

CLINICAL STUDY

Patient-Related Diet and Exercise Counseling: Do Providers' Own Lifestyle Habits Matter?

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The goal of this research was to evaluate the personal health behaviors of physicians in training and attending physicians in association with patient-related lifestyle counseling. Physicians at a major teaching hospital were surveyed regarding their personal lifestyle behavior, perceived confidence, and frequency of counseling patients regarding lifestyle behaviors. One hundred eighty-three total responses were received. Trainees were more likely to consume fast food and less likely to consume fruits and vegetables than attendings. Attending physicians were more likely to exercise 4 or more days per week and more than 150 minutes per week. Attending physicians were more likely to counsel their patients regarding a healthy diet (70.7% vs 36.3%, $P < .0001$) and regular exercise (69.1% vs 38.2%, $P < .0001$) compared with trainees. Few trainees or attendings were confident in their ability to change patients' behaviors. Predictors of confidence in counseling for exercise included the provider's own exercise time of >150 minutes per week, being overweight, and reported adequate training in counseling. Only adequate training in counseling was a predictor of strong self-efficacy for counseling in diet. Many physicians lack confidence in their ability to counsel patients regarding lifestyle. Personal behaviors including

regular exercise and better training in counseling techniques may improve patient counseling.

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The prevalence of coronary heart disease (CHD) has declined in recent years; however, heart disease and related risk factors such as hypertension and diabetes remain leading causes of morbidity and mortality in the United States.¹ Obesity has been associated with increased rates of insulin resistance and diabetes^{2,3} and increased incidence of CHD.^{4,5} Given that the prevalence of obesity among adults in the United States has doubled since 1980, with an estimated two-thirds of Americans being overweight or obese,⁶ an increase in the prevalence of CHD and diabetes may be observed in the near future. Therefore, the ability of health care providers to counsel patients regarding lifestyle factors that prevent obesity, CHD, and CHD risk factors is imperative. Recommendations regarding nutrition and physical activity are components of major guidelines for prevention of both diabetes⁷ and CHD.^{7–9} Despite these guidelines, counseling by physicians is not well studied and is thought to be variable in both frequency and efficacy.^{10,11} Physicians who themselves lead healthy lifestyles may be more likely to counsel patients regarding lifestyle modification; however, these studies are predominately limited to exercise and smoking.^{12–16}

The goal of this study was to survey physicians at a major teaching hospital regarding their personal lifestyle behaviors and level of training in association with reported lifestyle counseling and perceived confidence for effective counseling. We hypothesized that physicians who had completed their training would be more likely to counsel patients related to lifestyle modification and the degree of counseling would be more strongly associated with their personal lifestyle behaviors as compared with physicians still in training.

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METHODS

Physicians affiliated with the University of Michigan Health System were eligible to complete the survey questions used in the present analysis. The survey was sent to physicians via e-mail, with responses collected between March 2009 and April 2009. Physicians who were categorized as internists, family practitioners, endocrinologists, and cardiologists were the primary recipients for the survey, as they are most likely to care for patients at risk for CHD or with risk factors for CHD. Physicians who did not regularly provide direct patient care (ie, radiologists or pathologists), surgeons, and those who were at the medical center for less than 3 months were excluded. An estimated 500 physicians were currently practicing within the departments of internal medicine and family medicine at the time of the survey administration. Physicians considered trainees (residents and fellows) included residents from internal medicine (or the medicine-pediatrics residency), family medicine, and preliminary year interns. Fellows included were in training programs within cardiology and endocrinology. This study was approved by the institutional review board at the University of Michigan Health System.

