

ORIGINAL RESEARCH

Weight-loss talks: What works (and what doesn't)

Combining nutrition, physical activity, and weight loss advice may help patients reduce fat intake. Focusing solely on exercise may actually lead to weight gain.

Abstract

Background ▶ In primary care encounters, it is unknown whether physician advice on weight-related matters leads to patient weight loss. To examine this issue, we analyzed physician weight loss advice and measured corresponding changes in patients' dietary intake, physical activity, and weight.

Methods ▶ Using audio-recorded primary care encounters between 40 physicians and 461 of their overweight or obese patients, we coded weight-related advice as nonspecific, specific nutritional, specific exercise, or specific weight. Physicians and patients were told the study was about preventive health, not weight. We used mixed models (SAS Proc Mixed), controlled for physician clustering and baseline covariates, to assess changes in diet, exercise, and measured weight, both pre-encounter and 3 months post-encounter.

Results ▶ When discussing weight, physicians typically provided a combination of specific weight, nutrition, and physical activity advice to their patients (34%). Combined advice resulted in patients reducing their dietary fat intake ($P=.02$). However, when physicians provided physical activity advice only, patients were significantly ($P=.02$) more likely to gain weight (+1.41 kg) compared with those who received no advice.

Conclusion ▶ When giving weight-related advice, most physicians provided a combination of lifestyle recommendations. Combining advice may help patients reduce their fat in-

take. Physical activity advice alone may not be particularly helpful.

The US Preventive Services Task Force (USPSTF) recommends that physicians screen patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss.¹ Evidence suggests that physician counseling, including advice, *can* help patients to lose weight, increase physical activity, and improve diet.²⁻⁹ However, little is known about what specific types of weight loss advice physicians give to patients, and whether some types are more effective than others at influencing behavior change.

We analyzed physician weight loss advice delivered in primary care visits and measured changes in patients' dietary intake, physical activity, and body weight. We examined both the type of weight loss advice delivered and the impact of type of advice on weight and behavior change.

Methods

This study analyzed audio recordings from Project CHAT – Communicating Health: Analyzing Talk. The project was approved by the Duke University Medical Center Institutional Review Board.

Recruitment

Physicians. We obtained consent from 40 primary care physicians in community-based

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Drs. Alexander, Cox, Yancy, Turer, Dolor, Tulsky, and Pollak and Ms. Lyna reported no potential conflict of interest relevant to this article. Dr. Østbye reported that he serves as a consultant for AstraZeneca.

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The study sample reported on here was used to produce several different analyses published elsewhere in the literature.

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practices and told them the study would examine communication around preventive health topics, not weight specifically.

■ **Patients.** We identified potential participants by reviewing scheduled appointments 3 weeks in advance. Eligible participants were at least 18 years of age, English-speaking, overweight or obese (body mass index [BMI] ≥ 25 kg/m²), cognitively competent, and not pregnant. After we obtained consent, a remotely located research assistant started a digital audio recorder as the patient entered the exam room. Immediately after the encounter, the research assistant administered a post-encounter survey to the patient and recorded the patient's vital signs (N=461). Three months later, the research assistant met with the participant to record vital signs and administer a survey assessing changes in dietary fat intake and exercise (N=426).

Data coding

We coded advice into 4 broad categories: (1) nutrition advice, (2) physical activity advice, (3) specific weight loss advice, and (4) nonspecific weight loss/weight-related advice. We transcribed each piece of advice verbatim.

■ **Nutrition advice** consisted of 9 subcategories: calorie/portion control, meal timing/planning, commercial diet plans, negative diet plans, increase fruits/vegetables, reduce sugar/carbohydrates, reduce fat/cholesterol, other micronutrient recommendations, and specific food items from multiple categories.

■ **Physical activity advice** consisted of 6 subcategories: walking, aerobic exercise, anaerobic exercise, exercise intensity, exercise duration, and exercise for comorbid conditions.

■ **Specific weight loss advice** consisted of 3 categories: weight loss behavior, weight loss for comorbid conditions, and referrals.

■ **Nonspecific weight loss advice** also consisted of 3 subcategories in which physicians provided no details about the general topics of nutrition, physical activity, or weight loss.

