

Patient Characteristics Associated with Receipt of Lifestyle Behavior Advice

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Abstract

Background: Lifestyle behaviors such as reducing weight if overweight or obese, reducing salt intake, exercising, reducing alcohol intake, quitting smoking, and eating a healthy diet are related to the prevention and control of chronic diseases. However the amount of lifestyle advice provided by clinicians has been declining over the last decade.

Methods: In 2002, a telephone survey was conducted to assess the quality of preventive care offered by health care providers. The study was a cross-sectional observational study of a randomly selected sample of 516 diverse individuals in Durham County, North Carolina. Information regarding age, sex, race, education, health conditions, and self-reported receipt of lifestyle advice was examined in the study.

Results: The odds of receiving advice to engage in preventive lifestyle behaviors were significantly higher for those with a pre-existing diagnosis of diabetes or hypertension and for participants reporting poor health status. For example, the odds of receiving advice to control or lose weight was 8.32 (95% CI, 2.65, 26.15) among individuals reporting a diagnosis of diabetes. Similarly, the odds of reporting "receiving advice to reduce salt intake" was 6.97 (95% CI, 3.74, 13.00) among subjects reporting a diagnosis of hypertension.

Limitations: The results are from a cross-sectional study of a sample of individuals in only one county. Additionally, the results are based on patient self-reported information, which could be subject to recall and social desirability bias.

Conclusion: Patients with identified health problems were more likely than others to report being advised to adopt healthy lifestyle recommendations. Future research should examine methods to encourage health care providers to offer lifestyle advice to those without pre-existing illness.

Keywords: lifestyle; provider; prevention

An estimated 7.8% of the United States population has been diagnosed with diabetes mellitus,¹ 25% with hypertension,² and 33% of adults in this country are obese.^{3,4} Strategies for prevention and treatment of these conditions include lifestyle modification and adoption of preventive health behaviors. The benefits of engaging in preventive health behaviors are well-established. For example, weight loss can help prevent diabetes⁵⁻⁹ and improve glycemic control.¹⁰⁻¹² Losing weight, eating a healthy diet,¹³ increasing physical activity,¹⁴⁻¹⁷ reducing salt intake,¹⁸⁻²⁰ and reducing excessive alcohol intake²¹ lower blood pressure and prevent hypertension. Smoking cessation is also critical to reducing

cardiovascular disease risk.^{22,23} However, during the last decade multiple investigations demonstrated that the number of individuals reporting that they receive advice to engage in preventive health behavior is lower than expected.^{24,25} Furthermore, the number of individuals reporting receiving smoking cessation advice is also low.²⁶ In summary, behavioral lifestyle modification has been demonstrated to prevent and control chronic medical conditions. However, the number of individuals reporting receiving this type of advice is likely to be insufficient.

Health-related messages are disseminated to the public by various health advocacy agencies. In addition, patients report

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that health care providers are an important source of information and counseling concerning healthy lifestyle.²⁷ However, the volume of lifestyle advice provided by physicians has declined over the last 10-15 years.²⁸ The extent to which patients report that they receive lifestyle advice from health care providers is likely to be influenced by several factors, most importantly the extent to which providers actually provide counseling. However, patient perceptions and characteristics such as sex, age, ethnicity/race, level of education, marital status, income, health, diagnosis of diabetes or hypertension, and perception of discrimination may also influence the extent to which patients report receiving lifestyle advice.

The purpose of this investigation was to determine if these patient perceptions and characteristics are associated with reporting receiving lifestyle advice from health care providers in a diverse community sample in North Carolina. Identifying how health, demographic information, and perceived discrimination are related to self-reported receipt of lifestyle advice can inform future development of interventions and strategies aimed at increasing engagement in preventive lifestyle behaviors.

Methods

Data Source

In 2002, a cross-sectional observational study was designed to collect data on a sample of Durham County residents. The study was conducted with survey items based primarily on the *Kaiser Family Foundation Survey of Public Perceptions and Experiences of Race, Ethnicity, and Medical Care*.²⁹ In addition, the survey included elements from other surveys including the California Health Interview Survey (CHIS),³⁰ the El Centro Hispano/Proyecto LIFE survey,³¹ and a review of the literature.^{32,33} The final draft survey was administered to a small sample of African American and Latino residents of Durham County to ensure the questions were understandable (face validity) and to address issues of relevance (content validity). Princeton Survey Research Association (PSRA) administered the final survey by phone to a random sample of white, African American, and Latino residents of Durham County. The survey was attempted in English or Spanish depending on the participant's preference. All aspects of the study were approved by the Duke University Institutional Review Board and verbal consent was obtained from all participants prior to completing the survey.