Providers were asked to identify their practice type (internal medicine, cardiology, endocrinology, family medicine, or other), training level (resident or fellow) or post-graduate year, and practice type (eg, hospital-based, private practice). Basic demographic information included sex and age. Self-reported health information included questions on weight, height, waist circumference, most recent lipid profile, and blood pressure measures. Respondents were also asked about lifestyle behaviors. The number of days per week in which exercise was performed and the estimated number of minutes per week of aerobic exercise was asked of each respondent, in addition to the type of exercise performed. Dietary questions included items to assess the number of fast food meals consumed per week, servings of fruit and vegetables consumed per day, and barriers to consuming a healthy diet. Additional questions to ask about regular practice of stress reduction techniques including practice of yoga, Tai Chi, and meditation.

In addition to being asked about personal lifestyle behaviors, providers were asked about their counseling of patients in lifestyle habits. Respondents were asked about the percentage of patients with whom they discussed diet and exercise and their confidence in their ability to counsel patients regarding lifestyle behaviors. Respondents were also asked to rank the adequacy of training they have received in counseling patients on healthy lifestyle. Respondents were categorized into 2 groups: trainees and attending physicians.

Summary statistics are presented as frequencies and percentages or as means and standard deviations. Student *t* tests and chi-square tests were used

to compare differences in baseline physical and clinical characteristics between trainees and attending physicians. Analysis of variance was used to evaluate the differences between trainees and attending physicians in knowledge about their own personal health including lipid profile, blood pressure, and personal lifestyle behaviors such as number of fast food meals consumed per week and number of servings of fruit and vegetables consumed per day. Logistic regression models were used to investigate relationships between physician training, self-efficacy, lifestyle, and other characteristics to the rates of exercise and diet counseling. All analyses were performed using SAS version 9.1 (SAS Institute, Cary, NC).

RESULTS

A total of 183 physicians completed the survey, of whom 102 (56%) were trainees (residents and fellows) and 81 (44%) were attending physicians. Approximately 40% of the respondents were male; no differences in sex were observed between the trainees and attending physicians (Table I). As expected, trainees were younger than attending physicians, with 65% of trainees listing their age as between 20 and 29 years and 32% reporting being between the ages of 30 and 39 years. The majority of attending physicians listed their age as between 30 and 39 years (28%) and 40 to 49 years (38%), with a further 22% being between the ages of 50 and 59 years and 6% of respondents stating they were 60 years or older. Rates of being overweight or obese were similar between the 2 groups, with 20.6% of trainees and 27.2% of attendings reporting a body mass index (BMI) between 25 and 30 kg/m² and 5.9% of trainees and 8.6% of attendings reporting a BMI >30 kg/m². Increased abdominal obesity, defined as a waist circumference of ≥ 40 in for men and ≥ 35 in for women, was reported in 4.9% for trainees and 6.2% of attending physicians, with no statistical difference between the 2 groups. Few physicians reported currently smoking.

A large majority of both trainees and attending physicians reported having their serum cholesterol and blood pressure checked within the past year (Table I). Attending physicians were more likely to have had their cholesterol checked (87.7% vs 68.6%; $P=.002$) compared with trainees. However, reported lipid levels were similar between the 2 groups, with the majority having a total cholesterol <200 mg/dL. In contrast to cholesterol measures, attending physicians were less likely to have had their blood pressure measured in the past year compared with trainees (77.5% of attending physicians vs 87.3% of trainees; $P=.01$). Mean blood pressure was similar between the 2 groups.

Overall, both trainees and attending physicians reported low levels of fruit and vegetable consumption and low levels of exercise (Table II). Physicians who were trainees were more likely to report

