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Effect of didactic lectures on obesity documentation and counseling among internal medicine residents

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Background: Screening adult patients for obesity and offering appropriate counseling and treatment for weight loss is recommended. However, many healthcare providers feel ill-equipped to address this topic.
Objective: We examined whether didactic presentations lead to increased obesity documentation and counseling among internal medicine (IM) residents.
Methods: We reviewed medical records of patients seen at the IM Resident Continuity Clinic during April 2015. Residents were provided feedback at two didactic presentations during May 2015. To examine the effect of this intervention, we repeated medical record review during June 2015. For both reviews, we abstracted patient-specific (i.e., age, body mass index [BMI], race, sex, and number of comorbid diagnoses) and resident-specific (i.e., sex and training level) data as well as evidence of obesity documentation and counseling. We used logistic regression models to examine the effect of intervention on obesity documentation and counseling, adjusting for patient- and resident-specific variables.
Results: Of the 278 patients with BMI $\geq$30 kg/m^2, 139 were seen before and 139 after the intervention. Intervention had no effect on obesity documentation or counseling with or without adjustment for confounding variables (both $P > 0.05$). In adjusted post-hoc analyses, each additional comorbidity increased the odds of obesity documentation by 8% (OR = 1.08; 95% CI = 1.05–1.11; $P < 0.001$). In addition, as compared to postgraduate year (PGY) 1 residents, PGY-3 residents were 56% (OR = 0.44; 95% CI = 0.21–0.95; $P = 0.03$) less likely to counsel obese patients.
Conclusions: Obesity is inadequately addressed in primary care settings, and didactic presentations were unable to increase obesity documentation or weight loss counseling. Future research to identify effective interventions is needed.

Keywords: *BMI*; *weight*; *intervention*; *primary care*; *behavior modification*

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Over two-thirds of United States adults are overweight or obese; nearly 35% are obese (1). Several leading causes of preventable death (e.g., cardiovascular disease, type 2 diabetes mellitus, and cancer) have been associated with obesity (2). In addition to lives lost, the medical cost of obesity was estimated to be $147 billion in 2008 (3). Despite extensive public health efforts, obesity prevalence among both adults and children in the United States remains high and largely unchanged over the past decade while rates of weight counseling among primary care physicians have significantly declined (1, 4).

Several medical organizations including the United States Preventive Services Task Force (USPSTF) have published guidelines and recommendations for the diagnosis and management of obesity (5). However, there are many barriers to obesity diagnosis and counseling by physicians, including limited knowledge or training and negative stereotypes (6, 7). Emphasizing the need for obesity documentation and counseling to internal medicine (IM) resident physicians may be effective in changing clinical practice of future primary care physicians (8). Therefore, we examined the effect of a two-pronged intervention of 1) feedback and 2) didactic presentations on resident physicians' documentation of obesity and counseling for weight loss in an outpatient setting.

Methods

We reviewed electronic medical records (Centricity EMR) of all patients who were seen at the IM Resident

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Continuity Clinic in April 2015 for presence of obesity (body mass index [BMI] ≥ 30 kg/m^2) and documentation of obesity and weight loss counseling. Patients who were not seen by IM residents, pregnant, <19 years old, or who presented only for follow-up of anticoagulation treatment were excluded. Acute, urgent, new, and return visits were included in the study. The remaining eligible patients included in our study were distributed among 30 categorical IM residents. To increase obesity documentation and counseling, we implemented a two-stage intervention in May 2015. First, residents were collectively provided feedback on the extent of documentation and counseling and the need for improvement. Second, during noon conferences, we gave two didactic presentations two weeks apart, highlighting the need for obesity documentation and the importance of weight loss counseling. To examine the effect of this two-stage intervention, we repeated the review of medical records during June 2015. For both medical record reviews, in addition to abstracting data on obesity documentation and counseling, we also abstracted patient-specific (i.e., age, BMI, race, sex, and number of comorbid diagnoses) and resident-specific (i.e., sex and training level) data. The study was approved by our institutional review board.

We defined a patient as obese if his/her BMI was greater than or equal to 30 kg/m^2 when seen in clinic. Age, race, and sex were self-reported. Presence of obesity in the problem list was considered sufficient for documentation of obesity. Documentation of weight loss counseling, advice for dietary changes or physical activity, prescription of weight loss drugs, or referral to another healthcare provider for weight management was considered to be adequate counseling for weight loss. Data were summarized using mean (standard deviation) or frequencies as appropriate. We used logistic regression models to examine the effect of intervention on documentation and counseling, adjusting for patient age, race, sex, and number of diagnoses and resident sex and training level.

Results

Of 513 patients, 262 were seen during the pre-intervention and 251 during the post-intervention month. Mean age of the patients was 53.6 (12.8) years, mean number of diagnoses was 17.3 (9.2), 58% were females, and 37% were African Americans. PGY-3 residents saw the largest number of patients (40%). During each of the two months, 139 obese patients were seen. Residents documented 67 and 70 and counseled 26 and 23 obese patients during the pre-intervention and post-intervention months respectively (Table 1). We did not find a significant effect of intervention on either documentation or counseling with or without adjustment for confounding variables (patient age, race, sex, and number of diagnoses; resident sex and training level).

