# Changing Internal Medical Residents' Attitudes Towards Managing People With Obesity Using an Interactive Educational Session With Embedded Real-Life Patients' Experiences

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## Abstract

Weight bias and discrimination towards individuals living with obesity among healthcare providers are associated with inferior patient care and worse outcomes. Our aim was to assess and measure the effect of an innovative educational session on attitudes towards perceived causes of obesity and treating individuals with obesity among internal medicine residents. This pre-post-intervention study was conducted among 30 internal medicine residents at the University of California San Diego. The session included a didactic lecture on obesity embedded with shared real-life patient experiences. Validated surveys were offered pre- and post-session: Perceived Causes of Obesity and Attitudes about Treating Patients with Obesity. A generalized estimating equations time-based model was used. The median age of participants was 29 years old, 53.3% females, and 56.7% were Caucasians. The effect of the session was significant in the physiological causes domain (from 3.59 ± 0.75 to 3.97 ± 0.80; $p = 0.002$), suggesting a greater belief in that obesity is caused by physiological characteristics. Our educational session also resulted in a statistically significant improvement in negative attitudes about treating people with obesity (from 2.43 ± 0.60 to 2.28 ± 0.54; $p = 0.015$). Our study demonstrated the significant positive impact of combining a traditional didactic lecture approach with embedded real-life patient experiences on a better understanding of factors contributing to obesity and improving attitudes towards managing people with obesity. It opens avenues for improving curricula to reduce anti-obesity stigma. Our findings merit further research on optimal strategy, context, duration, and evaluation of educational interventions that effectively and efficiently reduce weight bias among our future healthcare workforce.

*Keywords:* obesity, weight bias, medical education, residents, educational intervention

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## Introduction

It is estimated that over 16% of the adults worlds' population has obesity, which is a widely stigmatized condition by the general public and healthcare providers alike (Lytvyak et al., 2022; Ng et al., 2025). Obesity is associated with numerous conditions commonly encountered by internists, including type 2 diabetes, cardiovascular disease, various forms of cancer, and complications from Covid-19 (Wadden & Tsai, 2020). Weight bias and discrimination towards individuals living with obesity among healthcare providers are associated with inferior patient care and worse outcomes. Compared to patients with normal body mass index (BMI), those with excess weight avoid health care, receive less cancer screening, and have worse health outcomes (Aldrich & Hackley, 2010; Gudzune et al., 2014; Lytvyak, 2022).

Anti-obesity bias and stigma pose significant barriers to delivering impactful clinical care. Although providers must devote a considerable amount of time and resources to addressing the management of these comorbidities, there is no formal standardized education in the pathophysiology and management of obesity in U.S. medical schools and training programs (Butsch et al., 2020). Medical students and residents have also been found to harbor anti-obesity bias and weight stigma (Phelan et al., 2021). For patients to receive effective, evidence-based, compassionate care, healthcare providers must first overcome negative attitudes.

Our aim was to assess and measure the effect of an innovative educational session on attitudes towards perceived causes of obesity and treating individuals with obesity among internal medicine residents.

## Methodology

This pre-post-intervention study was conducted among 30 internal medicine residents at the University of California San Diego. Residents at UC San Diego attended a didactic lecture addressing the pathophysiology and management of obesity, embedded with real patients successfully treated with a variety of evidence-based therapies.

The session included a didactic lecture on obesity embedded with shared real-life patient experiences. The lecture was created and delivered by a faculty member certified by the American Board of Obesity Medicine. It included content addressing the pathophysiology of obesity and evidence-based therapies, including nutrition, lifestyle and behavior modification, pharmacotherapy, and bariatric surgery. The novel intervention of embedding real patients into the lecture allowed the residents to hear directly from them regarding correlates of their experiences and outcomes with the concepts introduced in the lecture, the impact of obesity stigma, bias and negative attitudes in healthcare settings, and advice on improving communication, rapport, and trust when treating patients with obesity.

Validated surveys were offered pre- and post-session: Perceived Causes of Obesity (PCO) and Attitudes about Treating Patients with Obesity (ATPO) (Foster et al., 2003; Puhl et al., 2014). The 23-item ATPO and the 14-item Perceived Causes of Obesity questionnaires, each using a 5-point Likert scale, were used to determine what, if any, changes occurred. The 23 items in the ATPO were converted into two domains: negative attitudes about obesity and positive attitudes about obesity. The items in the PCO questionnaires were converted into three domains: physiological causes, behavioral causes and environmental causes.

Demographics were collected on residents, including their age, sex, race (choices were Caucasian, Hispanic, Asian, African-American, and other [write in]), height, and weight, in order to calculate BMI. A BMI between 25.00 and 30.00 kg/m$^2$ was considered as overweight, and a BMI equal to or over 30.00 kg/m$^2$ was considered as obesity. To identify demographics info with both questionnaires/surveys, we assigned each subject a unique number code and letter (A) for the first questionnaire and letter (B) for the second questionnaire. Participants were informed that the survey is anonymous and instructed not to record their names or any other identifying information on the completed surveys or the outer envelope. The completed surveys were collected and consolidated randomly in a single packet by students or facilitators not involved with the study, then collected by researchers who were unable to match the unique survey ID with other residents' identifiers.

We used the ATPO to assess our primary outcome of interest, a change in anti-obesity attitudes. Assessing perceptions about the causes of obesity, using the PCO measure, was our secondary outcome.

Descriptive statistics (mean, counts, and percentages) of demographic information were produced. Class intervention was an effect between pre-time and post-time, so we used the time effect to represent it. We applied Generalized Estimating Equation (GEE) to test the hypotheses for this longitudinal study. For each domain of items, $\alpha$ was set at 0.05.

## Results

Thirty residents completed the surveys. The median age of participants was 29 years old, 53.3% females. Over half, 56.7%, were Caucasians, and 36.7% Asian. The BMI among participants varied between 18.8 and 27.3 kg/m$^2$. The majority (76.7%, n = 23) were within the normal range, whereas 20.0% (n = 6) were categorized as overweight.

Our educational intervention resulted in a statistically significant improvement shown as a reduction of negative attitudes using the ATPO survey from 2.43 ± 0.60 to 2.28 ± 0.54 ($p = 0.015$), and although there was a trend towards an increase in positive attitudes, the change was not statistically significant.

When assessing perceived causes of obesity, the physiologic causes domain showed a statistically significant increase from 3.59 ± 0.75 to 3.97 ± 0.80 ($p = 0.002$), but not the behavioral causes or environmental causes domains. This suggests a greater belief that obesity is caused by physiological characteristics.

## Conclusion

Our study demonstrated the significant positive impact of combining a traditional didactic lecture approach with embedded real-life patient experiences on a better understanding of factors contributing to obesity and improving attitudes towards managing people with obesity.

Our study is the first to examine the innovative approach of embedding real patients who have been successfully treated using the therapies presented in a traditional lecture on the biology and management of obesity. Using validated measures, we were able to demonstrate reduced negative attitudes towards treating patients with obesity. There was also evidence that residents perceived obesity as having physiological underpinnings to a higher degree after exposure to

this novel educational intervention. Efforts, including educational interventions to reduce negative attitudes towards patients with obesity, should therefore be prioritized for trainees.

Our findings open avenues for improving curricula to reduce anti-obesity stigma. They merit further research on optimal strategy, context, duration, and evaluation of educational interventions that effectively and efficiently reduce weight bias among our future healthcare workforce.

## Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that no AI or AI-assisted technologies have been used to generate, refine, or correct the content in the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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