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BRIEF REPORT

The Impactful Weight of Treating Beyond the Scale: A Comprehensive Course to Improve Obesity Care Among Medical Students

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ABSTRACT

Background and Objectives: Obesity is a complex, highly prevalent chronic disease that remains underprioritized in medical education, contributing to gaps in knowledge, confidence, and skills among future physicians. The purpose of this project was to evaluate the impact of an educational intervention on medical students' satisfaction, knowledge, and confidence related to obesity care, as well as their awareness of weight bias and stigma.

Methods: Medical students in the Comprehensive Urban Underserved and Rural Experience program took a five-session, in-person course focused on the multifaceted nature of obesity, patient-centered care, and practical application of learned skills. Student satisfaction, knowledge, confidence, and comfort were assessed using pre- and postcourse surveys.

Results: Students reported high satisfaction with the course sessions (scores≥4.0). Significant improvements were observed in obesity-related knowledge, comfort, confidence, and awareness domains (P<0.05) following the course.

Conclusions: These findings highlight the potential of comprehensive obesity education to improve medical students' knowledge, confidence, and awareness related to obesity care, including weight bias and patient-centered communication.

INTRODUCTION

Obesity is a complex and highly prevalent chronic disease affecting more than 40% of the adult population in the United States and nearly 600 million adults worldwide.[1,2] Despite its classification as a chronic disease, obesity remains underprioritized in medical education.[3,4] Obesity is associated with nearly 200 comorbidities, yet many medical professionals lack the training to manage it effectively.[3-7] Current curricula often do not provide sufficient education on obesity's multifactorial etiology, treatment modalities, and counseling techniques.[8] A recent study found that only 7.5% of medical schools incorporated dedicated obesity courses into their curricula, with an average of just 10 hours of instruction over 4 years; and fewer than 40% of programs reported covering key obesity-related topics in sufficient depth.[9,10]

Furthermore, weight bias is a widespread problem, with studies indicating that negative attitudes and implicit biases toward obesity are prevalent among providers and trainees.[11-14] This bias contributes to poorer health outcomes and avoidance of care, while also fostering harmful psychological effects, further compounding associated challenges.[14-18] Addressing this stigma through medical education is critical to breaking the cycle of stereotyping and improving the quality of care for individuals with obesity.

The objective of this project was to evaluate student satisfaction with

the course and assess changes in their self-perceived knowledge, confidence, and awareness following its completion.

METHODS

The course, titled "The Impactful Weight of Treating Beyond the Scale," was developed by an interdisciplinary team at the University of Alabama at Birmingham (UAB) and delivered during the summer to medical students (N = 25) in the Comprehensive Urban Underserved and Rural Experience (CU^{2}RE) program. Sessions 1 to 4 (implicit bias, motivational interviewing, nutrition, treatment/pathophysiology) combined lectures, discussions, and activities, while session 5 (standardized patient simulation), conducted with the Office of Interprofessional Simulation at UAB, engaged students in hands-on role-playing exercises and debriefs with facilitators (Table 1). Outcomes were collected through surveys administered throughout the course. These included postsession feedback surveys evaluating session content, facilitator effectiveness, and materials; a simulation feedback survey; and pre- and postcourse assessments of student knowledge, comfort, confidence, and awareness. All survey items used a 5-point Likert scale with higher scores indicating greater proficiency and ratings of 4.0 or higher (4 = agree, 5 = strongly agree) considered positive responses.

We analyzed data using Jamovi version 2.3 (The Jamovi Project) and conducted paired Wilcoxon signed-rank tests to compare pre- and postcourse survey data, with significance set at $P \leq 0.05$. Results are presented as mean (M) ± standard deviation (SD). This study was determined to be not human subjects research by the UAB Institutional Review Board (IRB-300013504).

RESULTS

Average postsession feedback survey, simulation feedback, and obesity knowledge, comfort, and awareness survey responses are presented in Table 2. Students rated all session and simulation domains as positive reactions (scores≥4.0). Students significantly improved their knowledge of implicit bias and motivational interviewing after session 1 (presession = 80±13%; postsession = 97%±9%; P<0.001) and demonstrated significantly increased confidence to introduce oneself to a new patient (presession = 4.3±0.8, postsession = 4.8±0.4; P= 0.02), ability to assess a patient's willingness to make changes (presession = 2.5±0.7, postsession = 4.0±0.7; P<0.001), understand key concepts of motivational interviewing (presession = 2.7±0.7, postsession = 4.0±0.8; P<0.001), ability to motivate the patient to exercise or consume a nutritious diet (presession = 2.4±0.7, postsession = 4.0±0.8; P<0.001), and advising one's patients to change their health behaviors (presession = 2.5±0.8, postsession = 4.0±0.8; P<0.001). We found no change in confidence with interpersonal skills (presession = 3.9±0.8, postsession = 4.3±0.6; P=0.09) or ability to express empathy and reflect a patient's emotions during an interview (presession = 3.8±0.8, postsession = 4.1±0.7; P=0.14).

DISCUSSION AND CONCLUSIONS

The results of this project demonstrate the positive impact of a targeted educational intervention on medical students' knowledge, confidence, and awareness related to the counseling and provision of obesity care. Students reported high satisfaction with the course sessions and simulation activities, and demonstrated significant improvements across multiple domains, including understanding obesity as a chronic disease, self-awareness of biases, confidence in motivational interviewing, knowledge of patient-centered language, and nutrition approaches.