Sample

Eligible subjects included individuals 18 years and older living in Durham County, North Carolina, in households with a telephone. Individuals included were not required to have a primary care provider. However, 77.7% of the participants reported seeing a doctor in the last 12 months. The sampling strategy was designed to obtain a representative sample of whites, African Americans, and Latinos in Durham County. The sample was drawn using standard list-assisted random digit dialing (RDD) methodology. Active blocks of numbers that

contained three or more residential directory listings were selected with probability in proportion to the number of listed phone numbers. After selection, two more digits were added randomly to complete the number. Phone exchanges with higher than average density of African American households were oversampled to help increase the overall sample of African Americans.³⁴ The same approach was not possible for the Latino sample due to the lower number of Latino households in Durham County. In order to include a representative number of Latinos, a list of Durham County residents was used to identify households listed under a Latino surname, with RDD methodology then being applied to these households. Additional details regarding the sampling procedure have been previously published.^{34,35}

The proportion of initially cooperating and eligible interviews that were completed was 96% (1,131/1,175). Due to the large number of items included in the survey, the questions were divided into three parts: the core survey and two split-half samples. All participants completed the items in the core survey, while only half of the participants completed each split-half component of the survey. A total of 586 individuals were administered the split-half survey that included the items relevant to our study. Seventy of these individuals were not included in the analyses: Asian participants were excluded due to very small sample size (n=15), and 55 other individuals were excluded due to missing data on key study variables, such as race or reported receipt of advice. This resulted in a final sample size of 516.

Measures

Independent Variables

Ten independent variables were examined with regard to their association with the reported receipt of preventive health advice from health care providers. These variables included demographic variables, financial variables, physical health status, and general perception of discrimination.³⁴⁻³⁶

Demographic variables included age, gender, and educational level. The participants self-identified as white, African American/black, Hispanic/Latino, Asian, or other.

Financial variables included perception of financial adequacy and health insurance coverage. Perception of financial adequacy was assessed by asking participants to describe their household's finances based on how much trouble they have paying their bills. Participants were categorized as either having no problems paying their bills or having at least some trouble paying their bills. Health insurance coverage was categorized based on the patient response of having health insurance or not having any insurance coverage.

Physical health was assessed using three items. Participants were asked to rate their physical health on a scale of 1 (excellent) to 5 (poor). In addition, participants were asked if they had ever been diagnosed with diabetes or hypertension.

Finally, general perceived discrimination in health care was measured with one item, asking: "Generally speaking, how often do you think our health care system treats people unfairly in the community based on race or ethnicity?" with the possible

responses of “never,” “not too often,” “very often,” “moderately often,” or “somewhat often.” This item has been used in previous studies.^{34, 35}

Dependent Variables

The dependent variables were assessed by asking participants if their health care provider had ever provided advice to do any of the following: control or lose weight, reduce salt or sodium intake, exercise more, reduce alcohol consumption, quit smoking, reduce fat intake, and/or avoid fast foods.

Analysis

Data analysis involved two steps. The first step involved calculating summary statistics for the key study variables. The second step involved a series of multivariable logistic regressions—one for each preventive behavior—that examined the relationships between the independent variables and each prevention variable. This approach was used in order to examine the relationships among the several independent variables and the dichotomous outcome variables. Preliminary analyses indicated that the assumptions of logistic regressions were met. The statistical analysis was conducted with SPSS software version 15.

Results

Descriptive Information

Of the 516 individuals included in this analysis, 38.0% were white, 30.2% were African American, and 31.8% were Latino. On average, respondents were 41 years old, female, had at least a high school education, had no problem paying their bills, were insured, and rated their health as “good to excellent.” Seven percent of the sample reported a diagnosis of diabetes, and 22.5% reported a diagnosis of hypertension (see Table 1).^a

Overall, 35.4% reported receiving advice to control or lose weight, 25.5% to reduce salt intake, 47.1% to exercise more, 10.2% to reduce alcohol consumption, 29.4% to quit smoking, 38.7% to reduce fat in their diet, and 26.0% reported receiving advice to avoid fast foods. With regard to gender differences, women reported receiving more advice to exercise (52.1%) than men (40.7%), while men (14.9%) reported receiving more advice to limit alcohol consumption than women (5.9%). With regards to racial differences, more African Americans reported receiving advice to reduce salt intake (36.0%) as compared to whites (19.1%) and Latinos (23.5%). Latinos were more likely to receive advice to reduce alcohol intake (18.0%) compared to 7.3% of whites and 6.6% of African Americans (see Table 2, page 394).

