

## Which patients receive advice on diet and exercise?

*Do certain characteristics affect whether they receive such advice?*

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### ABSTRACT

**OBJECTIVE** To examine whether patients' characteristics, familiarity with the clinic, or perspectives on the quality of their care predict whether they receive advice from physicians regarding diet and exercise.

**DESIGN** Secondary data analysis of responses to the Primary Care Practice Survey.

**SETTING** Capital District Health Authority in Nova Scotia.

**PARTICIPANTS** Residents of the Capital District Health Authority 18 years old and older (N=1562).

**MAIN OUTCOME MEASURES** Percentage of patients who reported frequently receiving advice from their family physicians regarding diet and exercise.

**RESULTS** Almost 38% of respondents reported frequently receiving advice from their physicians on diet. Those more likely to receive advice on diet were male (adjusted odds ratio [AOR] 1.6, 95% confidence interval [CI] 1.2 to 2.1), were 35 to 54 years old (compared with those aged 18 to 34) (AOR 1.5, 95% CI 1.1 to 2.2), had more chronic illnesses (AOR 1.3, 95% CI 1.2 to 1.6), had good relationships with their health care providers (AOR 2.3, 95% CI 1.8 to 3.1), or reported higher scores on an enablement scale (AOR 2.2, 95% CI 1.6 to 3.1). Respondents who reported their health status as excellent were less likely to receive advice on diet (AOR 0.5, 95% CI 0.3 to 0.9). About 42% of respondents reported frequently receiving advice on exercise. Men (AOR 1.7, 95% CI 1.3 to 2.2), those older than 35 years (AOR 1.7, 95% CI 1.2 to 2.4 for those aged 35 to 54; AOR 1.6, 95% CI 1.1 to 2.3 for those 55 and older), those rating their health as good (AOR 1.6, 95% CI 1.1 to 2.4), those with more chronic illnesses (AOR 1.3, 95% CI 1.1 to 1.5), and those reporting higher scores on communication (AOR 3.2, 95% CI 2.3 to 4.4) and enablement (AOR 1.8, 95% CI 1.3 to 2.4) scales were more likely to receive advice on exercise.

**CONCLUSION** Strategies to increase the number of patients who receive advice on diet and exercise would likely include enhancing communication between patients and their physicians, improving relationships between patients and their physicians, and improving physicians' ability to help their patients feel enabled to act on advice and cope with their illnesses. Physicians should be aware of their counseling practices and consider discussing healthy behaviour with patients with no obvious risk factors. This would be practising true primary prevention.

### EDITOR'S KEY POINTS

- This study identifies potential predictors of whether patients receive advice from their physicians on diet and exercise.
- Almost 38% of respondents reported often or always receiving advice from their physicians on healthy eating; 42% reported often or always receiving advice on exercise.
- Men, those aged 35 to 54, those with more chronic illnesses, and those with higher scores on relationship with their health care providers and enablement scales were more likely to receive advice on diet. Those reporting excellent health were less likely to receive advice.

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## À quels patients donne-t-on des conseils sur l'alimentation et l'exercice?

*Les patients sont-ils plus susceptibles de recevoir de tels conseils selon certaines caractéristiques?*

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### RÉSUMÉ

**OBJECTIF** Déterminer si les caractéristiques des patients, leur familiarité avec la clinique ou leur opinion sur la qualité des soins constituent des indications qu'ils reçoivent des conseils de leur médecin sur l'alimentation et l'exercice.

**TYPE D'ÉTUDE** Analyse secondaire des réponses à l'Enquête sur les modes de pratique dans les soins primaires.

**CONTEXTE** Services de santé publique du district de la capitale, en Nouvelle-Écosse.

**PARTICIPANTS** Résidents de 18 ans et plus (N = 1562) couverts par les Services de santé publique du district de la capitale.

**PRINCIPAUX PARAMÈTRES MESURÉS** Pourcentage des patients qui déclaraient recevoir fréquemment des conseils de leur médecin de famille sur l'alimentation et l'exercice.

