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Enhancing the role of nutrition professionals in weight management: A cross sectional survey

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Abstract

Objective—1) To determine the non-physician health profession perceived as best qualified to provide weight management; 2) To examine nutrition professionals' current practice characteristics and perceived challenges and solutions for obesity care; and 3) To examine the association between nutrition professionals' quality of training and self-efficacy in weight management.

Design and methods—We analyzed a 2014 national cross-sectional online survey of 500 U.S. non-physician health professionals (100 from each: nutrition, nursing, behavioral/mental health, exercise, pharmacy).

Results—Nutrition professionals most commonly self-identified as the most qualified group to help patients lose weight (92%), sentiments supported by other health professionals (57%). The most often cited challenge was lack of patient adherence (87%). Among nutrition professionals, 77% reported receiving high quality training in weight loss counseling. Nutrition professionals who reported high quality training were significantly more likely to report confidence (95% vs. 48%) and success (74% vs. 50%) in helping obese patients lose weight ($p<0.05$) than those reporting lower quality training.

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Conclusion—Across all non-physician health professionals, nutrition professionals were identified as best suited to provide routine weight management counseling to obese patients. Yet, nutrition professionals' receipt of high quality weight management training appears critical to their success in helping patients lose weight.

Keywords

nutrition professionals; weight management

Introduction

Obesity affects one third of the U.S. adult population and is estimated to cost $147 billion annually (1, 2). Earlier studies, primarily focused on primary care physicians (PCPs), documented various provider and system barriers to providing obesity care and suboptimal treatment of obesity (3-18). As a result, PCPs are often unable to provide "intensive, multi-component behavioral interventions" as recommended by the U.S. Preventive Services Task Force (USPSTF) for all persons with obesity (19). The USPSTF has acknowledged PCPs' potential difficulty in offering intensive weight loss counseling and has suggested that clinicians consider collaborative treatment with nutrition and other health professionals (20). Recent guidelines on the management of overweight and obesity in adults also recommended that PCPs refer patients to high-intensity lifestyle interventions delivered by trained nutrition professionals (21). A prior study of PCPs also noted that these physicians believe that nutrition professionals are the group best suited to take on weight management (22). Yet, little research to date has specifically focused on the current role of nutrition professionals in obesity care.

Nutrition professionals include registered dieticians (RD), certified clinical nutritionists (CCN), and certified nutrition specialists (CNS). There are several factors that may lend nutrition professionals to a primary role in obesity care. First, these professionals undergo 2 to 4 years of training in nutrition, which they could apply to weight-related counseling. Nutrition professionals have routinely been utilized as key interventionists in randomized controlled trials of multi-component behavioral interventions (21). Second, unlike physicians and nurses, who consistently demonstrate weight bias (the inclination to form unreasonable judgments based on a person's weight) that negatively impacts care nutrition professionals are a *less* common source of weight bias (23-25). Third, more individuals are expected to be pursuing education and training in nutrition science in the coming years. According to the Bureau of Labor Statistics, employment of nutrition professionals is projected to grow by 22% from 2012 to 2022, which is twice the average growth rate for all occupations (26). Finally, the Patient Protection and Affordable Care Act (ACA), calls for primary care teams to include professionals from several disciplines (including nutrition) to help patients address complex behavioral changes such as lifestyle modification and weight management (27). There are no prior studies assessing the perspectives of nutrition professionals about the weight management of obese patients.

Our first objective was to determine which non-physician health profession was perceived as best qualified to participate in weight management among all potential non-physician health

professional partners. Based on our prior work with PCPs, we hypothesized that non-physician health professionals would identify nutrition professionals as the most qualified group and that this group would also endorse their aptitude for this role (22). Therefore, our second objective focused on examining the self-reported current practice characteristics and perceived challenges and solutions for weight management as reported by nutrition professionals. Our final goal was to examine the association between quality of obesity training and self-efficacy in providing weight management among nutrition professionals.

Methods

Study Design

We conducted a national cross-sectional internet-based survey of non-physician health professionals in the United States among the following groups: nutrition, nursing, behavioral/mental health, exercise, and pharmacy.

Survey Development and Implementation

Detail about the survey development can be found in the Appendix A. We consulted SSRS/Social Science Research Solutions to design and implement the survey. The survey instrument was reviewed for content by health professionals (in each of the fields included in the survey) and experts in the field of obesity, and was then pretested for length and comprehensibility. The survey was revised on the basis of these pilot tests and the final version included forty-eight questions. A total of 20 pretest interviews (4 in each of the five professional groups) were conducted by inviting panel members to participate in the study and asking them for comments about any of the questions. Following the pretest, several changes were incorporated into the final questionnaire. For example, we changed the response categories for some questions and the stem question for others (e.g., expanding the list of addition obesity training options respondents could choose from). The pilot interviews were conducted by the survey firm (Social Science Research Solutions) which is external to Johns Hopkins. Two polling experts from Social Science Research Solutions also reviewed the survey for comprehensibility. Four obesity experts (independent of the research team and internal to Hopkins) commented on the content of the survey questions.