Table 1.
Descriptive Characteristics of Respondents by Race/Ethnic Group

Variable	Total (n = 516)	White (n = 196)	African American (n = 156)	Latino (n = 164)
	mean (SD)	mean (SD)	mean (SD)	mean (SD)
Demographics				
Age	40.65 (16.9)	45.84 (17.4) ^a	43.13 (18.1) ^c	32.06 (10.9) ^{a,c}
Female	289 (56.0)	113 (57.7) ^b	104 (66.7) ^d	72 (43.9) ^{b,d}
At least high school education	407 (78.9)	188 (95.9) ^b	133 (85.3) ^{b,c}	78 (52.4) ^{b,d}
Married	217 (42.2)	103 (52.6) ^{a,b}	44 (28.2) ^{b,d}	70 (42.7) ^{a,d}
Income				
No problems paying bills	433 (86.6)	185 (95.9) ^b	125 (82.2) ^a	123 (78.8) ^b
Has insurance	355 (68.8)	180 (91.8) ^b	123 (78.8) ^{b,d}	52 (64.4) ^{b,d}
Self-rated health				
Good to excellent	419 (83.1)	179 (95.7) ^b	124 (80.0) ^{b,d}	116 (71.6) ^{b,d}
Medical conditions				
Diabetes	36 (7.0)	8 (4.1) ^a	18 (11.5) ^a	10 (6.1)
Hypertension	116 (22.5)	47 (24.0) ^a	45 (28.8) ^d	24 (14.6) ^{a,d}
Perceived discrimination	318 (69.6)	111 (70.3)	96 (65.3)	111 (73.0)

a p < 0.05 (African Americans vs. whites)

b p < 0.01 (African Americans vs. whites)

c p < 0.05 (African Americans vs. Latinos)

d p < 0.01 (African Americans vs. Latinos)

a Details on the response rate for this study are provided in Friedman J, Anstrom KJ, Weinfurt KP, et al. Perceived racial/ethnic bias in healthcare in Durham County, North Carolina: a comparison of community and national samples. *NC Med J*. 2005;66(4):267-275.

Table 2.
Percentage of Respondents Reporting Receiving Lifestyle Advice by Sex, Race/Ethnicity

Advice	Overall	Sex		Race/Ethnicity		
		Male	Female	White	African American	Latino
Control weight or lose weight	35.4	31.6	38.4	35.9	40.4 ^{b,c}	30.1
Cut down on salt or sodium	25.5	24.8	26.1	19.1 ^b	36.0 ^{b,c}	23.5
Exercise more	47.1	40.7 ^a	52.1	46.2	51.9	43.6
Cut down on alcohol consumption	10.2	14.9 ^a	5.9	7.3 ^c	6.6 ^b	18.0
Quit smoking	29.4	29.1	29.7	27.3	32.3	29.2
Reduce fat in diet	38.7	35.4	41.3	37.8	39.1	39.5
Avoid fast foods	26.0	24.0	27.6	22.1	27.2	29.4

a $p < 0.01$ (difference between males vs. females)

b $p < 0.01$ (difference between whites vs. African Americans; African Americans vs. Latinos)

c $p < 0.05$ (difference between whites vs. Latinos; African Americans vs. Latinos)

Many of the participants reporting a diagnosis of hypertension reported receiving advice to control or lose weight (62.6%), cut down on salt (60.4%), exercise more (68.7%), reduce alcohol intake (15.1%), quit smoking (37.7%), reduce fat in their diet (60.9%), and avoid fast food (35.5%). In addition, respondents reporting a diagnosis of diabetes reported relatively high levels of receiving lifestyle advice. Almost 90% of individuals with diabetes reported receiving advice to control or lose weight, 76.5% to reduce salt intake, 77.8% to exercise more, 31.8% to reduce alcohol consumption, 25.5% to quit smoking, 83.3% to reduce fat in diet, and 48.6% to avoid fast food (see Figure 1).

In addition, individuals with poor self-rated health were more likely to report receiving advice to stop smoking. Poor self-rated health and reporting a diagnosis of diabetes or hypertension were associated with an increased likelihood of reporting advice to reduce fat intake. Lastly, individuals with diabetes and those who reported low perceived discrimination were more likely to report receiving advice to avoid fast food. Odds ratios and 95% confidence intervals for each variable are presented in Table 3.

