Published in final edited form as:

Am J Prev Med. 2018 November ; 55(5): e139–e145. doi:10.1016/j.amepre.2018.06.014.

Students' Report of Preceptor Weight Management Counseling at Eight U.S. Medical Schools

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Abstract

Introduction: Primary care providers, using brief counseling, can help patients increase motivation to initiate or maintain weight loss, improve diet, and increase physical activity. However, no prior studies have examined the degree to which primary care preceptors, who are responsible for mentoring medical students during their core clerkships, provide clinical teaching regarding weight management counseling.

Methods: Medical students enrolled in eight U.S. medical schools who had finished their preclinical coursework completed surveys in the spring of 2016 to assess preceptor communication, modeling, feedback, and instruction in weight management counseling as well as educational cues for patients and chart reminders for physicians. Analysis was completed in 2017 and 2018.

Results: Of 738 students completing the survey, the most recent completed clerkships were obstetrics and gynecology (38.1%), family medicine (32.1%), and internal medicine (29.8%). Students in family medicine clerkships reported higher levels of weight management counseling clinical teaching than students completing an internal medicine or obstetrics and gynecology clerkship. Among the main variables of interest, across all three clerkships, only 13%–24% of

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No financial disclosures were reported by the authors of this paper.

students agreed that preceptors provided clear objectives for learning weight management counseling and 13%–25% of students agreed that preceptors provided feedback.

Conclusions: Even with a U.S. Preventive Services Task Force recommendation for primary care physicians to provide weight management counseling and endorsement from the major academic primary care societies, students in primary care clerkships report receiving little weight management counseling clinical teaching from their preceptors. The results reinforce the need for medical educators to teach and model weight management counseling for physicians-in-training if they are to achieve Task Force goals. Further research is required to better corroborate self-reported indicators of preceptor to student communication that are described herein.

INTRODUCTION

More than two thirds of Americans with overweight or obesity are at risk for associated illnesses including heart disease, hypertension, diabetes mellitus, and some cancers.¹ Modest weight loss (5%–10% of body weight), through lifestyle modification that includes diet, physical activity, and behavior change can reduce disease and mortality risk.^{2–4} Because nearly 84% of adults had contact with a healthcare professional in the past year,⁵ clinicians have an opportunity to monitor and encourage these lifestyle changes. Accumulating evidence shows that brief counseling by primary care providers (PCPs) in particular can help patients increase motivation to initiate or maintain weight loss,^{6–9} improve diet,¹⁰ reduce problem drinking,¹¹ and increase physical activity.^{6,7,9,10,12–14} For these reasons, the U.S. Preventive Services Task Force (USPSTF) now recommends that physicians “screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss.”¹⁵ Other organizations support this recommendation including the National Heart, Lung, and Blood Institute, which in 2013 partnered with other institutes^{16,17} and published updated guidelines¹⁷ focused on treating adult patients with overweight and obesity. The Patient Protection and Affordable Care Act strengthens the movement toward physician-delivered lifestyle counseling by allowing health insurance carriers to cover weight management counseling (WMC) by physicians at no patient cost.¹⁸

Despite these incentives and recommendations, only 50% of physicians report providing weight management advice to patients, and fewer than 25% report assisting patients with weight management or arranging further assistance.¹⁹ A national survey showed that the rate of primary care–based WMC is low and did not improve from 1995–1996 to 2007–2008 (7.8% to 6.2% of visits).¹⁹ Physician-reported barriers to conducting WMC include lack of specific training in such counseling, low self-efficacy for WMC,^{20–22} and limited time.^{23,24} Physicians who report learning about obesity screening and counseling practices are more likely to report routinely discussing diet or exercise with patients who have overweight or obesity.²⁵ However, most U.S. medical schools do not provide the recommended minimum 25 hours of nutrition education, largely confining it to preclinical courses, and fewer than half report teaching any nutrition in clinical practice; practice of nutrition counseling with patients accounts for an average of only 4.7 hours.²⁶ Many “frontline” medical professionals feel they are unskilled in weight management and that students are inadequately tested in this area.²⁷