Table I. Self-Reported Characteristics of Trainees and Attending Physicians

CHARACTERISTIC, No. (%)	TRAINEES N=102	ATTENDING PHYSICIANS N=81	P VALUE
Male	45 (44.1)	33 (40.7)	.65
Body mass index, kg/m ² (SD)	23.3 (4.2)	24.7 (3.9)	.02
Overweight	21 (20.6)	22 (27.2)	.30
Obese	6 (5.9)	7 (8.6)	.47
Increased waist circumference ^a	5 (4.9)	5 (6.2)	.71
Lipid profile	70 (68.6)	71 (87.7)	.002
Total cholesterol, mg/dL (SD)	170.6 (51.4)	177.1 (35.0)	.47
LDL cholesterol, mg/dL (SD)	98.2 (31.8)	100.4 (27.0)	.73
HDL cholesterol, mg/dL (SD)	57.9 (17.3)	58.5 (16.1)	.85
Triglycerides, mg/dL (SD)	104.3 (75.4)	103.4 (64.5)	.96
Fasting glucose, mg/dL (SD)	83.8 (16.8)	88.8 (11.6)	.12
Blood pressure	89.0 (87.3)	79.0 (97.5)	.01
Systolic blood pressure, mm Hg (SD)	114.9 (10.8)	115.0 (11.2)	.93
Diastolic blood pressure, mm Hg (SD)	71.0 (7.8)	70.2 (8.4)	.53
Current smoker	2 (0.0)	2 (0.0)	.81

Abbreviations: HDL, high-density lipoprotein; LDL, low-density lipoprotein. ^aIncreased waist circumference defined as ≥ 40 in for men and ≥ 35 in for women.

Table II. Self-Reported Health Behaviors of Trainees and Attending Physicians

LIFESTYLE FACTORS, No. (%)	TRAINEES N=102	ATTENDING PHYSICIANS N=81	P VALUE
No. of fast food meals per week	1.2 (1.4)	0.8 (1.1)	.04
Averages No. of servings per day			
Fruits	1.7 (1.0)	2.2 (1.2)	.005
Vegetables	2.1 (1.0)	2.6 (1.3)	.002
Exercise			
≤ 2 days per week	66 (64.7%)	30 (37.0%)	<.001
3 days per week	26 (25.5%)	19 (23.4%)	
≥ 4 days per week	10 (9.8%)	32 (39.5%)	
≥ 150 min of aerobic exercise/week	8 (7.8%)	21 (25.9%)	<.001

greater consumption of fast food compared with attending physicians. On average, trainees reported consuming 2 fast food meals per week, while attending physicians reported just less than 1 such meal per week. Trainees were also less likely to consume fruits and vegetables compared with attending physicians. Exercise was not highly reported among respondents. Only 9.8% of trainees and 39.5% of attending physicians reported exercising 4 or more days per week. Only 7.8% of trainees and 25.8% of attending physicians reported getting the recommended ≥ 150 min of aerobic exercise per week. Attending physicians were more likely to report a higher number of days per week of exercise and were more likely to meet the recommended number of minutes per week of exercise, as well as to exercise ≥ 150 min per week. Among those who exercised, walking and running were the top activities for both trainees and attending physicians, followed by weight lifting. Few physicians practice any type of meditative practice. Only 8% of trainees and 12% of

attending physicians reported a regular yoga practice, and 6% of trainees and 10% of attending physicians reported regular meditation. The top barriers for exercise were work schedule for trainees (88%) and work schedule (48%) and family commitments (22%) for attending physicians.

In regard to patient-related counseling in lifestyle behaviors, attending physicians reported counseling more of their patients (Table III). When asked the percentage of patients the physician counseled, 70.4% of attending physicians reported counseling two-thirds or more of their patients. In contrast, only 36.6% of trainees reported counseling a similar number of patients ($P < .0001$). Almost half of all attending physicians (48%) counseled 80% or more of their patients on diet, as opposed to 13% of trainees. A similar pattern was observed for exercise counseling, with 69.1% of attending physicians reporting having counseled two thirds or more of patients compared with 38.2% of trainees ($P < .0001$). However, both trainees and attending physicians

Table III. Patient-Related Counseling Behaviors of Trainees and Attending Physicians

CHARACTERISTIC, No. (%)	TRAINEES N=102	ATTENDING PHYSICIANS N=81	P VALUE
Counseling on diet			
Percentage of patients >67%	37 (36.3)	57 (70.4)	<.001
Counseling on exercise			
Percentage of patients >67%	39 (38.2)	56 (69.1)	<.001
No. of minutes per visit			
High self-efficacy to effect change in patients' lifestyle			
Diet	11 (10.8)	14 (17.3)	.20
Exercise	12 (11.8)	14 (17.3)	.28
Self-reported adequate training in counseling patients			
Diet	13 (12.7)	19 (23.5)	.06
Exercise	14 (13.7)	14 (17.3)	.51

reported that time spent on counseling (either diet or exercise) was <5 min per visit.