Two independent coders (CBT and MEC) assessed each piece of advice and double coded 20% of conversations for reliability. Cohen's kappa was used to calculate inter-rater reliability for each code

using Landis and Koch's classification (0.21-0.40=fair agreement; 0.41-0.60=moderate agreement; 0.61-0.80=substantial agreement; 0.81-1.0=near-perfect agreement).¹⁰ Three advice categories achieved near perfect agreement: nutrition (kappa=0.94; 95% confidence interval [CI] 0.82-1.0; 99.2% agreement), physical activity (kappa=0.91; 95% CI, 0.84-0.99; 98.6% agreement), and weight loss (kappa=0.95; 95% CI, 0.82-1.0; 99.7% agreement). The nonspecific weight loss advice category had slightly lower agreement but still achieved near-perfect agreement (kappa=0.82; 95% CI, 0.62-1.0; 99.2% agreement).

After all advice was coded, we placed conversations into 1 of 6 categories: (1) no advice given; (2) nonspecific advice only; (3) nutrition only; (4) physical activity only; (5) weight loss only; or (6) combination of nutrition, physical activity, and/or weight loss.

Measures

■ **Dietary fat and fiber intake.** We assessed dietary fat intake at baseline and at 3 months using the 22-item Fat- and Fiber-Related Diet Behavior Questionnaire.^{11,12} Questions about frequency of food selections included, "When you ate dessert, how often did you eat only fruit?" and "When you ate chicken, how often did you take off the skin?" We averaged responses into a total score wherein 1 reflected higher fiber, lower fat food choices; a score of 4 reflected lower fiber, higher fat choices ($\alpha=0.74$ at baseline and $\alpha=0.77$ at 3-month follow-up).

■ **Physical activity.** We measured physical activity (baseline, 3 months) using the Framingham Physical Activity Index.¹³ Participants recalled the average number of hours spent engaged in various daily activities (sleeping, working, leisure) and the level of activity for each (sedentary, slight, moderate, or heavy). The composite score accounts for activity duration and intensity.

■ **Anthropometrics.** We measured patient weight (baseline, 3 months) and height (baseline only) using a calibrated scale and portable stadiometer. Patients removed shoes, outerwear, and belongings from their pockets before being weighed.

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➤ Consider addressing a patient's motivation, confidence, outcome expectations, and skills to help promote behavior change.

Analysis

We analyzed data using SAS (SAS Institute, Inc., Cary, NC). We assessed the association between type of advice and weight loss, improvement in dietary fat intake behaviors, and increase in physical activity between baseline and the 3-month follow-up visit. We used PROC MIXED to fit general linear models; we incorporated responses into these models from all participants who provided measurements for at least one time point. This modeling framework yields unbiased estimates when missing data are unrelated to the observed variable.¹⁴

■ **Primary predictors:** (1) type of advice (none, nonspecific, nutrition, physical activity, weight loss, and combination), (2) time since baseline visit, and (3) time by type of advice interaction. All models included a priori defined patient, physician, and visit-related covariates that were theoretically or empirically related to changes in the outcomes (weight, physical activity, or dietary fat intake). The 14 patient covariates were sex; age; race; high school education; economic security (enough money to pay monthly bills); overweight (BMI, 25-29.9 kg/m²) or obese (BMI ≥30 kg/m²); actively trying to lose weight (yes/no); motivated to lose weight (Likert scale 1-7); comfortable discussing weight (Likert scale 1-5); confident about losing weight (Likert scale 1-5); and patient-reported comorbid conditions of diabetes, hypertension, arthritis, and hyperlipidemia.

The 9 physician covariates were sex; race; years since medical school graduation; specialty (family vs internal medicine); self-efficacy (Likert scale 1-5); barriers for weight counseling (Likert scale 1-5); comfort discussing weight (Likert scale 1-5); insurance reimbursement concerns (Likert scale 1-5); and prior training in behavioral counseling (yes/no). Finally, 2 visit-level covariates were included: minutes spent addressing weight issues and visit type (preventive vs chronic).