Data collection was conducted online between January 20 and February 5, 2014. One hundred respondents from each of five non-physician health professions were recruited. Participants were randomly recruited from the Medical Market Research (MMR) Panel which includes more than 200,000 healthcare professionals and has a 90 percent retention rate year-over-year. Respondents were asked to complete a 10 minute survey about obesity care. To be eligible for the study, respondents needed to: (1) confirm their profession (included professions: nutrition, nursing, behavioral/mental health, exercise, and pharmacy) and (2) indicate that they work at their profession at least 15 hours a week in an ambulatory setting. We excluded predominantly inpatient providers, as they are less likely to participate in obesity care.

This study was approved by the Johns Hopkins University Institutional Review Board and determined to be exempt.

Measures

For objective 1, we assessed perspectives of each of the non-physician health professional groups about the most qualified profession to provide obesity care with the following questions, comparing responses from nutrition professionals to all other health professionals: "In your experience, which one of the following groups of health care professionals is most qualified to help obese individuals lose weight?"; "In your experience, which group of health care professionals is most qualified to help obese individuals maintain their weight?; and "In your experience, which group of health care professionals would be best suited to partner with primary care physicians to provide healthcare practice-based weight loss programs?" For each question, health professionals were given nine health professional categories: 1) nutritionist/registered dietician (nutrition professional group), 2) nurse, 3) behavioral psychologist or mental health professional, 4) exercise physiologist or physical therapist, 5) pharmacist/Pharm D, 6) PCP, 7) specialty physician, 8) health coach/personal trainer, 9) a team of professionals. These categories were collapsed into five professional groups: nutrition, nursing, behavioral/mental health, exercise, pharmacy, and other (responses 6-9).

For all additional objectives, we focused only on responses from the nutrition professional group on a series of questions (detailed in Appendix B) which focused on challenges to helping obese patients lose weight and solutions for improving obesity care, quality of weight management training, self-efficacy, and practice patterns (e.g., number of hours of direct patient care in a typical week, common types of nutritional counseling provided to obese patients, and common types of behavioral counseling provided to obese patients). For the questions assessing challenges and solutions for improving obesity care, respondents were asked to pick three options from a list of ten challenges and three options from a list of twelve solutions. For each, we selected the three most frequently endorsed options.

We assessed the quality of weight management training by asking, "How would you describe the training you received regarding obesity care and weight loss counseling during your health professional degree or educational training?" Respondents indicated whether it was very good, somewhat good, not very good, or not at all good. We dichotomized this variable as 'high quality training' (very/somewhat good) and 'low quality training' (not very/not at all good) based on the cut points in the data. We evaluated self-efficacy by asking, "How confident are you in your ability to help your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?" and "How successful are you are helping your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?" We dichotomized respondents responses as 'high' if very/pretty confident or successful and 'low' if not very/not at all confident or successful.

Statistical Analyses

Survey response data were weighted to address concerns with systematic under- or over-representation of health professional subpopulations in the panel, and to account for systematic non-response along known demographic parameters of these professions. The data were adjusted in weighting so that the final weighted sample approximates the known distribution for these occupations as reflected in the American Community Survey (ACS).

Weighting parameters were derived from a cumulative file for the years 2010 through 2012 to ensure a sufficient amount of cases for each profession in the ACS data. To reflect the survey's focus on practicing professionals, only those currently employed in these particular occupations were included in the ACS data file used for deriving these parameters. Details about the weighting parameters by profession can be found in Appendix A.

We calculated weight means (adjusted for age and education) and performed descriptive analyses for all variables. T-tests were used to test for differences between nutrition professionals by self-reported quality of obesity care training received. Statistical analyses were performed using the STATA, version 13.0 software package (StataCorp LP, College Station, TX), using SVY functions to adjust for the complex survey design. The weighted margin of error for the survey was +/−5.3%.

Results

We screened 1052 panel members who responded to the survey invitation, and excluded 290 screened as ineligible for not meeting the inclusion criteria described above (by profession – nutrition: 51, nursing: 63, behavioral/mental health: 62, exercise: 49, pharmacy: 65) and 45 qualifying respondents who did not complete the questionnaire. The completion rate, calculated as completed interviews over the total of estimated working qualifying emails was 68% (717/1052). Working qualified emailed were calculated by adding qualified emails (completing or breaking off) plus the estimated number of qualified emails among the unknown.

