A Novel Longitudinal Training Experience in Obesity Medicine for Internal Medicine Residents

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ABSTRACT

Background Treatment of obesity is a public health priority. However, little training in obesity medicine is currently integrated into residency programs. We integrated a 12-month obesity medicine training experience within a New York internal medicine residency program.

Objective We describe the structure, feasibility and acceptability, resident assessments, and patient weight loss outcomes of an optional longitudinal obesity medicine training experience for internal medicine residents.

Methods Between July 2016 and June 2021, 26 second-year residents participated in the 12-month program, which comprised 10 educational/clinical sessions overseen by obesity medicine attendings. Residents completed baseline and post-program 5-point surveys of knowledge, competence, and attitudes. Differences at 12 months were analyzed using paired *t* tests. Resident patient weight loss was analyzed using the Wilcoxon signed rank test.

Results The training experience was successfully integrated over the study period and remains ongoing at present, demonstrating feasibility and acceptability. Fourteen of 26 (54%) residents completed post-program surveys. Significant improvements in all measures of knowledge and competence were seen. The greatest improvements were in comfort discussing weight loss with patients (+1.1; 95% CI 0.8-1.5; *P*<.001) and prescribing weight loss medications (+1.4; 95% CI 1.1-1.6; *P*<.001). The 98 patients seen by residents lost an average of 4.5 kilograms (95% CI 3.0-6.0; *P*<.001).

Conclusions The training experience was feasible and acceptable, and demonstrated improvements in resident outcomes and patient weight.

Introduction

Obesity continues to be a public health priority, now affecting 1 in 3 adults and 1 in 6 children in the United States.[1] While the United States Preventive Services Task Force (USPSTF) has long recommended that physicians screen for obesity and give referrals for intensive multicomponent interventions,[2] most health care systems, medical practices, and insurances do not allow easy access to comprehensive programs.

Given these realities, it is likely that for the foreseeable future obesity treatment will be delivered by individual generalists and specialists in clinical practice. It is essential that medical institutions develop training experiences to enhance physician competence in obesity medicine. To address this gap, our academic division developed an optional 12-month obesity medicine training experience that was integrated within our internal medicine residency program.

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Editor's Note: The online supplementary data contains the educational topics covered in curriculum, case-based learning examples, the full education curriculum, the survey used in the study, further data, and a visual abstract.

Prior studies of US residency training experiences have included single sessions or multiple sessions over short time frames,[3-6] which are unlikely to yield robust changes in resident skills and patient health.[3] Additionally, prior training experiences have not included substantial oversight from obesity medicine–trained attendings, or consistent clinical time treating patients for weight loss.[3-6]

Our program is a novel longitudinal approach that addresses some of the challenges and limitations described. We hypothesized that our 12-month program would be feasible and acceptable, that residents would improve knowledge and skill sets, and that patients seen by residents would see significant weight loss demonstrating objective evidence of successful obesity medicine care.

Methods

Setting and Participants

Residents had applied and were accepted into a primary care track within the internal medicine program between July 2016 and June 2021. The obesity medicine training experience was incorporated within

this track, and interested second-year residents volunteered to participate. The training was not mandatory. Our clinic patients were a racially and ethnically diverse underserved population with either Medicaid insurance or sliding scale payments. They were referred either by internal medicine residents or physicians to the weight management clinic.

Intervention

Over 12 months, residents attended the weight management continuity clinic at 5-week intervals to see follow-up patients and participate in educational sessions, allowing for 10 half-day training sessions per resident, per year. These sessions replaced one session of traditional ambulatory continuity clinic per 5-week period. Sessions began with 30 minutes of educational group discussion based on assigned readings, as well as interactive case-based learning. This was followed by 4 hours of resident-led, attending-supervised patient visits. Residents conducted the first 60-minute interview with new patients, and over the course of 12 months, residents followed the same patients as often as scheduling allowed. All attendings were board certified in obesity medicine. Educational sessions covered weight loss therapies, the management of common weight-related comorbidities, and other topics related to weight management. A full list of curriculum topics is shared in online supplementary data TABLE 1, and an example of our case-based learning approach is shared as online supplementary data BOX 1. Our full curriculum from the study period is shared in the online supplementary data. Additional information about the program was previously published.[7] Due to the COVID-19 pandemic during the study time frame, clinic visits were occasionally conducted virtually.