Results

Sample characteristics

Of the 40 physicians, 19 were family physicians and 21 were internists. More than half

of the physicians were female (60%), and 85% were white. Mean age was 47.2 years and mean BMI was 24.9 kg/m². Of the 461 patients, 66% were female, 65% were white, 35% were African American, and two-thirds had post-high school education (TABLE 1). Mean patient age was 59.8 years; only 4% of the patients were new to their physicians.

Frequency of advice

Physicians gave some type of weight-related advice in 63% of the encounters. They combined types of advice in 34% of all conversations, provided physical activity advice only in 13%, nutrition advice only in 8%, nonspecific advice in 5%, and weight loss advice only in 3%. Many times when physicians gave advice, it was centered on self (eg, "I need you to do X" or "What will it take for me to get you to do Y?").

Nutrition advice most commonly pertained to specific food items from multiple categories (27% of conversations). Physicians also advised patients to reduce sugar/carbohydrates, control calories and portions, add other micronutrients, eat more fruits/vegetables, and eat meals more frequently.

Walking was the physical activity topic discussed most frequently, followed by exercise duration, exercise for comorbidities, aerobic activities, exercise intensity, and anaerobic exercise. The most common specific weight loss topic was weight loss behavioral advice, followed by weight loss for comorbid conditions. Physicians rarely provided referrals to weight-loss programs.

Effect of type of advice on fat and fiber diet behavior score

Receipt of nutrition advice only was *not* associated with reduction in fat intake ($P=.43$, TABLE 2). However, those who received combined types of advice exhibited a significantly greater reduction of fat intake compared with those who received no advice (Fat- and Fiber-Related Diet Behavior Questionnaire score reduction of 0.15 vs 0.05; $P=.02$).

Effect of type of advice on Framingham Physical Activity score

No type of advice, including physical activity advice, led to a change in Framingham Physi-

TABLE 1
Patient characteristics (N=461)

	% or mean (SD)
Race	
White/Asian/Pacific Islander	65%
African American	35%
Female	66%
Age, y (missing=1)*	59.8 (13.9)
BMI, kg/m ² (missing=1)*	33.1 (7.1)
Education (missing=1)*	
Post-high school	67%
Income (missing=37)*	
\$45,000 or less	48%
High financial burden (missing=13)*	
Pay bills with trouble	14%
Diagnosed with:	
Diabetes	31%
Hypertension (missing=1)*	69%
Hyperlipidemia (missing=1)*	56%
Arthritis	47%
New patient	4%

BMI, body mass index; SD, standard deviation.

* Missing data at baseline.

cal Activity scores at the 3-month visit (overall $P=.76$; TABLE 2).

Effect of type of advice on weight loss

Patients who received physical activity advice gained significantly more weight than patients who received no advice (1.41 kg gained vs 0.18 kg lost; $P=.02$). Patients who received combined advice lost more weight than patients who received no advice, but the difference did not reach statistical significance (0.55 kg lost vs 0.18 kg lost; $P=.08$).

Discussion

Physicians typically took an “all or nothing” approach to weight-related issues, giving no advice (37%) or a combination of nutri-

tion, physical activity, and weight loss advice (34%). It seems when physicians do give advice, most of them follow the USPSTF guidelines by addressing nutrition and physical activity together.¹⁵

■ **Providing advice alone did not predict a change in patient behavior.** For instance, we found no significant association between dietary fat reduction and having received only nutrition advice. Possible explanations include the following:

- Although physicians advised patients to reduce fat/cholesterol intake in 28% of conversations, they did so mostly in combination with other types of advice. Nutrition-only advice occurred in only 8% of conversations. Thus, there may have been insufficient power to

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Nutrition advice alone was not associated with a reduction in fat intake.