**RÉSULTATS** Près de 38% des répondants déclaraient recevoir souvent des conseils sur l'alimentation de leur médecin. Les plus susceptibles de recevoir de tels avis étaient les hommes (rapport de cotes ajusté [RCA] 1.6, intervalle de confiance à 95% [IC] 1.2 à 2.1), les sujets de 35 à 54 ans (par rapport à ceux de 18 à 34 ans) (RCA 1.5, IC à 95% 1.1 à 2.2), ceux qui avaient le plus de maladies chroniques (RCA 1.3, IC à 95% 1.2 à 1.6), ceux qui maintenaient une bonne relation avec le personnel soignant (RCA 2.3, IC à 95% 1.8 à 3.1), ou ceux qui obtenaient les meilleurs scores à l'échelle mesurant l'incitation à prendre sa santé en main (RCA 2.2, IC à 95% 1.6 à 3.1). Les répondants qui se disaient en excellente santé étaient les moins susceptibles de recevoir des conseils sur l'alimentation (RCA 0.5, IC à 95% 0.3 à 0.9). Environ 42% des répondants disaient recevoir souvent des conseils sur l'exercice. Les plus susceptibles de recevoir de tels conseils étaient les hommes (RCA 1.7, IC à 95% 1.3 à 2.2), les sujets de plus de 35 ans (RCA 1.7, IC à 95% 1.2 à 2.4 pour ceux entre 35 et 54 ans; RCA 1.6, IC à 95% 1.1 à 2.3 pour les plus de 54 ans), ceux qui se disaient en bonne santé (RCA 1.6, IC à 95% 1.1 à 2.4), ceux qui avaient le plus de maladies chroniques (RCA 1.3, IC à 95% 1.1 à 1.5) et ceux qui obtenaient les meilleurs scores aux échelles de la communication (RCA 3.2, IC à 95% 2.3 à 4.4) ou de l'incitation à prendre sa santé en main (RCA 1.8, IC à 95% 1.3 à 2.4).

**CONCLUSION** Les stratégies visant à augmenter le nombre de patients qui reçoivent des conseils sur l'alimentation et l'exercice devraient probablement inclure un accroissement de la communication entre médecins et patients, une amélioration de la relation médecin-patient et une amélioration de la capacité du médecin à convaincre le patient qu'il peut mettre ses conseils en pratique et prendre sa maladie en charge. Les médecins devraient prendre conscience de leur façon de donner des conseils et envisager de discuter de saines habitudes de vie avec les patients qui n'ont pas de facteurs de risque évidents. Ce type de pratique correspondrait réellement à la prévention primaire.

### POINTS DE REPÈRE DU RÉDACTEUR

- Cette étude cerne les facteurs qui indiquent que les patients reçoivent des conseils de leur médecin sur l'alimentation et l'exercice.
- Près de 38% des répondants ont déclaré recevoir souvent ou toujours des conseils de leur médecin sur une alimentation saine; 42% ont dit recevoir souvent ou toujours des conseils sur l'exercice.
- Les hommes, les sujets de 35 à 54 ans, ceux qui avaient le plus de maladies chroniques, et ceux qui obtenaient les plus hauts scores sur l'échelle mesurant la relation avec leur équipe de santé et celle mesurant l'incitation à prendre sa santé en main étaient les plus susceptibles de recevoir des conseils sur l'alimentation. Ceux qui se disaient en excellente santé étaient les moins susceptibles de recevoir des conseils.

Cet article a fait l'objet d'une révision par des pairs.  
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Chronic disease contributes substantially to morbidity and mortality in Canada. Physical activity (exercise) and healthy eating are key elements of disease prevention and health promotion. Exercise has been shown to reduce the risk of many chronic illnesses, including cardiovascular disease, hypertension, diabetes, obesity, and osteoporosis<sup>1-3</sup>; to reduce anxiety and stress; and to improve the chances of continued independent living in later life.<sup>2</sup> Not eating enough fruit and vegetables is associated with obesity<sup>4</sup> and development of chronic diseases, most notably cardiovascular disease and certain types of cancer.<sup>3</sup>

Although the many benefits of healthy eating and exercise have been well established, evidence of the effectiveness of physicians' counseling on diet and exercise has been inconclusive. The Canadian Task Force on Preventive Health Care<sup>5</sup> and the United States Preventive Services Task Force<sup>6,7</sup> have both found insufficient evidence to recommend for or against counseling adults regarding exercise or diet in primary care settings. Evidence, however, does support intensive behavioural counseling on diet for adult patients with hyperlipidemia and other known risk factors for cardiovascular and diet-related chronic diseases.<sup>6</sup> The Primary Health Care Transition Fund, in response to recent health care reports, has supported improving strategies for prevention and management of chronic diseases in primary care.<sup>8-10</sup>