Based on a pre-specified sample size determination, the final sample included 500 non-physician health professionals with 100 in each professional group. Each participant received an incentive for their participation. Table 1 provides the characteristics of the overall study sample and the nutrition professionals group. Overall, most were female, white, under age 45, and had more than a college education. These characteristics of this study sample are comparable to U.S. Health Workforce Chartbook (for example: our sample of pharmacy professionals is 47% male and 53% female, which is the same as the Chartbook) (28).

Figure 1 displays the perspectives of non-physician health professionals about which profession is most qualified to participate in weight management where nutrition professionals are compared to all other health professionals. Nutrition professionals self-identified as the best group to help patients with obesity lose weight (92%) and maintain their weight (75%). The other non-physician health professionals in our study (nursing, behavioral/mental health, exercise, pharmacy) also identified the nutrition professionals as the best group for these activities (57% and 44%, respectively). Nutrition professionals perceived that they were best suited to partner with PCPs to provide weight loss programs (94%), and other non-physician health professionals cited them most commonly to fulfill this role as well (53%). Therefore, all additional results focus on the nutrition professionals group alone.

Among the nutrition professional group, most stated that they spent at least 21 hours a week engaged in direct patient care (79%) and patients are typically referred into their practices by physicians (75%). Only 34% of nutrition professionals reported that the majority of patients' health insurance covered at least some of the costs of their services.

Nutrition professionals most often endorsed using the following five nutrition counseling strategies in their practice: reducing portion size (96%), reading nutrition labels (91%), avoiding high calorie ingredients when cooking (91%), reducing sugar-sweetened beverage consumption (90%), and avoiding high calorie menu items when eating outside the home (88%). Interestingly, only 67% created menu plans for their patients and only 24% used meal replacements. Most nutrition professionals reported advising patients to engage in recommended levels of physical activity (83%) as a part of their weight management services. Nutrition professionals endorsed the use of some behavioral strategies as a part of weight management, including goal setting (91%) and self-monitoring of calories (80%) and exercise (81%), while other behavioral strategies such as problem solving (57%), self-monitoring of weight (40%), contingency planning (33%), and stimulus control (33%) were less common. The majority of nutrition professional do not offer alternative therapies like hypnosis, herbal supplements or accupuncture as a part of their practice (91%).

Table 2 presents nutrition professionals' perspectives on the three biggest challenges to helping obese patients lose weight and solutions to improve obesity care (full set of responses can be found in Appendix C). The two most often cited challenges were related to patient level factors, which were perceived lack of patient adherence and perceived lack of patient will power. The final most common challenge was related to lack of reimbursement for services. Nutrition professionals identified reimbursement for services not currently covered by insurance companies and higher reimbursements for covered services as two priority solutions in their practices. They also perceived that being able to collaboratively manage patients with colleagues with expertise in obesity care would be beneficial for their practice. Nutrition professionals most often identified behavioral psychologists or mental health professionals as the professionals best suited for them to partner with to provide obesity care (41%), while only 12% believe physicians were their best partners.

All nutrition professionals reported receiving weight management and obesity care training during their health professional degree program and 77% believed that the quality of this training was high. Table 3 presents the association between reported quality of obesity training and perceived self-efficacy in providing weight management among nutrition professionals. Compared with those who reported low quality weight management training, nutrition professionals who reported high quality obesity care training were significantly more likely to report confidence in their ability to help obese patients achieve clinically significant weight loss (95% vs. 48%, $p < 0.01$) and success in helping obese patients achieve clinically significant weight loss (74% vs. 50%, $p = 0.05$). In addition, 86% of nutrition professionals reported participating in additional training beyond their degree program, on how to help patients with obesity lose weight. This training was accomplished mostly through continuing education credit, lectures, seminars and conferences. Of note, most nutrition professionals who reported low quality training and high success received additional training (90%).

In sensitivity analyses (not shown but available upon request), we re-ran the results for Tables 2 and 3, adjusting for practice setting. We found no substantive differences from the original results. To be consistent with other published papers using this data (29), we report the tables which adjusted for only age and education.

