ARTICLE

Clinical Research

Obesity preclinical elective: a qualitative thematic analysis of student feedback

Amber Olson[1]✉, Katherine Lyons[2], Rosanna Watowicz[3], Matthew Loria[1], Lee Meluban[1], Shanail Berry Lampkin[2], W. Scott Butsch[4] and Eileen Seeholzer[2]

BACKGROUND: Education about the prevalent chronic disease of obesity is still minimal and variable in medical school curricula. In a student-led effort with faculty support, the authors designed and implemented an obesity medicine elective at Case Western Reserve University School of Medicine (CWRU). The 10-week elective, taught by seven physicians and one dietitian, was offered in January 2023 to medical students and included: weekly lectures, an interactive session with a patient, shadowing in obesity medicine practices, attendance at a distance-learning intensive behavioral lifestyle program, student presentations, and a final written reflection. The purpose of this study was to analyze the elective reflections and identify themes about the elective's value and areas to improve.

METHODS: The authors analyzed reflections from the 20 medical students that completed the elective via qualitative thematic analysis. The analysis was performed using the Braun and Clarke six-phase framework: (1) become familiar with the data, (2) generate initial codes, (3) search for themes, (4) review themes, (5) define themes, and (6) write-up.

RESULTS: The themes identified were improved: (1) understanding of obesity as a chronic disease, (2) knowledge about treatment options for obesity (3) confidence in compassionate obesity counseling skills, and (4) skills to confront weight bias. Theme (5) consisted of highlights (hearing from experts, practicing evidence-based medicine, and interacting with patients), and areas to improve (session length, presentation format, more peer-to-peer interaction, and more diverse patient interactions).

CONCLUSIONS: Medical student assessments of a new obesity medicine elective described improved attitudes, knowledge, and skills to address obesity and obesity bias. Students were very satisfied and contributed ideas for improvements. This elective structure and evaluation method is a feasible model to provide medical students with meaningful experiences related to obesity.

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INTRODUCTION

Obesity is a multifactorial chronic disease that affects more than 42% of the US adult population and is increasing steadily [1]. Obesity has negative consequences on every organ of the body and is one of the largest contributors to the burden of other chronic diseases like heart disease, hypertension, and diabetes [1]. In addition to the health costs associated with obesity [2], the economic costs of obesity are immense and growing [3].

Despite the physical and economic costs associated with obesity, education about obesity is still minimal and variable in medical school curricula. A 2020 study that studied the extent of obesity education in undergraduate medical curricula found that only 10% of medical schools reported that their students are very prepared to treat patients with obesity. One-third of schools reported there were no obesity education programs in place and no plans to develop one and half of the schools reported obesity education as a low priority or not a priority at all [4]. Part of the reason for this lack of education stems from the misunderstanding that obesity is a result of a lack of willpower, rather than a chronic disease that physicians must be competent in managing [4].

To address this gap in education, we created a student-led obesity elective at Case Western Reserve University School of Medicine with faculty support. This elective, entitled "Introduction to Obesity Medicine," was a 30 h, 10-week preclinical course that provided students background in the pathophysiology and management of obesity. It was developed by four obesity medicine physicians, a dietitian, and a third-year medical student. The elective was open to all medical students at Case Western Reserve University School of Medicine. The goals of the course were: (1) to describe the complex chronic disease of obesity and its pathophysiology, (2) to explain the importance of obesity management and its components, and (3) to learn how to treat patients with obesity with empathy and compassion. The course had 23 learning objectives created by the study team, which can be viewed in Table 1. The elective was taught by eight multidisciplinary professionals involved in obesity management.

[1]Case Western Reserve University School of Medicine, Cleveland, OH, USA. [2]Adult Weight Loss Surgery & Weight Management Center, MetroHealth System, Cleveland, OH, USA. [3]Department of Nutrition, Case Western Reserve University School of Medicine, Cleveland, OH, USA. [4]Bariatric and Metabolic Institute, Cleveland Clinic, Cleveland, OH, USA. ✉email: ato8@case.edu

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Table 1. Obesity medicine elective learning objectives.