Existing studies show positive associations between receiving advice on diet or exercise from a physician and being a woman,<sup>11-14</sup> being middle-aged,<sup>11-15</sup> having a higher income,<sup>11</sup> having a higher level of education,<sup>11,12,14</sup> having many chronic diseases,<sup>11-16</sup> reporting poor health,<sup>12,14</sup> and frequently visiting a physician.<sup>13</sup> There appears to be very little literature supporting our belief that good-quality primary health care, namely good doctor-patient communication, strong doctor-patient relationships, and how well doctors "enable" patients to care for themselves, is associated with giving patients advice on diet and exercise.<sup>17</sup>

The purpose of this study was to identify potential predictors of whether patients would receive advice on diet and exercise from their physicians by looking at patients' characteristics, familiarity with the clinic, and selected perspectives of the quality of their primary health care, most notably the elements of patient-centredness (communication, doctor-patient relationships, and enablement). Determining such predictors would aid in the development, evaluation, and improvement of current preventive care strategies in primary health care renewal efforts.

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## METHODS

### Design and instrument

Data for this study were obtained from responses to the Primary Care Practice Survey (PCPS) administered in 2005 to 1607 residents of the Capital District Health Authority (CDHA) in Halifax, NS. The PCPS is an adaptation of the General Practice Assessment Questionnaire (GPAQ)<sup>18</sup> and the former General Practice Assessment Survey<sup>19</sup> enhanced by questions relevant to primary care in Canada. Development and evaluation of the PCPS were part of a larger project to assess the public's experience with primary care in the CDHA. In brief, modifications and new questions agreed upon by an expert panel were pilot-tested on 376 CDHA residents, and the results were reviewed by panel members and focus groups composed of various stakeholders and consumers. Psychometric evaluation of the 2005 PCPS suggested that it had moderate to very good validity and reliability in the 6 primary care "domains" considered (access, continuity, communication, patient-provider relationships, enablement, and prevention). A report on the development of the survey and its psychometric properties is available on-line.<sup>20</sup> Ethical approval for this study was received from the CDHA.

### Subjects and sample

Potential participants were chosen systematically from a random selection of household telephone numbers in the CDHA. Age and sex quotas were set before the survey in order to obtain a representative distribution of respondents by sex and to obtain a preponderance of senior residents (65 years old and older), as required in the original study for effective subgroup analysis. A total of 1607 residents 18 years old or older participated in the survey. For this study, participants were eligible only if they reported having a regular family physician, so 45 participants became ineligible, leaving a final sample of 1562 respondents.

### Measures

To investigate how frequently physicians gave advice on diet and exercise separately, 2 of 3 questions that made up the PCPS prevention scale were used. Subjects were asked: "In visits to your usual family doctor [health care provider], how often were the following subjects discussed with you: advice on healthy eating and advice on appropriate exercise for you." Four response options were provided (never, rarely, often, always) which were dichotomized for analysis into often or always and never or rarely. These questions had good face and content validity and good individual reliability coefficients in scale assessment (Cronbach  $\alpha$  was 0.74 for diet, 0.72 for exercise, and 0.82 for the overall scale).<sup>20</sup>

Possible predictors included demographic characteristics (sex, age, geographic indicator, employment status, education, income, being a visible minority, self-reported health status, and total number of chronic illnesses), familiarity with the clinic (years as a patient, total number of visits during the past 12 months), and patients' perspectives on the quality of their care. Perspectives on quality of care focused on 3 key indicators of patient-centredness: communication, patient-provider relationships, and enablement. Previously validated scales used in the PCPS were used to develop a score for patients' perspectives on these 3 dimensions using methods suggested by the authors of the General Practice Assessment Questionnaire.<sup>18</sup> Owing to the positively skewed distribution of the scores, each was dichotomized at a commonly shared cut point (<75% versus ≥75%). **Table 1** lists the dimensions assessed and the questions used to obtain scores for each of the scales included in this study.

## Analysis

All analyses were weighted to reflect the distribution of the population in the CDHA with respect to sex and age. Tests of association ( $\chi^2$ , Wilcoxon) were conducted between physicians' giving advice on diet and exercise (often or always versus rarely or never) and respondents' characteristics, familiarity with the clinic, and perspectives on the quality of their care. Unadjusted and adjusted logistic regression analyses were conducted to determine the odds of having often or always received advice about diet or exercise. Manual backward elimination

techniques were used to identify factors independently associated with frequently receiving advice on diet and exercise. The final model included all independent factors statistically significant at  $P < .05$ . The Stata program was used to analyze the data.<sup>21</sup>

## RESULTS

Response rate was 68.4%. Associations between the characteristics of the 1562 respondents who reported having regular family physicians and whether they received advice on diet and exercise are shown in **Table 2**.