Few physicians were confident in the ability to change patient behaviors. Only 10.8% of trainees and 17.3% of attending physicians reported high self-efficacy for changing patients' diet-related behaviors. A similar pattern was observed related to self-efficacy to change patients' behaviors related to exercise. There were no statistical differences in the confidence levels and ability to change patients' behaviors in diet and exercise between attending physicians and trainees. The frequency of counseling was not correlated with self-efficacy for the ability to change patient behaviors in both groups.

Providers were also asked about training in counseling by asking to agree with the following statement: "I received adequate training in lifestyle counseling patients." Only 12.7% of trainees and 23.5% for attending physicians agreed that they had received adequate training in counseling on diet. Only 13.7% of trainees and 17.3% of attending physicians agreed that they had received adequate training in counseling on exercise.

We also examined the various factors for predictors of a providers' confidence in counseling patients on lifestyle behaviors. Predictors of strong self-efficacy in patient-related counseling for exercise were the provider's own exercise time of >150 min per week ($P=.01$), being overweight ($P=.03$), and reported adequate training in counseling ($P<.0001$). Only adequate training in counseling was a predictor of strong self-efficacy for counseling in diet ($P<.0001$).

DISCUSSION

Using a survey of trainees and attending physicians from a major teaching hospital, we observed physician lifestyle behaviors that suggested that many

physicians do not meet current dietary and physical activity recommendations. Attending physicians had slightly higher intake of fruits and vegetables and lower intake of fast foods and were more likely to exercise ≥ 150 min per week. More attending physicians than trainees reported counseling a majority of patients in diet and exercise; however, both types of physicians reported low confidence in their ability to change patients' behavior through counseling. Self-reported adequacy of training in counseling appeared to be predictive of counseling frequency for both diet and exercise.

Physician counseling has previously been proven effective in smoking cessation,^{17,18} which suggests that providers can play a role in assisting their patients in lifestyle modification. Physicians who smoke themselves are less likely to counsel their patients to quit smoking, as compared with nonsmoking physicians.¹⁹ In a survey of 323 physicians, nonsmoking physicians were more likely to advise patients to stop smoking as compared with physicians who reported smoking. However, among physicians who smoked, those who themselves wished to stop smoking were more likely to counsel patients regarding smoking cessation as compared with those who had no desire to stop smoking. Other studies have found similar results,¹⁵ while a study of female physicians did not find an association between personal smoking habits of physicians and counseling of patients,²⁰ although that study was limited to women.

Similar observations have been seen with other health-related behaviors such as weight loss²¹ and physical activity.^{13,22,23} Physician confidence in counseling ability has been linked with greater success in maintaining their own personal regular physical activity,^{13,23} reported enjoyment of physical activity,²³ and prior training in exercise counseling.²⁴ For counseling related to exercise, we did find that the providers' own exercise frequency was a predictor of counseling; however, for counseling related to diet, the providers' dietary habits did not appear to be associated with patient-related counseling. Of note, we observed that providers who reported being overweight were associated with increased frequency of counseling patients regarding exercise. Given that a prior study on smoking observed that smoking physicians who were considering quitting themselves were more likely to counsel patients on smoking cessation, we hypothesize that overweight providers who are considering changing their exercise habits may be more likely to counsel their patients regarding exercise. Our finding may relate to the providers' own beliefs regarding exercise as a weight loss tool. However, we found that the only predictor of counseling for both exercise and diet was self-reported adequacy of training. Because few studies have examined both exercise and diet counseling together or have asked providers to rate their training in counseling, we are

limited in the ability to compare these observations to other studies. As many as 83% of physicians in a major academic training program reported feeling limited by their lack of preventive care training.¹⁰ Thus, there exists a significant opportunity for educational intervention to improve training in lifestyle counseling.