Discussion

This study is the first to examine perspectives of non-physician health professionals about their scope of practice and responsibility for offering weight management to obese patients. We found that nutrition professionals were most commonly idenitifed as the most qualified professional group to help obese patients lose or maintain weight. Almost all nutrition professionals self-identified as the best professional group to deliver obesity care, and reported greater confidence and success in helping patients with obesity achieve clinically significant weight loss. Among non-physician health professionals, nutritionists were most commonly identified as the professional group best suited to partner with PCPs to provide weight loss programs and all most all nutritionists self-identified as as the best professional group to act in this collaborative manner. These results are consistent with earlier work assessing perspectives of physicians about obesity care, which found that PCPs most commonly idenitifed nutrition professionals as most qualified to help patients with obesity lose or maintain weight (22). Most PCPs in this prior study supported practice-based changes to help them improve their delivery of obesity care (22). Combining the results of these two studies, it appears that all health professionals, regardless of specialty, are looking to nutritionists to take a primary role in weight management and obesity care. Given their potential prominent role in weight management, it becomes critical to understand the training and current practice characteristics of today's active nutrition professionals.

In our sample, all nutrition professionals reported receiving education on weight management and obesity care during their professional degree program. We also found that most nutritional professionals pursued additional training in obesity after their degree program in this area. In contrast, a prior study of PCPs found that only 63% of these providers had similar educational experience (22). Our results suggest that all nutrition professionals have some educational experience in this domain, which suggests that they have the education and training to take on a lead role in obesity care. However, the quality of this education likely varies across programs and may have consequences for this professional group. Past research suggests that obesity training has been shown to improve obesity care (3). Our results suggest that the quality of weight management training is associated with significantly greater confidence and perceived success in helping patients with obesity lose weight. Therefore, improving the quality of weight management training for nutritional professionals could translate into better patient outcomes. Additional research is needed to evaluate and enhance current weight management curricula for nutrition professionals.

Nutritional professionals reported using many evidence-based methods in their current weight management practice including portion control and calorie tracking [2013 American Heart Association/The Obesity Society guidelines], although other evidence-based strategies such as meal replacements were uncommon. Most nutrition professionals endorsed using

behavioral strategies like goal setting and self-monitoring. Few incorporated other behavioral techniques like problem solving, contingency planning, and stimulus control. Nutrition professionals may benefit from additional training in counseling techniques and behavioral strategies, which may help them overcome their perceived challenges with patient non-adherence and lack of will power. Alternatively, collaborative obesity care models might consider pairing nutrition professionals with mental health/behavioral professionals to play upon the strengths of both groups. More research is also needed to identify which components of weight management would be best handled by nutrition professionals and which components would be best handled by mental health/behavioral professionals and/or PCPs with complementary skills.

A weight management model that combines the nutrition professional, mental health/behavioral professional and PCP would be consistent with The Patient Protection and Affordable Care Act (ACA), which calls for multidisciplinary teams to help patients address complex behavioral changes (27). Collaborative treatment of patients with obesity has been successful in the past (30, 31). However, the perceived challenges with reimbursement for nutritional professionals' services that we identified would need to be overcome before such a model could be implemented. Lack of reimbursement has been commonly cited as a barrier to providing obesity care.(32) Compensation for weight-related counseling is changing as a result of recent changes in the ACA (which provides federal matching funds to state Medicaid programs that choose to cover obesity screening and treatment) and by the Centers for Medicare and Medicaid Services (which covers intensive behavioral counseling for obese patients). However, it is unclear whether nutrition professionals will be eligible for reimbursement through ACA changes and their services are not eligible for reimbursement through CMS.

Yet, other challenges remain. Nutrition professionals are 70% white, while obesity disproportionately impacts low-income minority groups (33, 34). Given that minorities typically live in separate communities with different environmental exposures (35), it is quite possible that nutrition professionals may be unfamiliar with the locally available resources and food options for patients from different racial or socioeconomic backgrounds (36). Therefore, identifying strategies to familiarize nutrition professionals with the local realities of their patients' food environment may help them provide more relevant and effective weight management. Diversifying the nutrition workforce might also lead to better patient experiences for ethnic minority patients and improve cultural competence of their colleagues (37), although some prior research suggests that patient-provider race concordance may not improve obesity care for black patients with obesity (38). Increased recruitment of men as nutrition professionals may be another target, as a previous study found that male patient-physician gender concordance is associated with increased lifestyle counseling (39). In addition, nutrition professionals are a small professional group (accounting for 67 thousand jobs in 2012 compared to 2.7 million nursing jobs (26)), although growing. As a result, it may be unrealistic for them to serve as the primary health professional group delivering weight management for obesity patients with obesity. However, nutrition professionals work in a variety of settings and employment of nutrition professionals is projected to grow by 22% from 2012 to 2022, which is twice the average growth rate for all occupations (26).