Outcomes Measured

At baseline, residents completed comprehensive 5-point surveys measuring competence, knowledge, and attitudes toward obesity treatment (online supplementary data BOX 2). After the 12-month program, residents completed the same survey. Surveys were developed by obesity medicine–trained attendings through discussion and incorporated psychological domains that influence behavior and are common across theories of behavior change (eg, attitudes, competence which approximates self-efficacy).

To examine weight loss and clinical characteristics among the patients seen by residents, we extracted patient anthropometric measures and additional clinical data including prescribed medications over the study period. All patients seen by residents from July 2016 through June 2021 were included (N=98).

Analysis of Outcomes

Mean differences in survey measures at 12 months were analyzed using paired t tests. Patient weight loss was defined as the difference in body weight (kilograms) between the first and most recent office visit. Weight changes among patients seen by residents were analyzed using the Wilcoxon signed rank test. We considered a P value of $<.05$ statistically significant. For analyses we used SAS (SAS Institute Inc, release 3.8 Enterprise Edition).

The study was determined to be exempt by the Northwell Institutional Review Board.

Results

Feasibility and Acceptability

Our training experience was successfully integrated over the study period and remains ongoing at present. Since the study period, a second resident clinical site has been added where an additional 5 residents volunteer to participate during their second year.

Resident Surveys

Fifteen of 26 residents (58%) were women. Twelve (46%) were Caucasian, 8 (31%) were Asian American, and 6 (23%) were African American. The complete survey with frequencies of responses at baseline is presented in TABLE 1. Prior to the program, residents (N=26; 100% response rate) reported low levels of competence and knowledge in several areas, including weight loss medications, nutrition, and lifestyle counseling. Attitude assessments revealed a few areas of bias. For example, most residents considered lack of willpower to be an important cause of obesity. However, residents also clearly identified obesity as a chronic disease with multiple biopsychosocial causes (TABLE 1).

Of 26 residents, 14 (54%) completed post-program surveys. Significant improvements were seen in 5-point measures of competence and knowledge of obesity treatment, with means greater than midpoint for all measures at 12 months (TABLE 2). The largest improvements were seen in comfort discussing weight loss with patients (+1.1; 95% CI 0.8-1.5; $P<.001$) and prescribing obesity medications (+1.4; 95% CI 1.1-1.6; $P<.001$). Attitude measures were largely stable over the 12-month program (online supplementary data TABLE 2).

Patient Weight Loss

Ninety-eight patients visited residents in the clinic between July 2016 and June 2021. Seventy-four (76%) were women. Mean (standard deviation [SD])

TABLE 1
Baseline Measures of Competence, Knowledge, and Attitudes Toward Obesity Treatment Among Residents Between July 2016 and June 2021[a]