In post-hoc analyses, each additional comorbidity increased the odds of obesity documentation by 8% (OR $=1.08$; 95% CI $=1.05$–1.11; $P<0.001$). In addition, as compared to postgraduate year (PGY) 1 residents, PGY-3 residents were 56% (OR $=0.44$, 95% CI [0.21–0.95], $P=0.03$) less likely to counsel obese patients (46 patients not counseled vs. 104 patients not counseled). Both of these results remained significant after adjusting for confounding variables.

Discussion

Obesity management is critically important but inadequately addressed in primary care settings. Brief didactic

Table 1. Characteristics of obese study population before and after intervention

	Intervention			
	Before ($N=139$)	After ($N=139$)	All ($N=278$)	P
Obesity documentation, *N* (%)	67 (48%)	70 (50%)	137 (49%)	0.72
Obesity counseling, *N* (%)	26 (19%)	23 (17%)	49 (18%)	0.64
Resident training level, *N* (%)				0.10
PGY-1	24 (17%)	39 (28%)	63 (23%)	
PGY-2	51 (37%)	43 (31%)	94 (34%)	
PGY-3	64 (46%)	57 (41%)	121 (44%)	
Patients seen by female residents, *N* (%)	78 (56%)	55 (40%)	133 (48%)	
Patient age, mean (SD)	53.2 (12.7)	54.1 (12.9)	53.6 (12.8)	0.54
Patient BMI, mean (SD)	38.0 (7.8)	37.2 (5.7)	37.6 (6.8)	0.29
Patient race, *N* (%)				0.99
Caucasian	78 (56%)	79 (57%)	157 (56%)	
Black	54 (39%)	53 (38%)	107 (38%)	
Other	7 (5%)	7 (5%)	14 (5%)	
Female, *N* (%)	88 (63%)	88 (63%)	176 (63%)	0.99
Diagnoses per patient, mean (SD)	16.9 (9.3)	17.7 (9.1)	17.3 (9.2)	0.43

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presentations with feedback based on data illustrating the lack of obesity documentation and counseling for weight loss by residents in continuity clinic did not result in a significant change in residents' documentation or counseling. We also found that an increased number of co-morbid conditions was associated with an increased likelihood of obesity documentation but not counseling. Surprisingly, PGY-3 residents were significantly less likely to counsel obese patients than PGY-1 residents.

Several factors might have contributed to the observed lack of improvement in obesity documentation and counseling. First, the didactic presentations may have been too short, did not require sufficient active resident participation, and/or were not motivational enough to change residents' behavior (9, 10). Long-term and persistent interventions with active resident participation may be more effective (11, 12). Interventions focused on reminders, such as obesity-related posters at resident work-stations or EMR-generated obesity alerts, may have been more effective. Other potential interventions include requiring nursing staff to document BMI on the patient intake form and requiring that residents demonstrate appropriate obesity documentation and counseling in a minimum percentage of patient encounters.

Both findings in the post-hoc analyses were unexpected but can be due to various factors. For example, a patient with an obesity-related comorbid condition is likely to be evaluated for the presence of obesity. On the other hand, addressing comorbid conditions would have left little time for weight loss counseling; hence, we did not see an association between the number of comorbid conditions and obesity counseling. However, we were unable to examine this hypothesis due to the small sample size. Decreased likelihood of weight loss counseling by PGY-3 residents as compared to their PGY-1 colleagues may have been due to differences in patient load (i.e., PGY-3 residents saw more patients than PGY-1 residents and therefore had relatively less time to devote per patient), differences in attitude (i.e., pre-occupation with transitioning to the next phase of their professional careers), or differences in level of autonomy (i.e., PGY-1 residents were more conscious of supervision by attending physicians). In retrospect, it would have been interesting to study whether residents' post-graduate plans (e.g., ambulatory or primary care vs. fellowship) had any impact on their obesity documentation and counseling practices. Since goals often vary throughout residency, an accurate analysis is probably not feasible at this time given the large amount of time that has lapsed since the original study.

Our study has important implications for medical education as well as future research. Education that increases knowledge and awareness may not have a significant effect on modification of behavior. Thus, the focus of resident education should be on not just knowledge but also the translation of knowledge into expected behavior. Future research into different types of interventions may identify factors that are essential for changing clinical practice behavior of medical residents.

Our study has several potential limitations. We studied only one intervention consisting of feedback followed by didactic sessions conducted over a limited period of time. Thus, we cannot examine the effect of continued feedback or the effect of a larger number of didactic sessions. Our study was limited to one outpatient continuity clinic, potentially limiting its generalizability. Furthermore, we depended on documentation and did not directly observe the clinical encounter to determine whether patients were told about their weight and whether weight loss counseling was performed or not.

In summary, we found that obesity is inadequately addressed in primary care settings and that short-term feedback followed by didactic presentations was unable to increase obesity documentation or weight loss counseling among residents. Future research examining other interventions to identify factors that are essential for changing clinical practice behavior of medical residents is needed.

Authors' contributions

VZ and KE made significant contributions to the analysis and interpretation of data and drafting and revision of the manuscript, and have given final approval of the version to be published. JM and KB made significant contributions to the conception and design of the project and drafting of the manuscript, and have given final approval of the version to be published. EV made significant contributions to the acquisition of data and drafting of the manuscript, and has given final approval of the version to be published. MP and RQ made significant contributions to the conception and design of the project, analysis and interpretation of data, and drafting and revision of the manuscript; they have given final approval of the version to be submitted. VZ, KE, JM, and KB are transitional year interns at the University of Tennessee College of Medicine Chattanooga. The Transitional Year program is sponsored by the Departments of Medicine and Pediatrics.

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