There are several limitations to this analysis. First, our measures of health professional attitudes do not represent the full possible spectrum of attitude measures in the literature (such as perceived skills (40)) which may bias our results towards the null. Second, some of the included health professionals have had extensive additional training in weight management (even considering themselves “weight management specialists”), which could have biased our results positively. It is also possible that health professionals with more interest in the topic of obesity may be more likely to respond to the survey. Third, even though the survey was reviewed by experts in the field of obesity and among each health professional group included in the survey as well as pilot tested for comprehensibility, it is possible that health professionals differentially interpreted some of the questions. Fourth, we restricted our question related to weight loss challenges to factors specific to the health care setting, but nutrition professionals may also consider environmental factors (e.g., lack of access to healthy foods) to be weight loss challenges. Fifth, we did not gather information on years of training and are, therefore, unable to assess the association of training intensity in weight management and self-efficacy to manage obesity.

In conclusion, this study suggests that non-physician health professionals and nutrition professionals themselves support elevating of the role of nutrition professionals in the delivery of weight management. Additional training for nutrition professionals, a collaborative care model which includes other health professionals with expertise in obesity care that leverages the skills they feel most qualified to deliver, and reimbursement (for additional training or for insurance coverage of relevant services) may facilitate improved delivery of weight management from nutrition professionals.

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Appendix A

Survey Development

Summary

Data collection for the Health Professionals Survey on Weight Loss Management was conducted online between January 20 and February 5, 2014. We aimed to recruit one hundred respondents from each of five professions were recruited through the Research Now Healthcare Professional Panel. In total, 3,308 invitations were sent to a randomly selected sample of panel members who were dieticians/nutritionists, nurses, behavioral psychologists or mental health professionals, physical therapists, and pharmacists. Respondents were asked to complete a 10 minute survey about obesity care. A total of 500 respondents completed the questionnaire.

Questionnaire Development and Pretesting

The questionnaire for this survey was developed by Johns Hopkins Bloomberg School of Public Health researchers with expertise in obesity and in consultation with SSRS of Media,

PA and tested for length and comprehension. A total of 20 pretest interviews (4 per profession) were conducted by SSRS by inviting panel members to participate in the study and asking them for comments they had about any of the questions. A total of 5 pretest interviews (one per profession) were conducted by Johns Hopkins Bloomberg School of Public Health researchers by inviting a convenient sample of professionals working in the health system. Following the pretest, several changes were incorporated into the final questionnaire.

Recruitment/The Web Panel

The Sample Provider, Research Now of Plano, TX., randomly selected respondents from its Healthcare Panel, which recruits healthcare providers via multiple modes such as email, phone, fax and direct mail. Contact information is derived from a variety of commercial sources and association memberships. Respondents are compensated for participation in the panel.

In total 3,308 invitations were sent by email to panel members with the distribution of invitations and outcomes as following:

Table 1

Recruiting and Outcomes

	Dieticians/ Nutritionists	Nurses	Psychologists/ Mental Health Professionals	Physical Therapists	Pharmacists
Number of invitations	530	985	600	655	538
Number of clicks on invite	154	276	193	229	200
Completed questionnaire	100	100	100	100	100
Screened ineligible	51	63	62	49	65

Note: Recruitment of nurses excluded hospital/inpatient settings, and targeted private practices, group practices, clinics, affiliated clinics. Recruitment of pharmacy professionals excluded hospital/inpatient work settings, and targeted work settings in clinics/clinic pharmacy/retail/group practices/group clinics

Screening

In order to qualify for the study, respondents needed to: (1) confirm their profession and (2) indicate that they work at their profession at least 15 hours a week in an ambulatory setting.

Weighting

The final data were weighted to address concerns with systematic under- or over-representation of Health Professional subpopulations in the panel, and to account for systematic nonresponse along known demographic parameters of these professions. The data were adjusted in weighting so that the final weighted sample approximates the known distribution for these occupations as reflected in the American Community Survey (ACS). Weighting parameters were derived from a cumulative file for the years 2010 through 2012 to ensure a sufficient amount of cases for each profession in the ACS data.[1] To reflect the

survey's focus on practicing professionals, only those *currently employed* in these particular occupations were included in the ACS datafile used for deriving these parameters.

Since the sample size for each profession was relatively small (n=100), a limited number of parameters were used in weighting the sample for these professions, namely:

- Gender
- Age: under 35 years old; 35 to 50 years old; 50 or older
- Census region

In order to report about this Health Professional population as a whole, two weights were produced:

- Weight1 (Comparison Weight): the sum of weights for each profession matched the unweighted sample size (n=100 for each profession). This weight can be used for comparing the professions.
- Weight2 (Total Weight): this modifies Weight1 so that the relative share of each profession reflects its distribution among this population of five professions overall, based on the ACS data.

Table 2 details the weighting parameters used.