TABLE 2

How types of physician advice affected dietary fat intake, physical activity, and weight

	Type of advice					
	None	Nutrition only	Physical activity only	Weight loss only	Combined advice	Nonspecific
Dietary fat change in Fat- and Fiber-Related Diet Behavior Questionnaire score differences						
At 3 months from baseline (95% CI)	-0.05 (-0.11 to 0.004)	-0.10 (-0.22 to 0.01)	-0.07 (-0.16 to 0.02)	-0.08 (-0.26 to 0.09)	-0.15 (-0.20 to -0.09)	0.03 (0.11 to 0.18)
P value*		.43	.75	.73	.02	.31
Physical activity score (change in MET hours)						
At 3 months from baseline (95% CI)	0.48 (-0.17 to 1.11)	0.83 (-0.51 to 2.14)	0.69 (-0.33 to 1.69)	-0.72 (-2.66 to 1.21)	0.24 (-0.40 to 0.86)	-0.07 (-1.74 to 1.59)
P value*		.64	.73	.25	.60	.55
Weight change (kg)						
At 3 months from baseline (95% CI)	-0.18 (-0.39 to 0.75)	-0.18 (-1.38 to 1.02)	1.41 (0.51 to 2.31)	-0.26 (-1.99 to 1.47)	-0.55 (-1.12 to 0.02)	-0.62 (-2.11 to 0.87)
P value*		.59	.02	.63	.08	.32

CI, confidence interval; MET, metabolic equivalent tasks.

*Test of difference between advice given and no advice given.

detect the impact of this specific type of advice.

- With nutrition-only advice, the most common recommendation was to reduce carbohydrates/sweets, which should not affect fat intake.

Advising patients solely on physical activity led to unintended weight gain overall. Other data have shown that exercise without dietary changes, though beneficial in many ways, is not substantially effective for weight loss.¹⁵ People may eat more when they exercise, either to reward themselves or to satiate increased appetite from increased energy expenditure. Or, if physicians recommend the standard goal of 150 minutes of intensive physical activity per week, normally sedentary patients may see that as unattainable and become too discouraged to try.^{1,16,17}

Combining types of advice seemed to help patients reduce their fat intake. Overall, however, simple, brief advice from a physician may not be enough to promote healthy lifestyle changes.

Also notable was that physicians rarely provided referrals, even though this is a strong recommendation from the National Institutes of Health, the American Diabetes Association, and the USPSTF.^{1,16,17} It could be that many physicians believe referrals are not covered by insurance. Yet, the low frequency of referrals may suggest an important missing component of weight loss therapy, especially given that physician advice alone seems an inadequate intervention.

■ **Avoid physician-centered appeals.** Advice was often given in a physician-centered way. There are 3 possible explanations for such phrasing:

1. In the absence of clear evidence about how to deliver weight loss advice, physicians may be formulating advice based on their personal or clinical experiences.
2. Physicians either assume or sense that patients lack internal motivation to make lifestyle changes for themselves and instead request that patients

make changes for the doctor-patient relationship.

- Physicians might be trying to invoke authority in the hope that patients will respond accordingly.

Whatever the reason, the literature on self-centered physician talk indicates that patients are less satisfied when physicians make the visit more about themselves than about patients.¹⁸ A better strategy might be to use Motivational Interviewing¹⁹ that supports patient autonomy and attempts to elicit and build on internal motivation.

■ **The take-away message** is that behavior change is complex and that knowledge is a necessary but insufficient agent for change. Following the tenets of Social Cognitive Theory,²⁰ physicians might also need to address patient motivation, confidence, outcome expectations, and skills to help promote behavior change.

Strengths and limitations of this study

We recorded conversations rather than relying on physician or patient recall. Additionally, these primary care patients were not enrolled in a weight-loss trial and, therefore, were not self-selected to be highly motivated

to lose weight. Because of this, and the large and ethnically diverse sample, our results should be generalizable to many clinical settings.

One limitation is that few younger, lower-income patients were included in the sample, which limits generalizability to those populations. Also, the study was observational. Although we adjusted for a broad set of patient, physician, and visit covariates, unmeasured confounding variables may still account for at least part of the observed associations. The analysis is limited by the use of self-reported dietary fat intake and physical activity measures. A food diary and accelerometer would have been more accurate; however, such involved measures could invoke changes in behavior, which would have confounded our ability to assess the effect of physician advice on weight loss.

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➤ Physicians rarely provided referrals, although this is strongly recommended by the NIH, American Diabetes Association, and USPSTF.

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