### Advice on diet or healthy eating

About 37.6% of respondents reported often or always receiving advice from their physicians on diet or health eating. In bivariate analysis, sex, age, education, minority status, self-reported health, number of chronic illnesses, familiarity with the clinic, and the 3 perspectives on quality of care were significantly associated with receiving advice on diet or healthy eating (**Table 2**).

In the final multivariate model, only sex, age, self-reported health, total number of chronic illnesses, and patient-provider relationship and enablement scores were significantly associated with frequently receiving advice on diet (**Table 3**). After controlling for all other variables in the model, men, those aged 35 to 54, those with more chronic illnesses, and those with higher

**Table 1. Primary care attributes assessed in the 2005 Primary Care Practice Survey (PCPS) and questions used to derive scores for each of the PCPS scales included in our study: Survey questions were adapted from the General Practice Assessment Questionnaire and the General Practice Assessment Survey.<sup>18,19</sup>**

DIMENSION ASSESSED	SURVEY QUESTIONS
Communication	When you go to your regular clinic and consult with your usual family doctor [health care provider], how do you rate the following? (poor, fair, good, or excellent) <ul style="list-style-type: none"> <li>a) How thoroughly the doctor [provider] asks about your symptoms and how you are feeling</li> <li>b) How well the doctor [provider] listens to what you have to say</li> <li>c) How well the doctor [provider] puts you at ease during your physical examination</li> <li>d) How much the doctor [provider] involves you in decisions about your care</li> <li>e) How well the doctor [provider] explains your problems or any treatment that you need</li> </ul>
	Thinking about the personal aspects of care that you receive from your usual family doctor [health care provider], how do you rate the following? (poor, fair, good, or excellent) <ul style="list-style-type: none"> <li>a) The amount of time the doctor [provider] spends with you</li> <li>b) The doctor's [provider's] patience with your questions or worries</li> <li>c) The doctor's [provider's] caring and concern for you</li> </ul>
Patient-provider relationships	Thinking about how well your usual family doctor [health care provider] knows you, how do you rate the following? (poor, fair, good, or excellent) <ul style="list-style-type: none"> <li>a) His or her knowledge of your medical history</li> <li>b) His or her knowledge of what worries you most about your health</li> <li>c) His or her knowledge of your responsibilities at home, work, or school</li> </ul>
Enablement	After a visit to your regular family doctor's office or medical clinic, to what extent does the advice or assistance provided do the following? (to a great extent, to some extent, to little or no extent) <ul style="list-style-type: none"> <li>a) Help you better cope with your health problem or illness</li> <li>b) Help you to understand your health problem or illness better</li> <li>c) Help you keep yourself healthy</li> </ul>

**Table 2.** Respondents' demographic characteristics, familiarity with the clinic, and perspectives on quality of care related to how frequently they received advice on diet or healthy eating and appropriate exercise:  $\chi^2$  and nonparametric tests of association used where applicable.