The present study examined instruction in WMC during the medical preceptorship. One prominent role of the preceptor is to develop clinical skills by mentoring, modeling, and providing constructive feedback on specific skills. Thus, for WMC the preceptorship could optimally complement and expand relevant pre-clinical curricula and provide a learning environment to model and evaluate counseling skills. In practice, however, many teaching faculty are ill-prepared to provide these experiences, given that most receive little instruction in WMC during their own medical education and would benefit from training to serve as WMC role-models.²⁸ Inconsistencies in interpreting guidelines, lack of weight management teaching for educators themselves, and variable student interest may all limit implementation of weight management into curricula.²⁹

Data about WMC education, and particularly, on the role of preceptors in WMC education, remain sparse despite calls from national health organizations for WMC instruction during medical school.^{30–32} Vitolins and colleagues³³ reviewed five studies that included intervention and evaluation elements and highlighted relevant teaching methods, including hands-on training, role playing, and standardized patient interaction. A longitudinal survey of fourth-year medical students at 16 U.S. medical schools beginning in 2003 assessed WMC.³⁴ In brief, more than half of the medical students surveyed thought that WMC was highly relevant to their intended practice, but only one fourth reported that they were regularly provided with WMC teaching. Notably, this study did not report preceptor-specific teaching. The present study is aimed at helping to fill this knowledge gap by exploring student perception of the role preceptors play in teaching, modeling, and providing feedback on WMC.

METHODS

Study Sample

All eight U.S. medical schools included in the study were participants in a National Cancer Institute funded study entitled Weight Management Counseling in Medical Schools: A Randomized Controlled Trial (MSWeight). Schools were from each U.S. region (e.g., North, South, West, Midwest) and were from largely urban areas ($n=7$). They met the following criteria at the time of recruitment: (1) included a family medicine (FM), or outpatient internal medicine (IM), or obstetrics and gynecology (OB/GYN) clerkship; and (2) were willing and able to offer a WMC objective structured clinical examination following completion of a core clerkship, the FM or outpatient IM clerkship rotation, or as part of a cumulative objective structured clinical examination. In 2016, prior to randomization, medical students in their clerkship rotation (graduating class of 2017) were surveyed to assess their exposure to WMC clinical teaching by their preceptors. The analysis was conducted in 2017 and 2018. At all eight U.S. medical schools, 1,134 students were eligible to complete the survey, and 738 provided information about their last clerkship. The IRBs at each medical school approved or exempted the data collection protocol.

Measures

The WMC self-report survey included multiple questions built on previous tobacco prevention and cessation research and expanded questions using a self-report survey

developed to assess clinical teaching of tobacco cessation interventions during medical clerkships.^{35–37} The latter study used direct observation to assess the relationship between students' self-reported smoking assessment and counseling practices and observed educational interventions with preceptors in pediatric ambulatory clinics. Students and preceptors were asked about: (1) provision of smoking prevention and cessation educational items, (2) how clearly preceptors conveyed the importance of discussing smoking prevention/cessation with families, and (3) provision of positive feedback by preceptors about student interventions. Questions used to assess these factors were adapted for use in the current study of WMC and then pilot tested for ease of understanding and relevance by: (1) third-year medical students from the University of Massachusetts Medical School, (2) medical students from schools across the country, and (3) site principal investigators from the eight study schools, some of whom served as clinical preceptors.

Student age was reported as means and SDs. Frequencies and proportions were reported for gender and the most recently completed primary care clerkships: OB/GYN, IM, or FM.

Seven components of clinical teaching were measured by student's level of agreement (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree) to how well their preceptor performed the following behaviors during their most recent clerkship: (1) provided clear instruction on ways to deliver WMC to patients, (2) provided feedback on the student's WMC, (3) modeled ways to provide WMC, (4) outlined clear objectives for WMC such as the number of patients with overweight or obesity with whom one should interact, (5) responded to questions about WMC, (6) served as excellent role models to help their patients lose weight, and (7) emphasized the need for a team approach to help patients lose weight. Also included were two questions to assess office systems/environmental cues: (8) the presence of a place in the preceptor's record that reminded physicians to discuss weight, and (9) whether there were educational materials for patients about weight management prominently displayed in the preceptor's office.