Table 2

Weighting Parameters by Profession:

	Dieticians/Nutritionists	Nurses	Psychologists/Mental Health Professionals	Physical Therapists	Pharmacists
Male	10%	9%	31%	31%	47%
Female	90%	91%	69%	69%	53%
<35 years old	32%	24%	19%	33%	32%
35 to 49 years old	31%	37%	29%	44%	36%
50 or older	37%	38%	53%	23%	32%
Northeast	20%	20%	28%	24%	20%
Midwest	22%	24%	20%	23%	22%
South	36%	36%	25%	32%	36%
West	32%	19%	26%	21%	21%

The weighted margin of error for this survey using Weight1 is +/−5.3% and wit Weight +/−8.5%.[2]

[1]Psychologists/Mental Health Professionals were weighted to population parameters of employed psychologists. The demographic distribution was overall similar to findings in the 2008 APA Survey of Psychology Health Service Providers.
[2]Margin-of-error estimates assume random sampling, which may not be applicable to the web panel.

Appendix B

Survey Questions

Appendix B

Survey Questions

Question	Response categories
Most qualified profession to provide obesity care	
In your experience, which one of the following groups of health care professionals is most qualified to help obese individuals lose weight?	1 Registered Dietitian/Nutritionist 2 Nurse 3 Behavioral psychologist or mental health professional (e.g., psychotherapist) 4 Exercise physiologist or physical therapist 5 Pharmacist/PharmD 6 Physician 7 Health coach/personal trainer 8 A team of health professionals 9 Other
In your experience, which group of health care professionals is most qualified to help obese individuals maintain their weight?	
In your experience, which group of health care professionals would be best suited to partner with primary care physicians to provide healthcare practice-based weight loss programs?”	
Challenges to helping obese patients lost weight and solutions for improving obesity care	
Of the following, which three are the biggest challenges that you face in helping your obese patients or clients lose weight?”	1 Lack of time 2 Insufficient training 3 Lack of effective treatments 4 Lack of patient adherence to treatments 5 Lack of patient will power to make changes 6 Lack of reimbursement 7 Poor communication with primary care provider 8 Poor communication with specialty physicians (e.g., endocrinologists) 9 I don't face any challenges 10 Weight loss is not a part of my practice
Of the following, which three would be most helpful in your practice to facilitate patient weight loss?	1 Appropriate medical equipment (e.g., larger gowns, larger scales) or exercise equipment to accommodate obese patients or clients 2 Reimbursement from insurance companies for services not currently covered 3 Higher reimbursement from insurance companies for covered services 4 Compensation and/or time in order to receive additional training related to weight loss 5 Improved training among office staff 6 Colleagues with expertise in obesity care with which you could collaborate with to manage patients 7 Partnering with a physician who prescribes weight loss medications 8 Selling nutritional weight loss products like meal replacements in your practice 9 Selling exercise weight loss products like pedometers in your practice 10 Offering metabolic, fitness or body composition testing in your practice 11 Online self-monitoring program 12 Weight loss applications for smart phones
Quality of weight management training	
How would you describe the training you received regarding obesity care and weight loss counseling during your health professional degree or educational training?	1 Very good 2 Pretty good 3 Not very good 4 Not at all good 5 Did not receive any training
Self-efficacy	1
How confident are you in your ability to help your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?	2Very confident 3Pretty confident 4Not very confident 5Not at all confident

Question	Response categories
How successful are you are helping your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?	1 Very successful 2 Pretty successful 3 Not very successful 4 Not at all successful
Practice patterns	
During your last normal week of practice, how many hours of direct patient care did you provide in an ambulatory or outpatient setting?	Open ended response
Which healthcare professionals typically refer obese patients or clients to your practice?	1 Most patients or clients self-refer for my services 2 Registered Dietitian/Nutritionist 3 Nurse 4 Behavioral psychologist or mental health professional (e.g., psychotherapist) 5 Exercise physiologist or physical therapist 6 Pharmacist/PharmD 7 Bariatric surgeons 8 Other physicians 9 Health coach/personal trainer 10 Insurance 11 Other
What percentage of your patients or clients have health insurance plan that covers all or some of your services?	1 Less than 25 percent 2 25 percent to 49 percent 3 50 percent to 75 percent 4 Greater than 75 percent
Do you or someone in your practice provide any of the following types of nutritional counseling to help your obese patients or clients lose weight?	1 Reading nutritional labels to determine calorie or nutrition content 2 Dietary analysis through food records and/or database software 3 Avoiding high calorie ingredients when cooking (e.g., fats and oils) 4 Avoiding high calorie menu items when eating outside the home 5 Maintaining adequate water intake 6 Reducing consumption of sugar-sweetened beverages 7 Reducing consumption of alcohol 8 Reducing portion size 9 Meal planning or creation of menus 10 Calorie tracking 11 Meal replacements 12 Field trips to grocery stores 13 Increasing physical activities/exercise 14 Counseling techniques and/or other motivational interviewing 15 Other
Do you or someone in your practice provide any of the following types of exercise counseling to help your obese patients or clients lose weight?	1 Engaging in recommended levels of physical activity 2 Taking the stairs whenever possible 3 Using pedometers to meet step goals 4 Resistance or weight training planning 5 Aerobic exercise planning 6 Exercise prescriptions 7 Engaging in stretching exercises like yoga or tai chi 8 Assist in finding/getting gym/fitness center memberships 9 Walking 10 Other 11 Do not provide exercise counseling
Do you or someone in your practice personally provide any of the following types of behavioral counseling to help your obese patients or clients lose weight?	1 Encouraging self-monitoring of calories 2 Encouraging self-monitoring of exercise 3 Encouraging goal setting 4 Encouraging problem solving 5 Encouraging self-weighing 6 Discussing contingency planning 7 Discussing stimulus control 8 Cognitive behavioral therapy 9 Acceptance-based behavioral therapy 10 Other 11 Do not provide behavioral counseling
Do you personally provide any of the following types of alternative therapies to help your obese patients or clients lose weight?	1 Acupuncture 2 Herbs or supplements 3 Massage therapy 4 Hypnosis/Meditation