A)	RECEIVED ADVICE ON DIET OR HEALTHY EATING		RECEIVED ADVICE ON APPROPRIATE EXERCISE	
	NEVER OR RARELY WEIGHTED %	OFTEN OR ALWAYS WEIGHTED %	NEVER OR RARELY WEIGHTED %	OFTEN OR ALWAYS WEIGHTED %
<b>RESPONDENTS' CHARACTERISTICS</b>				
<b>Demographic characteristics</b>				
Sex				
• Male	43.8	52.1	42.7	52.8
• Female	56.2	47.9*	57.3	47.2 <sup>†</sup>
Age (y)				
• 18-34	38.0	22.8	39.1	22.5
• 35-54	40.4	49.8	40.9	48.5
• 55 or older	21.5	27.4 <sup>†</sup>	20.1	29.0 <sup>†</sup>
Geographic indicator				
• Rural	16.0	19.8	16.6	18.4
• Urban	84.0	80.2	83.4	81.6
Employment				
• Employed	62.6	62.4	62.6	62.1
• Unemployed	22.6	19.2	23.4	19.0
• Retired	14.8	18.4	14.1	19.0 <sup>§</sup>
Education				
• No or some high school	7.6	13.4	8.2	11.8
• Completed high school	74.2	17.8	20.7	16.7
• Some or completed post-secondary	72.2	68.8*	71.1	71.5 <sup>§</sup>
Income (\$)				
• <20 000	10.8	9.1	12.1	7.5
• 20 000 to <40 000	15.7	18.3	14.3	20.5
• 40 000 to <60 000	16.1	16.4	16.7	15.3
• 60 000 to <80 000	15.4	14.0	15.6	13.3
• ≥80 000	23.0	20.6	22.4	20.8
• Refused or no answer	18.9	21.6	18.9	22.6*
Visible minority				
• Yes	11.7	16.1	13.0	13.7
• No	88.3	83.9 <sup>§</sup>	87.0	86.3
Self-reported health status				
• Poor or fair	15.7	20.4	17.1	19.0
• Good	25.2	31.9	23.6	33.0
• Very good	34.5	34.1	36.4	31.7
• Excellent	24.6	13.6 <sup>†</sup>	22.9	16.3 <sup>†</sup>
<b>Perspectives on quality of care</b>				
Communication				
• PCPS scale score <75%	39.5	21.9	43.8	18.5
• PCPS scale score ≥75%	60.5	78.1 <sup>†</sup>	56.2	81.5 <sup>†</sup>
Patient-provider relationship				
• PCPS scale score <75%	59.3	32.9	58.8	36.6
• PCPS scale score ≥75%	40.7	67.1 <sup>†</sup>	41.2	63.4 <sup>†</sup>
Enablement				
• PCPS scale score <75%	49.1	25.5	49.9	27.1
• PCPS scale score ≥75%	50.9	74.5 <sup>†</sup>	50.1	72.9 <sup>†</sup>

PCPS—Primary Care Practice Survey.

\* $P < .01$ , <sup>†</sup> $P < .001$ , <sup>‡</sup> $P < .0001$ , <sup>§</sup> $P < .05$ .

B)	RECEIVED ADVICE ON DIET OR HEALTHY EATING		RECEIVED ADVICE ON APPROPRIATE EXERCISE	
	NEVER OR RARELY MEAN (SD)	OFTEN OR ALWAYS MEAN (SD)	NEVER OR RARELY MEAN (SD)	OFTEN OR ALWAYS MEAN (SD)
<b>RESPONDENTS' CHARACTERISTICS</b>				
Total no. of chronic illnesses	0.9 (1.1)	1.3 (1.3)*	0.9 (1.1)	1.3 (1.2)*
Familiarity with the clinic				
• No. of years as a patient	14.9 (11.5)	17.0 (12.7) <sup>†</sup>	15.0 (11.9)	16.6 (12.1)
• No. of visits in past 12 mo	3.8 (4.1)	5.2 (6.0)*	4.0 (4.5)	5.0 (5.7) <sup>†</sup>

SD—standard deviation.

\* $P < .0001$ , <sup>†</sup> $P < .001$ , <sup>‡</sup> $P < .05$ .



**Table 3. Likelihood of reporting often or always having received advice on diet or healthy eating**

VARIABLE	UNADJUSTED ODDS RATIO (95% CI)	ADJUSTED ODDS RATIO (95% CI)
Male sex (vs female)	1.4 (1.1-1.8)	1.6 (1.2-2.1)
Age (vs 18-34 y)		
• 35-54	2.1 (1.5-2.8)	1.5 (1.1-2.2)
• 55 or older	2.1 (1.5-3.0)	1.0 (0.7-1.5)
Urban geographic indicator (vs rural)	0.8 (0.6-1.0)	Not retained
Employment status (vs employed)		Not retained
• Not employed	0.9 (0.6-1.2)	
• Retired	1.2 (0.9-1.7)	
Education (vs some or completed post-secondary)		Not retained
• No or some high school	1.9 (1.3-2.7)	
• Completed high school	0.9 (0.7-1.3)	
Income (vs ≥ \$80 000)		Not retained
• <20 000	0.9 (0.6-1.5)	
• 20 000 to <40 000	1.3 (0.9-1.9)	
• 40 000 to <60 000	1.1 (0.8-1.7)	
• 60 000 to <80 000	1.0 (0.7-1.6)	
• Refused or no answer	1.3 (0.9-1.9)	
Not a visible minority (vs yes)	0.7 (0.5-1.0)	Not retained
Self-reported health status (vs poor or fair)		
• Good	1.0 (0.7-1.4)	1.2 (0.8-1.7)
• Very good	0.8 (0.5-1.1)	0.9 (0.6-1.4)
• Excellent	0.4 (0.3-0.6)	0.5 (0.3-0.9)
Total no. of chronic illnesses	1.4 (1.3-1.6)	1.3 (1.2-1.6)
No. of years as a patient	1.0 (1.0-1.0)	Not retained
No. of visits in the past 12 mo	1.1 (1.0-1.1)	Not retained
Communication score ≥ 75% (vs < 75%)	2.3 (1.8-3.1)	Not retained
Patient-provider relationship score ≥ 75% (vs < 75%)	3.0 (2.3-3.8)	2.3 (1.8-3.1)
Enablement score ≥ 75% (vs < 75%)	2.8 (2.2-3.7)	2.2 (1.6-3.1)

