was not the primary intent of the survey used in the study. Additionally, the fact that participation in this study was voluntary poses its own limitations. The first is generalizability. The findings of this study cannot be applied to the entire population of health profession students everywhere. Of all the disciplines represented in this sample, we cannot assume that all students across all disciplines have internalized weight bias and would benefit from an educational session. Secondly, there is room for self-report bias, or bias related to high motivation to participate and/or respond in a specific manner due to prior interest in the topic.

Conclusion

Weight bias is a real and present concern within our society and especially pervasive within healthcare. Those who are discriminated against because of their weight are so affected by weight stigma that they will delay or altogether avoid care at the expense of their obtaining healthcare. The experiences of weight discriminatory practices and the internalized weight bias among healthcare professionals in training have been well studied. Studies that assess whether an intervention to educate on weight stigma in clinical care has any impact on attitudes and ideas regarding weight stigma and affected individuals have demonstrated decreased anti-fat attitudes but no change in implicit biases towards fat people.⁹⁻¹¹ The results presented here suggest that there is a varied level of response shift when comparing pre- and post-test responses. The thematic analysis of the results points toward the success of the session at meeting three out of the four learning objectives of the session, but this association should be taken with the awareness that assumptions were gathered from participant responses and formatted as thematic codes to summarize common themes in responses. Therefore, these results can be taken as a preliminary step highlighting the importance of education and training on the topic of weight bias. It is only after multiple studies exploring the topic and the effectiveness of training and education on weight bias are performed, that surmountable evidence can be used to inform the public of the importance of these interventions.

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Appendix I Final Survey Questions

Demographic Questions

1. Did you attend the iPALS Zoom session "Weight Stigma in Clinical Care" on Friday 4/17?
2. Prior to this session, were you familiar with "Health at Every Size"?
3. What health profession are you in school for? (if applicable provide other health professional training that you have completed)

Likert-type Items

1. Fat people face discrimination in many areas of life
2. It is hard to accept your body if it differs from what the media represents as normal.
3. Fat people are treated badly because of the way society depicts fat bodies.
4. Concern for health is used as an excuse to judge fat people.
5. Health is not predicted solely by body weight.
6. Body Mass Index (BMI) is a poor indicator of health.
7. Fat people are not necessarily unhealthy.
8. Healthy bodies come in all shapes and sizes

Open-ended Questions

1. List 1-3 things that you learned in this session.
2. How do you envision applying this content to your future practice?
3. What challenges do interprofessional teams face when working with higher weight clients?
4. What strategies could interprofessional teams adopt to increase the quality of care for higher weight clients?