Competence					
	Never, n (%)	**Sometimes, n (%)**	**Half the Time, n (%)**	**Most of the Time, n (%)**	**Consistently, n (%)**
How often do you discuss how a patient's weight may be affecting their health?	1 (4)	5 (19)	8 (31)	10 (38)	2 (8)
	Very Uncomfortable	**Uncomfortable**	**Somewhat Comfortable**	**Comfortable**	**Very Comfortable**
How comfortable are you talking to patients about their weight?	0 (0)	1 (4)	17 (65)	8 (31)	0 (0)
How comfortable are you prescribing medications for the management of obesity?	2 (8)	18 (69)	5 (19)	1 (4)	0 (0)
How comfortable are you prescribing physical activity recommendations for patients with obesity?	0 (0)	2 (8)	15 (58)	7 (27)	2 (8)
How comfortable are you using behavioral interventions to help patients improve their food habits?	1 (4)	8 (31)	16 (62)	0 (0)	1 (4)
	Disagree Strongly	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Agree Strongly**
I am usually successful in helping patients with obesity lose weight.	2 (8)	6 (23)	15 (58)	2 (8)	0 (0)
Knowledge					
	Poor	**Basic**	**Average**	**Above Average**	**Exceptional**
Rate your understanding of the effects of obesity on comorbid conditions.	0 (0)	7 (27)	15 (58)	3 (12)	1 (4)
How would you rate your knowledge of pharmacotherapy options for management of obesity?	6 (23)	14 (54)	4 (15)	2 (8)	0 (0)
How would you rate your understanding of nutrition?	2 (8)	12 (46)	7 (27)	4 (15)	1 (4)
How would you rate your knowledge of criteria for referring patients for bariatric surgery?	3 (12)	11 (42)	9 (35)	3 (12)	0 (0)
Rate your understanding of the mechanisms and biology of obesity and weight homeostasis.	4 (15)	13 (50)	7 (27)	2 (8)	0 (0)
Attitudes—Bias					
How important are the following as a cause of obesity?	**Not at All Important**	**Somewhat Important**	**Important**	**Very Important**	**Extremely Important**
Overeating	0 (0)	2 (8)	5 (19)	11 (42)	7 (27)
Lack of willpower	0 (0)	5 (19)	10 (38)	6 (23)	4 (15)
	Disagree Strongly	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Agree Strongly**
Patients with obesity could reach a normal weight if they were motivated.	1 (4)	9 (35)	8 (31)	6 (23)	1 (4)
I have negative reactions towards the appearance of patients with obesity.	8 (31)	7 (27)	9 (35)	1 (4)	0 (0)
Most patients with obesity will not lose a significant amount of weight.	2 (8)	8 (31)	10 (38)	4 (15)	0 (0)
Attitudes—Biopsychosocial					
How important are the following as a cause of obesity?	**Not at All Important**	**Somewhat Important**	**Important**	**Very Important**	**Extremely Important**
Unhealthy diet	0 (0)	0 (0)	0 (0)	13 (50)	13 (50)
Metabolic defect or endocrine disorder	0 (0)	0 (0)	4 (15)	8 (31)	13 (50)
Physical inactivity	0 (0)	2 (8)	15 (58)	7 (27)	2 (8)
Poor nutritional knowledge	0 (0)	1 (4)	5 (19)	9 (35)	10 (38)
Psychosocial problems	0 (0)	2 (8)	4 (15)	13 (50)	6 (23)
Genetics or biological factors	0 (0)	0 (0)	8 (31)	14 (54)	4 (15)
Lack of access to healthy foods	0 (0)	1 (4)	2 (8)	12 (46)	10 (38)
	Disagree Strongly	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Agree Strongly**
Obesity is a chronic disease.	0 (0)	2 (8)	0 (0)	4 (15)	20 (77)

[a] N=26; 100% response rate.

TABLE 2
Twelve-Month Changes in Measures of Competence and Knowledge of Obesity Treatment Among Program Residents Between July 2016 and June 2021[a]

Survey Questions	Mean		Post-Pre, Mean (95% CI)	*P* value
	Pre	Post		
Competence				
How often do you discuss how a patient's weight may be affecting their health?	3.3	4.0	0.7 (0.2-1.2)	<.01
How comfortable are you talking to patients about their weight?	3.3	4.4	1.1 (0.8-1.5)	<.001
How comfortable are you prescribing medications for the management of obesity?	2.2	3.6	1.4 (1.1-1.6)	<.001
How comfortable are you prescribing physical activity recommendations for patients with obesity?	3.3	3.9	0.6 (0.2-1.1)	.01
How comfortable are you using behavioral interventions to help patients improve their food habits?	2.7	3.6	1.0 (0.3-1.5)	<.01
I am usually successful in helping patients with obesity lose weight.	2.7	3.5	0.8 (0.4-1.3)	<.01
Knowledge				
Rate your understanding of the effects of obesity on co-morbid conditions.	2.9	3.8	0.9 (0.5-1.2)	<.001
How would you rate your knowledge of pharmacotherapy options for management of obesity?	2.1	3.6	1.5 (1.1-1.9)	<.001
How would you rate your understanding of weight loss nutrition?	2.6	3.5	0.8 (0.2-1.3)	.01
How would you rate your knowledge of criteria for referring patients for bariatric surgery?	2.5	3.3	0.9 (0.2-1.6)	.02
Rate your understanding of the mechanisms and biology of obesity and weight homeostasis.	2.3	3.4	0.9 (0.3-1.4)	<.01