Question	Response categories
	5 Infrared therapy

Appendix C

Appendix C Table A1

Perspectives on challenges to helping obese patients lose weight and solutions to improve obesity care (%)

	Nutrition Professional Group (N=100)
Challenges[a]	
Patient-level	
Lack of patient adherence to treatments	87
Lack of patient will power to make changes	56
Provider-level	
Insufficient training	15
Poor communication with primary provider	16
Poor communication with specialty physicians	4
Health-system level	
Lack of time	44
Lack of effective treatments	23
Lack of reimbursement	47
Solutions[b]	
Additional training or expert staff	
Improved training among office staff	23
Colleagues with expertise in obesity care to collaborate on patient management	50
Partnering with a physician who prescribes weight loss medication	13
Compensation and/or time to receive additional training related to weight loss	36
Incentives	
Reimbursement from insurance companies for services not currently covered	71
Higher reimbursement from insurance companies for covered services	41
Complimentary products or new services	
Appropriate equipment to accommodate obese patients	9
Selling nutritional weight loss products (i.e. meal replacements)	6
Selling exercise weight loss product (i.e. pedometers)	4
Offering metabolic, fitness or body composition testing	19
Online self-monitoring program	22
Weight loss applications for smart phones	8

Analyses were adjusted for age and education.

[a]Survey question: Of the following, which THREE are the biggest challenges that you face in helping your obese patients or clients lose weight?

[b] Survey question: Of the following, which THREE would be the most helpful in your practice to facilitate patient weight loss?

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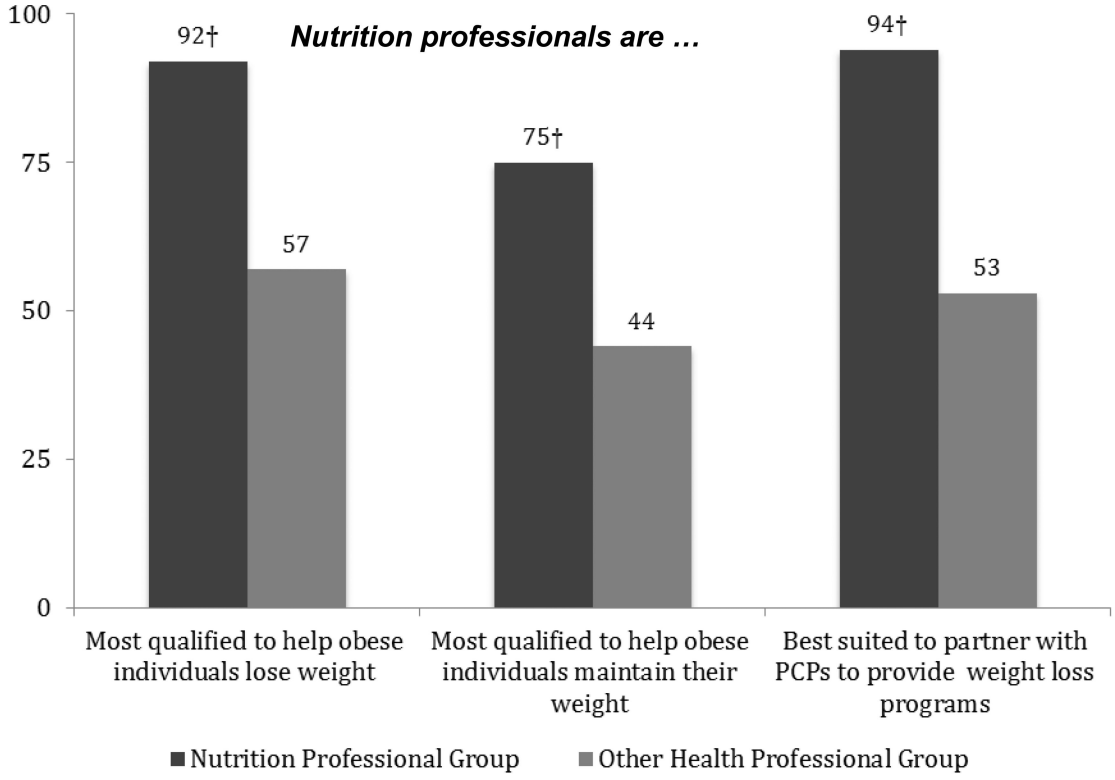
What is already known about this subject?