1. Explain the field of obesity medicine.
2. Describe the prevalence of overweight and obesity, including social and physical environmental determinants that may affect the risk of obesity, and health disparities seen across populations.
3. Describe examples of weight bias and what physicians can do to combat it.
4. Define the complex disease of obesity and its pathophysiology.
5. Describe the basic regulators of appetite.
6. Explain the genetic, behavioral, emotional, and physiologic mechanisms that contribute to the development of obesity.
7. Define energy homeostasis and its role in weight regulation.
8. Describe physiological barriers to weight loss maintenance.
9. Describe the goals in treating obesity.
10. Describe the obesity treatment pyramid and the importance of a comprehensive obesity treatment plan.
11. Describe common dietary interventions.
12. Demonstrate how to develop a nutrition plan to treat obesity.
13. Demonstrate how to develop a physical activity plan to treat obesity.
14. Explain the rationale for using anti-obesity medications.
15. Explain the mechanism of action of anti-obesity medications.
16. Recognize side effects and drug interactions of anti-obesity medications.
17. Identify medications that promote weight gain and their alternatives.
18. Use evidence-based medicine techniques to analyze and discuss a study.
19. Describe the goals and indications for surgery.
20. Explain the different surgical procedures that are used to treat obesity.
21. Describe the benefits and risks of different surgical procedures.
22. Listen to a patient's perspective on the disease of obesity.
23. Practice giving an "elevator pitch" on an obesity-related topic of your choice.

Table 2. Obesity medicine elective lecture schedule.

Session	Topic
1	Introduction, Epidemiology, Obesity Disparities
2	Pathophysiology
3	Nutrition
4	Physical Activity
5	Pharmacotherapy
6	Surgery
7	Journal Club
8	Weight Bias
9	Patient Perspective
10	Student Presentations

The components of the elective included weekly synchronous virtual lectures on various topics in obesity medicine (Table 2), a journal club on the STEP 1 semaglutide trial, a question-and-answer session with a patient who had undergone bariatric surgery, a shadowing session with an obesity medicine physician, a shadowing session at a distance-learning intensive behavioral lifestyle program (STRIDES Diabetes Prevention Program at MetroHealth), student presentations, and a final reflection [5, 6]. Through facilitation by the elective faculty, students were able to self-schedule shadowing sessions at both the obesity medicine clinics (at either MetroHealth or Cleveland Clinic) and the lifestyle program (STRIDES Diabetes Prevention Program at MetroHealth). For the presentation requirement, students were able to pick an obesity-related topic of their choice and give a 2 min elevator pitch during the final day of the elective. The purpose of the final elevator pitch was to practice communicating obesity research to colleagues in a concise and understandable manner.

The elective was offered as a zero-credit, pass/fail course. Successful completion of the course required: (1) attendance at at least eight out of 10 sessions (with journal club and student presentations being mandatory), (2) completion of a Dartmouth Evidence-Based Medicine Worksheet prior to the journal club, (3) 4 h of shadowing with an obesity medicine physician, (4) attendance at STRIDES, (5) a 2 min elevator pitch presentation, and (6) completion of the end-of-course reflection [7].

The objective of this study was to analyze student feedback on the elective to inform future iterations of the elective and provide insights for its adaptation at other medical schools. We report our program evaluation based on a qualitative thematic analysis of students' end-of-course reflections.

METHODS

Twenty (20) medical students at Case Western Reserve University School of Medicine in Cleveland, Ohio registered for and completed the elective. Of the 20 medical students that took the course, 15 were first-year medical students, three were second-year medical students, one was a fourth-year medical student, and one was a student in the MD/PhD program. For the final reflection, students were asked to respond to the following prompts: "What are your biggest takeaways from this elective? How will you incorporate this into your future career/practice? What were your favorite parts/experiences from this elective? What would you like to see improved for next year?" The study was determined to be exempt by the Case Western Reserve University Institutional Review Board (IRB).

We analyzed reflections from the 20 medical students that completed the elective via qualitative thematic analysis. To maintain confidentiality, reflections were de-identified and re-labeled with numerical identifiers by one author (AO) prior to analysis. The analysis was performed using the Braun and Clarke six-phase framework: (1) become familiar with the data, (2) generate initial codes, (3) search for themes, (4) review themes, (5) define themes, and (6) write-up. Three authors (AO, ML, LM) manually read the anonymized reflection transcripts and completed the analysis. AO is a third-year medical student involved in the creation of the elective, and ML

Table 3. Themes and subthemes of student reflections ($n = 20$).