In 2000, the US Department of Health and Human Services launched the Healthy People 2010 campaign, a 10-year strategy to promote and improve health in the United States. The goals of this project included increasing quality and years of healthy life. This included goals of increasing regular moderate physical activity in adults and eating a healthy diet including vegetables, fruits, dairy products, and lean meat of smaller portions. Some of the direct objectives of Healthy People 2010 were to improve access to health care and increase the percentage of providers who counsel their patients about physical activity and healthy diet to 85%.^{25,26} The majority of lifestyle recommendations focused on cardiovascular disease prevention, also recommending the counseling of patients to increase intake of fruits and vegetables while decreasing saturated fats and increasing physical activity.^{8,9,27} The American Heart Association currently recommends ≥ 30 min of exercise ≥ 5 days per week (≥ 150 min of exercise per week) as a class 1-A recommendation.²⁷

Despite Healthy People 2010's goal to increase provider counseling, several studies have observed low rates of counseling.^{10,11,22,23,28-32} We also observed a low rate of counseling among trainees, with a higher rate among attending physicians. These findings are similar to those of a study of 326 providers in San Francisco, where 62% of attending physicians and 34% of resident physicians counseled their patients on exercise.²⁹ The investigators observed that confidence in counseling ability and older age were associated with increased counseling. Physicians' personal lifestyle behaviors were not assessed, as was done in our study. Furthermore, although counseling frequency was similar between the 2 studies, confidence in providers' ability to change patient behaviors was low in our study. Mosca and colleagues²⁸ also observed low self-efficacy among providers (both primary care and cardiologists) for their effectiveness in counseling patients related to physical activity and a healthy diet, as we did in our study. Additional studies have observed internal medicine residents to lack confidence in their ability to counsel patients regarding exercise.^{22,23}

Despite lower counseling rates compared with attending physicians, previous studies have shown that resident physicians do understand the health benefits of exercise.^{22,23} Residency itself, with its long shifts, inadequate sleep, and scarce family and leisure time may be contributing to this, with low percentages of residents feeling they eat a healthy diet or get sufficient exercise³³ and fewer than half

of residents meeting current physical activity guidelines.²³ Our data confirm that residents and fellows, in general, lead a less healthy lifestyle than attending physicians, eating more fast food and fewer servings of fruits and vegetables and exercising less. This may lead to decreased awareness of available local resources and healthy lifestyle options, which may contribute to less frequent and less enthusiastic lifestyle counseling by resident physicians. A focus on creating a healthier personal lifestyle for resident physicians through increased exercise facilities and opportunities and wider in-hospital dietary options may contribute to increased awareness and thus more effective counseling.

Several limitations to this study exist. As a cross-sectional assessment of providers at one institution, our results may not be directly applicable on a national level. Potential biases (including selection bias) may exist, given the voluntary nature of the survey and, with a response rate of slightly $< 36\%$, may not be directly reflective of our population as a whole. In addition, the self-reported nature of the survey may have allowed for recall bias to become a potential confounder. Finally, the statistical power of our results was limited by the relatively small sample size, which prevented us from examining specific groups such as specialists as compared with primary care physicians. Further study into the barriers preventing increased frequency of counseling as well as personal lifestyle practices are recommended.

CONCLUSIONS

These data suggest that providers attempt to counsel their patients regarding healthy lifestyle behaviors, but few are confident in their counseling skills. Further research regarding provider-related health behaviors and training in counseling related to lifestyle is warranted in order to improve prevention counseling for patients.

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