[a] n=14/26; 54% response rate.

age was 49 (11.7). The mean (SD) number of clinic visits was 5 (6) visits. The mean (SD) baseline weight was 114.5 (30.7) kg; and the mean (SD) BMI was 42.5 kg/m2 (9.2). The frequencies of comorbidities and prescribed medications are included in online supplementary data TABLE 3. Weight loss was statistically significant, decreasing by a mean of 4.5 (95% CI 3.0-6.0, $P<.001$) kilograms.

Discussion

Our results suggest that our 12-month obesity medicine training experience might serve as a model for other internal medicine residency programs. Prior obesity medicine training interventions for residents in the literature resulted in limited changes in knowledge and other assessment measures,[3-6] which contrasts with our results. Reasons for this may include the longitudinal format of our program, the clinical continuity with patients, and the supervision of residents by board certified obesity medicine attendings.

Limitations of the present study include our nonrandomized design, the self-reported measures of competence and knowledge using surveys with no existing validity evidence, and the modest response rate among residents at 12 months, which may introduce bias. This was also a small group of volunteer residents from a single institution within a primary care track, which limits the generalizability.

The greatest changes we observed among residents were in comfort discussing weight loss with patients, knowledge of weight loss medications, and comfort prescribing weight loss medications. Future studies should examine ways to enhance other resident skill sets and consider using randomized study designs and more objective measures of resident outcomes.

Conclusions

Our longitudinal obesity medicine training experience for internal medicine residents was feasible and acceptable to residents and program leadership. We observed favorable changes in self-reported measures of resident competency and knowledge, as well as significant weight loss among patients seen by residents.

References

1. Tiwari A, Balasundaram P. *Public Health Considerations Regarding Obesity*. StatPearls Publishing LLC; 2024.

2. US Preventive Services Task Force, Curry SJ, Krist AH, et al. Behavioral weight loss interventions to prevent obesity-related morbidity and mortality in adults: US preventive services task force recommendation statement. *JAMA*. 2018;320(11):1163-1171. doi:10.1001/jama.2018.13022
3. Acosta A, Azzalin A, Emmons CJ, Shuster JJ, Jay M, Lo MC. Improving residents' clinical approach to obesity: impact of a multidisciplinary didactic curriculum. *Postgrad Med J*. 2014;90(1069):630-637. doi:10.1136/postgradmedj-2014-132821
4. Burton AM, Brezausek CM, Agne AA, Hankins SL, Willett LL, Cherrington AL. Evaluation of a workshop to improve residents' patient-centred obesity counselling skills. *Postgrad Med J*. 2016;92(1090):455-459. doi:10.1136/postgradmedj-2015-133590
5. Iyer S, Jay M, Southern W, Schlair S. Assessing and counseling the obese patient: improving resident obesity counseling competence. *Obes Res Clin Pract*. 2018;12(2):242-245. doi:10.1016/j.orcp.2018.02.007
6. Jay M, Schlair S, Caldwell R, Kalet A, Sherman S, Gillespie C. From the patient's perspective: the impact of training on resident physician's obesity counseling. *J Gen Intern Med*. 2010;25(5):415-422. doi:10.1007/s11606-010-1299-8
7. Kane J, Verbsky J, Cacace F, Conigliaro J. Beyond didactic teaching—implementing an obesity medicine clinic for internal medicine residency education. *SGIM Forum*. Published October 2020. Accessed October 17, 2024. https://connect.sgim.org/viewdocument/beyond-didactic-teaching-implement

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