Theme	Subtheme	Presence in reflections, no. (%)
Obesity as a multifactorial chronic disease	–	14 (70%)
Treatment options for obesity	Effective	14 (70%)
	Collaboration	3 (15%)
Obesity counseling skills	Motivational interviewing	8 (40%)
	Necessary	10 (50%)
	Confidence	10 (50%)
Weight bias	Willpower	6 (30%)
	Confronting bias	9 (45%)
Elective components	Lectures	17 (85%)
	Evidence-based medicine	13 (65%)
	Elevator pitch activity	9 (45%)
	Patient exposure	18 (90%)

and LM are both medical students not involved in the elective. After reading the anonymized reflection transcripts, the three authors independently generated initial codes, defined themes, and generated a codebook. After a series of discussions, the authors came to a consensus on the emerging themes and sub-themes and generated a final codebook. All 20 transcripts were then coded according to the codebook.

RESULTS

We identified five themes and twelve sub-themes from the submitted reflections (Table 3). The themes included: (1) the understanding of obesity as a chronic disease, (2) the many available treatment options for obesity, (3) an increased confidence in compassionate obesity counseling skills, (4) the importance of confronting weight bias, and (5) elective highlights and areas for improvement. Out of a total of 8948 words reflecting on the elective, only 957 words (10%) fell outside the scope of the five themes.

Theme 1: Obesity as a chronic disease

Fourteen students (70%) identified learning about obesity as a chronic, multifactorial disease as one of the biggest takeaways of this elective. Student 6 noted their biggest takeaway was a "shift in my perspective about obesity…understanding the physiological components of obesity allowed me to better appreciate it as a disease and not a personal choice." Students also emphasized the multifactorial nature of the disease. Student 9 mentioned, "prior to this course, the first thing that would come to mind when thinking about obesity is the diet and exercise component of the disease. I wasn't thinking deeply about the neurohormonal, genetic, and social drivers of the disease." In addition to obesity's multifactorial nature, students emphasized its complexity. For example, Student 12 learned that "the physiologic processes which drive obesity are incredibly complex with a lot that is still not fully understood."

Theme 2: Treatment options for obesity

In this theme, students discussed the many treatment options for obesity. Within the "effective" subtheme, fourteen students (70%) recognized the efficacy of different obesity treatment options. Some students were surprised to learn about the efficacy of certain treatments, such as bariatric surgery. For example, Student 15 wrote, "prior to this course, I assumed that bariatric surgery was an undesirable option with a lot of side effects and low efficacy, but I understand with the in-depth discussions from class how it is the opposite." Students also emphasized the importance of considering the entire continuum of treatment for obesity—lifestyle, pharmacological, and surgical interventions. Student 19 mentioned, "diet and exercise will not be enough for the majority of people and an array of lifestyle, medical, or surgical interventions may be needed to help patients reach their respective health goals." Students noted that different treatments work for different people and that a combination of treatments is often necessary.

In the "collaboration" subtheme, three students (15%) discussed collaboration as a necessary tenet of obesity treatment. Student 9 reflected that, "dietitians and physicians can work together to treat obesity…I will always keep at the forefront of my mind that the treatment of obesity is a team effort."

Theme 3: Obesity counseling skills

The third theme reflects the obesity counseling skills that students learned during the elective. Within the "motivational interviewing" subtheme, eight students (40%) reflected on the importance of compassionate motivational interviewing when counseling patients on obesity, rather than just instructing patients to "lose weight." Students discussed the importance of patient-centered care and making recommendations based on the patient's goals. Student 1 reflected, "it is crucial for me to ask the patient what their goals are and to make changes based on what will actually work in their life." Student 7 illustrated this with an example: "when I was shadowing Dr. X in clinic, he saw a patient who…did not have a goal of reaching his ideal weight according to a BMI chart, but rather to feel good and be able to enjoy activities with his partner and children." Students also discussed the compassion that is required in obesity counseling. For example, Student 11 noted, "the environment that you create for them [patients] must be non-judgemental and supportive in order to foster meaningful change…creating a safe environment in which patients feel comfortable sharing their struggles is essential to amending treatment plans and overcoming setbacks together."

In the "necessary" subtheme, ten students (50%) discussed how all providers, regardless of specialty, should be proficient in obesity management. Student 10 reflected, "I do not know what specialty of medicine I will end up in, but I do know obesity intersects virtually every type of medicine…every physician should be able to discuss obesity to a basic extent."