A WMC Preceptor Score was created by summing the nine preceptor-related responses for each student. The scores for the students' exposure to WMC precepting ranged from a low score of nine (one point for each of the nine questions for disagree) to a high score of 36 points (four points for each of the nine questions equivalent to strongly agree). Analyses were conducted for each of the nine individual items and for the WMC Preceptor Score. The Cronbach's α for the WMC Preceptor Score was 0.932 with an item-test correlation ranging from 0.7724 to 0.8406 for the nine questions.

Statistical Analysis

The distribution of the most recently completed clerkship by sex was summarized using frequencies and proportions (Table 1). First, for each of the nine WMC clerkship preceptor items, the frequencies in each response category—agree/strongly agree, disagree, and strongly disagree—were calculated for the three clerkships (Figure 1). Second, the WMC Preceptor Score was divided into quartiles to estimate the proportion of students in each level of exposure by clerkship (Table 2). Comparisons across clerkships were compared using chi-square testing.

RESULTS

Of the 738 students completing the survey, slightly more than half were male (52.1%) and the median age was 26 (SD=2.9) years. The most recent reported clerkships were OB/GYN (38.1%), FM (32.1%), and IM (29.8%) and distribution by clerkship was equal by gender (Table 1). Nearly all of the students completed the survey in May 2016 (no date provided for 31 students).

Student level of agreement to the nine questions regarding their clerkship experience related to WMC is presented in Figure 1, with agree and strongly agree combined. For responses to all nine questions, students most recently completing a FM clerkship reported higher levels of agreement than those most recently completing IM or OB/GYN clerkships. For example, among students most recently completing a FM clerkship, 77.8% stated that their preceptors responded to questions about WMC (compared with 60% and 50% among IM and OB/GYN students, respectively). However, students in the FM clerkships exceeded 50% agreement for only four of the nine measures. Only to the question “responded to questions about WMC” did >50% of students from all three clerkships answer affirmatively. However, for all students, the largest deficits were in receiving clear WMC objectives with only 13%–24% agreeing that preceptors provided clear objectives and 13%–25% of students agreeing that preceptors provided feedback on WMC sessions.

Overall, mean WMC Preceptor Scores ranged from 17.7 (SE=0.37) for the OB/GYN clerkship to 19.2 (SE=0.37) for the IM clerkship to 21.7 (SE=0.37) for the FM clerkship. All pairwise differences were statistically significant ($p<0.001$; Table 2).

Mean WMC Preceptor Scores of students enrolled in each of the eight participating medical schools were similar, ranging from 17.0 to 21.2 points of a total possible range, 9 to 36 points; the overall mean score was 19.4 points. In a survey of the site principal investigators of the eight schools, four stated that obesity was a focus in their curriculum, four had an obesity champion, three had an obesity champion in their clerkship, three had post-graduate training for faculty, and five noted that obesity counseling is a learning objective for their students as part of the overall 4-year curriculum.

DISCUSSION

The USPSTF recommends that physicians “screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss.”¹⁵ Unfortunately, the present results suggest that physicians may not be receiving adequate education to meet this recommendation as medical students receive limited clinical teaching in WMC during their primary care clerkships. In the present study, the greatest gaps in WMC clinical teaching were found in the IM and OB/GYN clerkships, although WMC teaching during FM clerkships also fell short of the 50% mark for practice on five of the nine components assessed in the present study. The results of this study and other studies noted earlier reinforce the need for medical educators to intervene with physicians-in-training if they are to achieve USPSTF weight management goals in the future and provide the best care of their patients.