CI—confidence interval.

scores on patient-provider relationship and enablement scales were more likely to frequently receive advice on diet or healthy eating. Those reporting excellent health were less likely to receive such advice.

### Advice on appropriate exercise

About 42% of respondents reported often or always receiving advice from their physicians on exercise. In bivariate analysis, with the exception of the geographic and visible minority indicators, all demographic characteristics were associated with receiving advice on appropriate exercise as were number of visits made to the clinic during the past 12 months and the 3 perspectives of quality of care.

After accounting for all other retained variables in the final multivariate model, sex, age, self-reported health status, number of chronic illnesses, and scale scores pertaining to communication and enablement remained independently related to frequently receiving advice on appropriate exercise (Table 4). Men, older adults, those reporting good health, those with many chronic illnesses, and those with higher scores

on communication and enablement scales were all more likely to often or always receive advice on appropriate exercise.

## DISCUSSION

Overall, sex, age, chronic illnesses, self-reported health status, and respondents' perceptions regarding enablement were significantly associated with receiving advice on both diet and exercise. Respondents' perceptions of their providers' communication skills were associated only with receiving advice on exercise, while their perceptions of patient-provider relationships were associated only with receiving advice on diet.

Results from previous studies are conflicting with regard to whether men or women are more likely to receive advice on diet and exercise. Although many suggest that women are more likely than men to receive such advice,<sup>11-14</sup> a very recent study of Australian residents supports our finding that men are more likely to receive advice.<sup>22</sup> Both our analysis and those in the

literature adjusted for the presence of other sex-specific issues, such as income, education, and number of chronic diseases. It seems there is no clear indication of whether men or women are more likely to receive advice on diet and exercise.

Our findings demonstrate that patients' perspectives on the quality of their care are associated with whether they receive advice on diet and exercise. Higher scores on patient-provider relationship and enablement scales were associated with frequently receiving advice on diet while higher scores on communication and enablement scales were associated with frequently receiving advice on exercise. The single other study examining these specific relationships reported a strong association between patient-physician communication and counseling on healthy living (diet, exercise, substance abuse).<sup>17</sup>

Our results linking effective communication and strong patient-provider relationships with more frequent counseling on prevention, combined with published results associating counseling with positive health outcomes and healthy behaviour,<sup>23-27</sup> suggest that we should consider communication and patient-provider relationships

as essential components of health promotion and disease prevention. This study provides additional evidence that medical education programs and guidelines for improving existing health care teams should emphasize good communication skills and development of effective patient-provider relationships in order to improve counseling on diet and exercise.

Those receiving advice from physicians on diet and exercise in our study appear to be those in greatest need (ie, middle-aged adults with chronic diseases), suggesting a current focus on secondary, rather than primary, prevention. This trend might be overlooking the preventive potential of exercise and healthy eating or it might reflect the fact that, without good evidence of effectiveness, physicians are counseling only people at risk and not counseling those who are well. Primary health care renewal has emphasized the need for disease prevention and health promotion.<sup>8</sup> By counseling primarily those at risk, we might be missing opportunities for health promotion and disease prevention. Unfortunately, the long-term benefits of counseling healthy patients have been difficult to ascertain. In addition, the realities of busy practices,