- Obesity care is suboptimal and many physicians to do not provide recommended obesity care
- Physician barriers to providing obesity care have been well documented
- Physicians identify nutrition professionals as the group best suited to take on weight management

What does this study add?

- Non-physician health professionals perceive nutrition professionals as best suited to provide routine weight management counseling to obese patients
- Nutrition professionals self-identified as the best professional group to deliver obesity care
- High quality training in weight management is critical to nutrition professionals' perceived confidence and success in helping their patients achieve clinically weight loss



†significantly different from other professionals $p < 0.05$

Note: Adjusted for age and education. This includes a total of 500 respondents; 100 nutrition professionals and 400 health professionals from nursing, behavioral/mental health, exercise, pharmacy.

Figure 1.
Perspectives of non-physician health professionals about nutrition professionals' role in weight management (%)

Table 1

Characteristics of the overall study sample* (N = 500) and the subgroup of nutrition professionals (N = 100)

	Overall N (%)	Nutrition Professionals Group N (%)
Female	386 (86)	99(95)
Race/ethnicity**		
White-Non Hispanic	416 (81)	87(80)
Black-Non Hispanic	14 (5)	0(0)
Asian	27 (4)	3(6)
Hispanic	19 (3)	6(7)
Other	8 (3)	0(0)
Age, years		
Under 35	75 (25)	12(32)
Aged 35-44	142 (26)	31(23)
Aged 45-54	127 (20)	28(20)
Aged 55 and older	156 (28)	29(25)
Education		
Less than college	34 (15)	1(1)
College	164 (32)	46(50)
More than college	302 (53)	53(49)
Completed training more than 20 years ago	220 (32)	50(38)

Source: Survey of health professionals between January 20 and February 5, 2014.

Note: The data were adjusted in weighting so that the final weighted sample approximates the known distribution for these occupations as reflected in the American Community Survey.

* Overall study sample include 100 professionals from each of the following groups: nutrition, nursing, behavioral/mental health, exercise and pharmacy.

** The race/ethnicity categories do not sum to 100% as some health professionals reported their race category as “prefer not to say.” For the overall population this included 16 observations (4%) and for nutrition professionals this included 4 observations (8%).

Table 2

Nutrition professionals' perspectives on their three biggest challenges to helping obese patients lose weight and solutions to improve obesity care (%)

	Nutrition Professionals Group (N=100)
Challenges to helping patients lose weight[a]	
Lack of patient adherence to treatments	87
Lack of patient will power to make changes	56
Lack of reimbursement	47
Solutions to improve obesity care[b]	
Reimbursement from insurance companies for services not currently covered	71
Colleagues with expertise in obesity care to collaborate on patient management	50
Higher reimbursement from insurance companies for covered services	41

Note: We calculated the number of respondents who mention the item as one of the three / total respondents. Analyses were adjusted for age and education.

[a] Survey question: Of the following, which THREE are the biggest challenges that you face in helping your obese patients or clients lose weight?

[b] Survey question: Of the following, which THREE would be the most helpful in your practice to facilitate patient weight loss?

Table 3

Association between reported obesity training quality and perceived self-efficacy in weight management among nutrition professionals (%)

	Nutrition Professionals Group (N=100)	
	High Quality Training (77%)	**Low Quality Training (23%)**
High confidence in ability to help obese patients achieve clinically significant weight loss[a]	95	48†
Perceived high success in helping obese patients achieve clinically significant weight loss[b]	74	50†

Note: Adjusted for age, education and additional training.

† significantly different from high quality group, $p < 0.05$

[a] Survey question: How confident are you in your ability to help your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?

[b] How successful are you at helping your obese patients or clients achieve a clinically significant weight loss (at least 5% of body weight)?