There are clear written guidelines for the teaching of WMC clinical skills within the medical school curriculum from the three leading societies representing FM, OB/GYN, and IM. For the FM clerkship, as reported by the Society of Teachers of Family Medicine, obesity is listed as one of the 14 core chronic disease presentations, with recommendations to obtain a diet history and to collaborate with the patient to set a specific and appropriate weight loss goal.³⁰ Likewise, for preventive care for FM, specific student learning objectives call for encouraging lifestyle changes and support of wellness including weight loss, nutrition, and diet.³⁰ For the OB/GYN clerkship, the most recent edition of the Association of Professors of Gynecology and Obstetrics included nutrition/obesity as a component of educational topic 1 (among 64 educational topic areas).³¹ The Clerkship Directors of Internal Medicine and Society of General Internal Medicine published a joint curriculum guide for medical students that includes obesity as core content and nutrition as a core competency.³²

It is noteworthy that 62% of students reported that preceptors responded to their questions about WMC but only 17% reported that preceptors gave them feedback on their WMC performance with patients. It is possible that students are not being provided opportunities to practice WMC with patients and hence there are few opportunities for preceptors to provide feedback on WMC to students. Another notable deficiency is the finding that only 31% of students reported receiving clear instruction on how to provide WMC coupled with only 17% reporting that they had received clear objectives for learning WMC. These low-to-modest rates as reported by students may reflect the preceptors' lack of WMC modeling and experience with their own patients. There are many competing demands on PCPs to address multiple health concerns with their patients during brief visits. In addition, curriculum for students is complex with numerous learning objectives per clerkship.

Furthermore, only an estimated one third of students noted weight management information for patients in the clinical setting or cues in the medical record to remind preceptors to provide WMC to their patients. For other health promotion practices, inclusion of a checklist or reminder is associated with a boost in prevention counseling.³⁸ Use of such checklists or reminders with accountability built in (i.e., checklists collected and reviewed by clerkship directors for student and preceptor evaluation) may increase preceptor WMC instruction, modeling, and provision of feedback. These strategies also may empower students to request WMC instruction and ask for opportunities to practice WMC and receive feedback during their clerkship experience.

From the current study, one cannot determine why students who most recently completed FM clerkships reported significantly more preceptor WMC clinical teaching than students most recently completing IM or OB/GYN clerkships. Interestingly, though, earlier studies have also shown that third-year medical students were more likely to provide behavior-change counseling during FM clerkships than during pediatrics or IM clerkships, though apparently not as a direct result of clinical instruction.³⁹ Further investigation comparing multiple clerkships is needed to understand differences between the preceptorships, such as whether there are more or fewer at-risk patients, a stronger prevention-teaching culture, or more curriculum elements dedicated to WMC during the FM clerkship. Other factors may include the possibility of greater primary care focus of FM as a specialty. IM and OB/GYN clerkships often have a stronger focus on the inpatient setting addressing acute health

concerns. In addition, many ambulatory IM rotations take place in subspecialty clinics where WMC may be deferred to the patient's PCP. Increasing the amount of WMC precepting in IM and OB/GYN clerkships may reduce gaps across the three clerkships and provide multiple, diverse experiences for students to conduct WMC with patients in various clinical settings.

Limitations

There are a number of limitations worth noting. First, students were asked to report only about their most recent clerkship experience, although there are advantages of more immediate recall. Second, student perceptions of their experiences were not corroborated with those of their preceptors or was there any other form of objective assessment. Third, students were asked to complete the survey retrospectively. Fourth, the survey was not designed to measure other teaching demands on preceptors, or the actual amount of time that preceptors spend with students during the clerkship. Two notable strengths of the study were its ability to obtain survey data immediately after the end of the clerkship on more than 70% of students at these eight diverse medical schools and to examine a wide range of preceptor to student communication variables.

CONCLUSIONS

Even though the USPSTF recommends that PCPs provide WMC¹⁵ and the major academic primary care societies recommend that WMC be included in medical school curricula,^{30–32} students in primary care clerkships perceive that they receive a relatively low-to-modest amount of WMC clinical teaching from their preceptors. The greatest discrepancies between guidelines and practice were found in the IM and OB/GYN clerkships, particularly with respect to feedback and clear objectives. However, teaching during FM also fell short of the 50% mark for practice of five of the nine components assessed. The results of this study, including the needs assessment by the eight site principal investigators, reinforces the need for clinical faculty to receive training in WMC and for teaching WMC to physicians-in-training to achieve USPSTF weight management goals. Further research is required to better corroborate self-reported indicators of preceptor to student communication that are described herein. Clerkship directors and other faculty involved in curriculum development also need to increase the emphasis on WMC as a defined learning objective and a required competency for their students. Future studies are needed to further explore the barriers to teaching WMC from the perspective of the clerkship director, preceptor, and student.