**Table 4. Likelihood of reporting often or always having received advice on appropriate exercise**

VARIABLE	UNADJUSTED ODDS RATIO (95% CI)	ADJUSTED ODDS RATIO (95% CI)
Male sex (vs female)	1.5 (1.2-1.9)	1.7 (1.3-2.2)
Age (vs 18-34 years)		
• 35-54	2.1 (1.5-2.8)	1.7 (1.2-2.4)
• 55 or older	2.5 (1.8-3.5)	1.6 (1.1-2.3)
Urban geographic indicator (vs rural)	0.9 (0.7-1.2)	Not retained
Employment status (vs employed)		Not retained
• Not employed	0.8 (0.6-1.1)	
• Retired	1.4 (1.0-1.8)	
Education (vs some or completed post-secondary)		Not retained
• No or some high school	1.4 (1.0-2.0)	
• Completed high school	0.8 (0.6-1.1)	
Income (vs ≥ \$80 000)		Not retained
• < 20 000	0.7 (0.4-1.1)	
• 20 000 to < 40 000	1.5 (1.0-2.3)	
• 40 000 to < 60 000	1.0 (0.7-1.5)	
• 60 000 to < 80 000	0.9 (0.6-1.4)	
• Refused or no answer	1.3 (0.9-1.9)	
Not a visible minority (vs yes)	0.9 (0.7-1.3)	Not retained
Self-reported health status (vs poor or fair)		
• Good	1.2 (0.9-1.8)	1.6 (1.1-2.4)
• Very good	0.8 (0.6-1.1)	0.9 (0.6-1.3)
• Excellent	0.6 (0.4-0.9)	0.7 (0.4-1.2)
Total no. of chronic illnesses	1.4 (1.2-1.5)	1.3 (1.1-1.5)
No. of years as a patient	1.0 (1.0-1.0)	Not retained
No. of visits in past 12 mo	1.0 (1.0-1.1)	Not retained
Communication score ≥ 75% (vs < 75%)	3.4 (2.6-4.5)	3.2 (2.3-4.4)
Patient-provider relationship score ≥ 75% (vs < 75%)	2.5 (1.9-3.2)	Not retained
Enablement score ≥ 75% (vs < 75%)	2.7 (2.1-3.5)	1.8 (1.3-2.4)

CI—confidence interval.

poor reimbursement, and inadequate training have likely influenced physicians to focus their counseling on those in greatest need.<sup>28-32</sup>

We know that counseling on exercise and diet is effective for patients with certain chronic diseases, and our findings suggest that this counseling is indeed happening in the CDHA. Our results demonstrate that the more chronic illnesses patients have, the more likely they are to receive advice from their physicians.

## Limitations

First, selection and recall bias are always potential problems in conducting telephone surveys. Respondents and nonrespondents could well differ in many ways, including in their perspectives on quality of care and in their recall of discussions with their physicians. It is possible our respondents failed to recall some discussions of diet and exercise. Second, the survey questions were limited in how well they captured the frequency of discussions on health promotion; they allowed only the responses *often, always, rarely, or never*. Questions did not assess the nature or quality of advice given, nor did they differentiate between discussions initiated by physicians and those initiated by patients. Third, survey questions did not allow us to ascertain whether patients were trying to lose weight or whether they had other factors that could influence discussion of diet and exercise. Finally, given that our results are derived from cross-sectional data, we cannot infer causality.

## Conclusion

This study adds to the evidence connecting good-quality primary health care (good communication, good doctor-patient relationships, and effective enablement of patients) with more frequent preventive counseling regarding diet and exercise. In addition, we have provided evidence that indicates physicians are more likely to target advice at those with many chronic illnesses.

Clearly, there is a need for longitudinal studies examining the long-term effectiveness of counseling on diet and exercise for the general patient population in primary care settings. To our knowledge, ours is the only study that has included both patients' characteristics and their perspectives on the quality of their care as independent variables in examining the possible predictors of receiving advice on diet and exercise.

Strategies to increase the frequency of receiving advice from physicians on diet and exercise would likely benefit from enhancing communication between patients and physicians, improving patient-provider relationships, and increasing the ability of health care providers to help their patients feel enabled to follow advice. Physicians should be aware of their counseling practices and consider the possibility of discussing healthy behaviour with patients with no obvious risk factors. This would be practising true primary prevention.

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## Contributors

**Ms Sinclair, Ms Lawson, and Dr Burge** developed the original idea. **Ms Sinclair and Dr Burge** reviewed the literature. **Ms Lawson and Ms Sinclair** managed and analyzed the data. The first draft of the discussion was developed by **Ms Sinclair** and reviewed and edited by **Ms Lawson and Dr Burge**. All the authors saw and approved the final version of the manuscript.

## Competing interests

*None declared*

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