Within the "confidence" subtheme, ten students (50%) described how they feel more confident in obesity management as a result of this elective. For example, Student 6 wrote, "I think that I've gained several useful tools and resources for talking about and helping patients with weight management. Before this elective, I can imagine being completely unprepared for having these discussions with patients…but now I feel confident that at the very least I can provide some useful counseling and know where to direct patients for more specialized treatment."

Theme 4: Weight bias

In this theme, students discussed their takeaways regarding weight bias. In the "willpower" sub-theme, six students (30%)

emphasized that obesity is not the result of a lack of willpower. Rather, students discussed how it is the pathophysiology of obesity that makes it so difficult to lose and maintain weight. During their shadowing sessions, several students observed the impressive effort patients put into controlling their obesity, dispelling the myth that patients with obesity are "lazy." Student 8 reflected how patients invest so much in lifestyle modifications, "but [are] still unable to change their weight because of so many other factors." Student 11 "was truly astounded by the perseverance of the individuals who came in to see [the physician]" and observed that "patients were remarkably compliant to excellent diets."

In the "confronting bias" sub-theme, nine students (45%) described how the elective allowed them to both confront weight bias in themselves and advocate for less weight bias among all healthcare professionals. Student 11 described how the elective made them more "aware of [their] own biases and misconceptions about the nature of obesity." Student 6 reflected that they have "already encountered numerous peers with significant weight bias, and utilizing the knowledge [they] gained from this elective [will be] incredibly helpful when talking to them about their beliefs and thoughts on obesity." Student 19 broadened this discussion to comment on the weight stigma that impacts the lack of insurance coverage for anti-obesity medications, stating, "it is saddening to see institutional prejudices against patients with obesity [that] prevent the field from…treating patients."

Theme 5: Elective highlights and areas to improve

As indicated in the reflection prompt, students also provided their perspectives on highlights of the elective and areas to improve for future iterations. In the first sub-theme, 17 (85%) students discussed lectures. Students described the lectures as well-organized, engaging, informative, comprehensive, and applicable to future practice. Student 18 said they appreciated "the setup of the course, the flexibility offered, and the exposure to…innovative research in the field of obesity medicine." In terms of improvements, students suggested shortening the lecture component of the elective from 2 h to 90 min. Students also suggested inviting a more diverse array of medical professionals to share their insights. Specifically, students recommended more content from dietitians, pediatricians, cardiologists, and surgeons.

In the second sub-theme, 13 (65%) students discussed the evidence-based medicine (EBM) component of the course. In general, students appreciated the course's focus on EBM, but desired a more interactive approach in learning the principles of EBM. Student 5 felt very appreciative that this elective "provided an opportunity…to learn the steps of critically appraising an article." As a result of the journal club, Student 9 stated they feel "more comfortable navigating and approaching the obesity research field literature." However, students largely desired a more interactive journal club. Several students suggested the use of "breakout" rooms on Zoom to encourage more student discussion and interaction.

In the third sub-theme, nine (45%) students discussed the elevator pitch activity. In general, students described their enjoyment of the elevator pitch activity, but many desired an alternate format. Student 18 reflected, "hearing everyone share their research and interests allowed us to have a lot of really insightful conversations in a short period of time." There were many suggestions made to improve the structure of the final elevator pitch activity, as students largely agreed that the session was too lengthy. Student suggestions included: spreading pitches out throughout the elective, presenting elevator pitches in small groups with a physician facilitator, and pitching outside of class time.

In the final sub-theme, 18 (90%) students described their exposure to patients with obesity. Students largely agreed that their interactions with patients with obesity were a highlight of the elective, but they desired exposure to a more diverse set of patients. Students had three opportunities during the elective to interact with patients affected by obesity: shadowing, the distance-learning intensive behavioral lifestyle program (STRIDES), and the patient perspective lecture. Many students indicated that patient exposure was their favorite part of the elective, allowing them to apply the principles discussed in lecture to clinical practice and "humanize the disease of obesity." Several students indicated that exposure to patients with a wide variety of experiences and backgrounds would be helpful in contextualizing the disease of obesity.