ACKNOWLEDGMENTS

This work is supported by NIH and the National Cancer Institute (5R01CA194787). The authors thank the Weight Management Counseling in Medical Schools: An RCT investigators and staff, the participating medical schools and students, for their dedication and making this study possible. We acknowledge all school site principal investigators, research coordinators, evaluators, research assistants, and support staff who have implemented and participated in the study thus far.

REFERENCES

1. Leblanc ES, O'Connor E, Whitlock EP, Patnode CD, Kapka T. Effectiveness of primary care-relevant treatments for obesity in adults: a systematic evidence review for the U.S. Preventive

- Services Task Force. *Ann Intern Med.* 2011;155:434–447. 10.7326/0003-4819-155-7-201110040-00006. [PubMed: 21969342]
2. U.S. Preventive Services Task Force. *Guide to Clinical Preventive Services: Report of the U.S. Preventive Services Task Force.* 2nd ed. Baltimore: Williams & Wilkins; 1996.
3. Tuomilehto J, Lindstrom J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med.* 2001;344(18):1343–1350. 10.1056/NEJM200105033441801. [PubMed: 11333990]
4. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med.* 2002;346(6):393–403. 10.1056/NEJMoa012512. [PubMed: 11832527]
5. National Center for Health Statistics. Ambulatory Care Use and Physician Office Visits www.cdc.gov/nchs/fastats/physician-visits.htm. Published 2017 Accessed March 27, 2018.
6. Jay M, Gillespie C, Schlair S. Physicians' use of 5As in counseling obese patients: is the quality of counseling associated with patients' motivation and intention to lose weight? *BMC Health Serv Res.* 2010;10:159 10.1186/1472-6963-10-159. [PubMed: 20534160]
7. Rose SA, Poynter PS, Anderson JW, Noar SM, Conigliaro J. Physician weight loss advice and patient weight loss behavior change: a literature review and meta-analysis of survey data. *Int J Obes (Lond).* 2013;37(1):118–128. 10.1038/ijo.2012.24. [PubMed: 22450855]
8. Cox ME, Yancy WS, Jr, Coffman CJ, et al. Effects of counseling techniques on patients' weight-related attitudes and behaviors in a primary care clinic. *Patient Educ Couns.* 2011;85(3):363–368. 10.1016/j.pec.2011.01.024. [PubMed: 21316897]
9. Alexander SC, Cox ME, Boling Turer C, Lyna P, Ostbye T, Tulsy JA. Do the Five A's work when physicians counsel about weight loss? *Fam Med.* 2011;43(3):179–184. [PubMed: 21380950]
10. Dorsey R, Songer T. Lifestyle behaviors and physician advice for change among overweight and obese adults with prediabetes and diabetes in the United States, 2006. *Prev Chronic Dis.* 2011;8(6):A132. [PubMed: 22005625]
11. Ockene JK, Adams A, Hurley TG, Wheeler EV, Hebert JR. Brief physician- and nurse practitioner-delivered counseling for high-risk drinkers: does it work? *Arch Intern Med.* 1999;159:2198–2205. 10.1001/archinte.159.18.2198. [PubMed: 10527297]
12. Zapka J, Lemon SC, Estabrook B, Rosal MC. Factors related to weight loss behavior in a multiracial/ethnic workforce. *Ethn Dis.* 2009;19(2):154–160. [PubMed: 19537226]
13. Post RE, Mainous AG, 3rd, Gregorie SH, Knoll ME, Diaz VA, Saxena SK. The influence of physician acknowledgment of patients' weight status on patient perceptions of overweight and obesity in the United States. *Arch Intern Med.* 2011;28;171(4):316–321. 10.1001/archinternmed.2010.549.
14. Pollak KI, Alexander SC, Coffman CJ, et al. Physician communication techniques and weight loss in adults: Project CHAT. *Am J Prev Med.* 2010;39(4):321–328. 10.1016/j.amepre.2010.06.005. [PubMed: 20837282]
15. U.S. Preventive Services Task Force. Screening for and management of obesity in adults: U.S. Preventive Services Task Force recommendation statement AHRQ Publication No.11–05159-EF-2. Published 2012.
16. Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Obesity Society. *J Am Coll Cardiol.* 2014;63(25 pt B):2985–3023. 10.1016/j.jacc.2013.11.004. [PubMed: 24239920]
17. Gibbons GH, Harold JG, Jessup M, Robertson RM, Oetgen WJ. The next steps in developing clinical practice guidelines for prevention. *Circulation.* 2013;128(15):1716–1717. 10.1161/CIRCULATIONAHA.113.005548. [PubMed: 23929910]
18. Centers for Medicare and Medicaid Services. Decision memo for intensive behavioral therapy for obesity www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?&NcaName=Intensive%20Behavioral%20Therapy%20for%20Obesity&bc=ACAAAAAIAAA&NCAId=253&. Published 2011 Accessed June 26, 2018.