While limited literature exists on comprehensive courses addressing the multifaceted nature of obesity, our findings align with prior studies showing that education approaches, particularly those incorporating weight bias training, case-based learning, and simulation, can improve knowledge, comfort, and confidence in providing care while also reducing weight bias and stereotyping among medical students.[19-24] However, the educational sessions in previous studies ranged from short videos to single workshops, and they typically focused on either medical content or addressing bias; whereas this course was intentionally designed to integrate both, offering a more cohesive approach to obesity education. Thus, our course can serve as a useful model for other institutions in addressing the multivarious complexities of obesity. Through interprofessional collaboration, institutions can use our course methodology as a template for "treating beyond the scale."

This project was limited by a small sample size drawn from a single institution's medical school program (CU^{2}RE), and additional research is needed to determine the generalizability of the findings to other medical schools. The sample consisted of students enrolled in a voluntary program focused on urban underserved populations, which may have contributed to more favorable outcomes than might be seen in the general medical student population. Additional cohorts with more heterogeneous student backgrounds are planned to allow for broader comparisons. Because the CU^{2}RE program is specifically designed to prepare future physicians to serve underserved communities, the course content was intentionally tailored to address the needs and challenges of these populations, which may further limit generalizability to other student cohorts. Furthermore, while the course surveys effectively captured student feedback and outcomes, they were developed by course instructors and not validated, potentially limiting their ability to evaluate course effectiveness. The current analysis is also limited to short-term retention of knowledge and skills; future assessments will explore longer-term outcomes.

These results suggest that this course may help improve obesity and weight stigma-related knowledge and skills among participating students and offer insights for future

TABLE 1. The Impactful Weight of Treating Beyond the Scale Course Outline

Session topic	Teaching technique	Session objective(s)	Session duration
Implicit weight bias and stigma in health care settings	Interactive lecture followed by practicing methods for overcoming biases	• Understand the origin of implicit bias and how it impacts caring for patients with obesity. • Describe the inequitable outcomes for different subpopulations of patients with obesity. • Be mindful of how to overcome bias when interacting with patients with obesity.	1.5 hours
Use of motivational interview to build relationships and guide health behavior change outline	Brief didactic sessions, paired and group role-plays, video vignettes, and group discussion	• Demonstrate the fundamental spirit and principles of motivational interviewing; understand core communication skills to elicit and reinforce change talk. • Learn to identify change talk and sustain talk and ways to assist with increasing change talk and reducing sustain talk. • Recognize signs for readiness to change and ways to develop effective change plans.	3.5 hours
Nutrition for weight management	Brief didactic session, small-group work and presentation, paired role-play, and large-group discussion	• Understand methods for determining energy needs as a component of nutrition assessment for obesity. • Evaluate potential benefits and drawbacks for commonly used diet approaches. • Apply learning about motivational interviewing to clinical encounters focused on diet and nutrition. • Assess sources of nutrition information used by both patients and providers for scholarly and clinical use. • Determine the roles and responsibilities of the physician vs dietitian in care teams for weight management.	2 hours
Pathophysiology and management of obesity	Didactic session blending audience response questions and case-based learning to apply knowledge to devising individualized treatment regimens	• Define obesity and use body mass index as a screening tool. • Understand the pathophysiology of obesity as a multifactorial disease affected by genetics, environment, and behavior. • Review current evidence-based treatments for obesity, including lifestyle changes, medications, and bariatric surgery. • Use patient-centered language to develop personalized treatment plans for patients with obesity based on individual risk factors.	2 hours
Scaling success through simulated motivational interviewing	Simulation with small groups, facilitator debrief	• Reflect and recognize how one's own implicit bias plays a role in developing empathetic relationships. • Demonstrate patient-centered communication with a focus on eliciting the patient's perspective on the illness, understanding the patient's psychosocial context, and reaching shared treatment goals based on the patient's values. • Develop motivational interviewing skills by practicing empathetic and respectful communication strategies in a clinical encounter for weight management. • Populate a shared treatment plan that includes one of the following: lifestyle changes, medication management, or community resources to assist in lifestyle changes.	1.5 hours

TABLE 2. Student Ratings of Satisfaction, Knowledge, and Skill Application in Obesity Care Education

Survey	Item/domain	Precourse M (SD)	Postcourse, M (SD)	*P*
Postsession feedback survey	Content	–	4.8 (0.2)	–
	Facilitator effectiveness	–	4.7 (0.3)	–
	Module/materials	–	4.8 (0.2)	–
Simulation feedback survey	The objectives for this event were met.	–	4.3 (1.4)	–
	The learning experience was valuable.	–	4.6 (1.2)	–
	This experience will improve performance in actual clinic setting.	–	4.5 (1.2)	–
	I would recommend this event to others.	–	4.6 (1.2)	–
Obesity knowledge, comfort, and awareness survey	Knowledge of obesity as a chronic disease	2.9 (0.7)	3.8 (0.5)	.001
	Comfort talking to patients with obesity	3.2 (0.9)	4.1 (0.7)	.002
	Self-awareness of own biases	3.6 (0.7)	4.4 (0.6)	<0.001
	Confidence in motivational interviewing	2.9 (0.9)	4.0 (0.5)	<0.001
	Knowledge about nutrition approaches	2.3 (0.7)	3.5 (0.8)	<0.001
	Knowledge about patient-centered language	2.3 (0.7)	3.8 (0.4)	<0.001

Abbreviations: M, mean; SD, standard deviation

efforts to enhance obesity education within similar curricular contexts.

PRESENTATIONS

This study was presented before publication at the Society of Teachers of Family Medicine Conference on Medical Student Education, January 31, 2025, San Antonio, TX.

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