DISCUSSION

Medical student reflections of a novel obesity medicine elective described improved attitudes, knowledge, and skills to address obesity and obesity bias. The main identified takeaways from this elective were (1) the understanding of obesity as a chronic disease, (2) the many available treatment options for obesity, (3) an increased confidence in compassionate obesity counseling skills, and (4) the importance of confronting weight bias. Students were also very satisfied with the elective and contributed ideas for improvement.

In future iterations of the elective, several changes will be made. In response to valuable student feedback, there will be a reduction in the length of lectures from 2 h to a more focused 90 min. We will also use Zoom breakout rooms to create a more interactive EBM session. In addition, efforts are underway to expand the involvement of both faculty members and patients, enriching the array of perspectives available for students to engage with and learn from.

As obesity medical education is scant, this obesity medicine elective structure and evaluation method is a feasible model to provide students with meaningful experiences related to obesity for adaptation at other medical schools. Based on student feedback, patient exposure should be prioritized if constructing a new obesity medicine elective, as this was the highlight of the elective for most students. Obesity medicine electives should also incorporate a diverse array of both obesity medicine professionals and patients, and be composed of succinct yet interactive sessions.

To date, this is the only study that provides qualitative data on a novel obesity medicine elective for medical students. A 2021 review of the state of obesity education found only 17 high-quality studies since 1982 that have attempted to improve obesity education at the undergraduate medical level.[14] As education about obesity is largely absent in medical curricula nationally, these data provide essential insight into successful obesity educational interventions that can be adopted at other institutions. However, our study has several limitations. Students wrote these reflections to fulfill course requirements, which may bias some of the thoughts they shared. However, this potential bias is limited by the pass/fail nature of the course, as the content of their reflection did not have any influence on their successful completion of the elective. In addition, this elective occurred at a single institution, which may limit its generalizability to other settings.

This study demonstrates that the first iteration of a novel obesity medicine elective at Case Western Reserve University School of Medicine resulted in an improvement in obesity attitudes and knowledge among medical students. The elective was largely appreciated by students and the identified areas of improvement will be addressed in future iterations of the elective. Using this study as a model, future studies are warranted to implement and evaluate obesity medicine electives at other institutions. In order to combat the obesity epidemic, medical students must be better educated on obesity to create a generation of future physicians that are more competent and confident in obesity management.

DATA AVAILABILITY

The data generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

REFERENCES

1. CDC. Obesity is a Common, Serious, and Costly Disease. Centers for Disease Control and Prevention. Published May 17, 2022. Accessed July 27, 2022. https://www.cdc.gov/obesity/data/adult.html
2. Pearson-Stuttard J, Banerji T, Capucci S, de Laguiche E, Faurby MD, Haase CL, Sommer Matthiessen K, Near AM, Tse J, Zhao X, Evans M. Real-world costs of obesity-related complications over eight years: a US retrospective cohort study in 28,500 individuals. Int J Obes (Lond). 2023. https://doi.org/10.1038/s41366-023-01376-4
3. Ward ZJ, Bleich SN, Long MW, Gortmaker SL. Association of body mass index with health care expenditures in the United States by age and sex. PLOS ONE. 2021;16:e0247307. https://doi.org/10.1371/journal.pone.0247307
4. Butsch WS, Kushner RF, Alford S, Smolarz BG. Low priority of obesity education leads to lack of medical students' preparedness to effectively treat patients with obesity: results from the U.S. medical school obesity education curriculum benchmark study. BMC Med Educ. 2020;20:23. https://doi.org/10.1186/s12909-020-1925-z
5. Wilding JPH, Batterham RL, Calanna S, Davies M, Van Gaal LF, Lingvay I, et al. Once-Weekly Semaglutide in Adults with Overweight or Obesity. N Engl J Med. 2021;384:989–1002. https://doi.org/10.1056/NEJMoa2032183
6. Diabetes Prevention Program STRIDES. Accessed March 1, 2023. https://www.metrohealth.org:443/population-health-innovation-institute/diabetes-prevention-program-strides
7. Evidence-Based Medicine Worksheets. Accessed March 30, 2023. https://www.dartmouth.edu/library/biomed/guides/research/ebm-resources-materials.html

AUTHOR CONTRIBUTIONS

AO was responsible for designing the elective, analyzing the feedback, and drafting and editing the paper. KL, RW, SL, SB, and ES were responsible for designing the elective and editing the paper. ML and LM were responsible for analyzing the feedback and editing the paper.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

Correspondence and requests for materials should be addressed to Amber Olson.

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