19. Kraschnewski JL, Sciamanna CN, Stuckey HL, et al. A silent response to the obesity epidemic: decline in U.S. physician weight counseling. *Med Care*. 2013;51(2):186–192. 10.1097/MLR.0b013e3182726c33. [PubMed: 23047128]
20. Block JP, DeSalvo KB, Fisher WP. Are physicians equipped to address the obesity epidemic? Knowledge and attitudes of internal medicine residents. *Prev Med*. 2003;36(6):669–675. 10.1016/S0091-7435(03)00055-0. [PubMed: 12744909]
21. Kushner RF. Barriers to providing nutrition counseling by physicians: a survey of primary care practitioners. *Prev Med*. 1995;24(6):546–552. 10.1006/pmed.1995.1087. [PubMed: 8610076]
22. Thompson SC, Schwankovsky L, Pitts J. Counselling patients to make lifestyle changes: the role of physician self-efficacy, training and beliefs about causes. *Fam Pract*. 1993;10(1):70–75. 10.1093/famp/10.1.70. [PubMed: 8477898]
23. Bleich SN, Bennett WL, Gudzone KA, Cooper LA. National survey of U.S. primary care physicians' perspectives about causes of obesity and solutions to improve care. *BMJ Open*. 2012;2(6). 10.1136/bmjopen-2012-001871.
24. Orleans CT, George LK, Hout JL, Brodie KH. Health promotion in primary care: a survey of U.S. family practitioners. *Prev Med*. 1985;14(5):636–647. 10.1016/0091-7435(85)90083-0. [PubMed: 4070193]
25. Puhl RM, Luedicke J, Grilo CM. Obesity bias in training: attitudes, beliefs, and observations among advanced trainees in professional health disciplines. *Obesity (Silver Spring)*. 2014;22(4):1008–1015. 10.1002/oby.20637. [PubMed: 24124078]
26. Adams KM, Kohlmeier M, Zeisel SH. Nutrition education in U.S. medical schools: latest update of a national survey. *Acad Med*. 2010;85(9):1537–1540. 10.1097/ACM.0b013e3181eab71b. [PubMed: 20736683]
27. Chisholm A, Hart J, Mann KV, Harkness E, Peters S. Preparing medical students to facilitate lifestyle changes with obese patients: a systematic review of the literature. *Acad Med*. 2012;87(7):912–923. 10.1097/ACM.0b013e3182580648. [PubMed: 22622210]
28. Qualters DM, Regan MB, O'Brien MC, Stone SL. Comparing ambulatory preceptors' and students' perceptions of educational planning. *J Gen Intern Med*. 1999;14(3):196–199. 10.1046/j.1525-1497.1999.00314.x. [PubMed: 10203628]
29. Chisholm A, Mann K, Peters S, Hart J. Are medical educators following General Medical Council guidelines on obesity education: if not why not? *BMC Med Educ*. 2013;13:53. 10.1186/1472-6920-13-53. [PubMed: 23578257]
30. Society of Teachers of Family Medicine. National Clerkship Curriculum -Second Edition www.stfm.org/Portals/49/NCC_2018edition.pdf. Published 2018 Accessed July 1, 2018.
31. Clerkship Directors in Internal Medicine/Society of General Internal Medicine. Core Medicine Clerkship Curriculum Guide: A Resources for Teachers and Learners –Version 3.0 www.im.org/p/cm/ld/fid=385. Published 2006 Accessed July 1, 2018.
32. Association of Professors of Gynecology and Obstetrics. Medical Student Educational Objectives - Tenth Edition www.apgo.org/med-ed-obj. Published 2014 Accessed July 1, 2018.
33. Vitolins MZ, Crandall S, Miller F, Ip E, Marion G, Spangler JG. Obesity educational interventions in U.S. medical schools: a systematic review and identified gaps. *Teach Learn Med*. 2012;24(3):267–272. 10.1080/10401334.2012.692286. [PubMed: 22775792]
34. Rose AE, Frank E, Carrera JS. Factors affecting weight counseling attitudes and behaviors among U.S. medical students. *Acad Med*. 2011;86(11):1463–1472. 10.1097/ACM.0b013e3182312471. [PubMed: 21952055]
35. Ockene JK, Hayes RB, Churchill LC, et al. Teaching medical students to help patients quit smoking: outcomes of a 10-school randomized controlled trial. *J Gen Intern Med*. 2016;31(2):172–181. 10.1007/s11606-015-3508-y. [PubMed: 26391030]
36. Brooks KR, Siegel B, Lash TL, et al. Validating medical students' self-report of smoking-related communication skills and educational experiences. *Ambul Pediatr*. 2007;7(2):187–191. 10.1016/j.ambp.2006.11.009. [PubMed: 17368415]
37. Geller AC, Hayes RB, Leone F, et al. Tobacco dependence treatment teaching by medical school clerkship preceptors: survey responses from more than 1,000 U.S. medical students. *Prev Med*. 2013;57(2):81–86. 10.1016/j.ypmed.2013.04.006. [PubMed: 23623894]

38. Ferris LK, Saul MI, Lin Y, et al. A large skin cancer screening quality initiative: description and first-year outcomes. *JAMA Oncol.* 2017;3(8):1112–1115. 10.1001/jamaoncol.2016.6779. [PubMed: 28241191]
39. Carney PA, Pipas CF, Eliassen MS, et al. An analysis of students' clinical experiences in an integrated primary care clerkship. *Acad Med.* 2002;77(7):681–687. 10.1097/00001888-200207000-00007. [PubMed: 12114140]

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Figure 1.
 Level of agreement with clerkship items, by clerkship (N=738).
 FM, family medicine; IM, internal medicine; OB, obstetrics and gynecology

Table 1.Distribution of Students by Gender and Clerkship at Eight U.S. Medical Schools (N=738^a)

Gender	Clerkship			Total
	OB/GYN	Internal medicine	Family medicine	
Male	143 (52.4)	107 (51.9)	117 (51.8)	367 (52.1)
Female	130 (47.6)	99 (48.1)	109 (48.2)	338 (47.9)
Total	273 (100)	206 (100)	226 (100)	705 (100)

Note: Data presented as n (%).

^a33 students did not provide their binary gender designation on the survey.

OB/GYN, obstetrics and gynecology.

Table 2.

Weight Management Counseling (WMC) Preceptor Score Quartiles by Clerkship

WMC Preceptor Score - 9 items	Clerkship (N=706)			p-value
	OB/GYN	Internal medicine	Family medicine	Total
Range: 9–36				
Mean (SE)	17.7(0.37)	19.1 (0.37)	21.7(0.37)	<0.001
<25th percentile	99 (36.5)	46 (22.1)	31 (13.7)	176 (24.9)
Range: 9–<16				
25th to <50th percentile	67 (24.7)	63 (30.3)	41 (18.1)	171 (24.2)
Range: 16–<20				
50th to <75th percentile	60 (22.1)	61 (29.3)	65 (28.6)	186 (26.4)
Range: 20–<24				
≥75th percentile	45 (16.6)	38 (18.3)	90 (39.7)	173 (24.5)
Range: 24–36				

Notes: Data presented as n (%) unless otherwise noted.

OB/GYN, obstetrics and gynecology