In summary, our results suggest that poorer self-rated health and reporting a diagnosis of either diabetes or

Characteristics Associated With Reporting Receiving Advice

The logistic regressions indicated that individuals with a low level of education, poor self-reported health, diabetes, hypertension, and less perceived discrimination were more likely to report receiving advice to control or lose weight. African Americans, people with diabetes, and people with hypertension were more likely to report receiving advice to reduce sodium intake. Females with a low level of education, poor self-rated health, and reported hypertension were more likely to report receiving advice to exercise more. Males and those who reported poor self-rated health were more likely to report receiving advice to reduce alcohol intake.

Figure 1.
Percentage of Respondents Reporting Lifestyle Behavioral Advice by Diagnosis of Hypertension or Diabetes

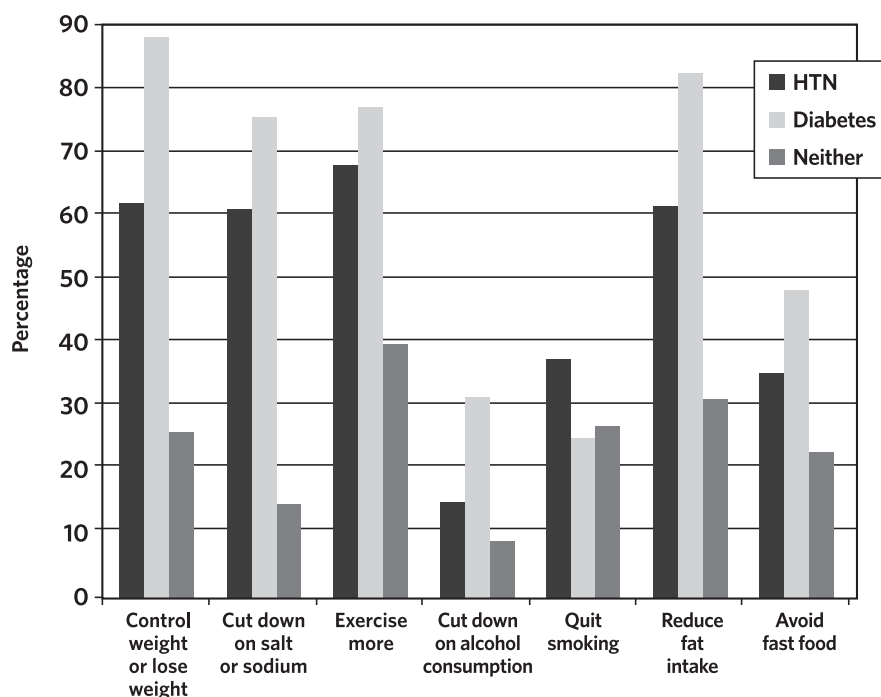


Table 3.
Multivariable Logistic Regression Examining Correlates of Reported Receipt of Lifestyle Advice

Variable	Control Weight/Lose Weight	Cut Down on Salt or Sodium	Exercise More	Cut Down on Alcohol Consumption	Quit Smoking	Reduce Fat Intake	Avoid Fast Foods
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Demographics							
Age	1.01 (0.99, 1.03)	1.01 (0.99, 1.03)	1.01 (0.99, 1.02)	1.01 (0.99, 1.04)	1.01 (0.99, 1.03)	1.01 (1.00, 1.03)	0.99 (0.97, 1.01)
Female	1.21 (0.77, 1.89)	0.93 (0.56, 1.55)	1.55 ^a (1.02, 2.34)	0.41 ^a (0.19, 0.89)	1.11 (0.65, 1.90)	1.33 (0.86, 2.07)	1.10 (0.69, 1.74)
At least high school education	0.51 ^a (0.27, 0.95)	1.07 (0.55, 2.10)	0.48 ^b (0.27, 0.85)	1.51 (0.63, 3.63)	1.10 (0.53, 2.26)	0.80 (0.45, 1.42)	0.86 (0.47, 1.54)
Latino	0.96 (0.48, 1.95)	2.07 (0.90, 4.78)	1.15 (0.60, 2.19)	1.31 (0.43, 3.99)	0.75 (0.33, 1.56)	1.80 (0.91, 3.55)	1.43 (0.70, 2.88)
African American	0.88 (0.51, 1.50)	2.50 ^b (1.32, 4.74)	0.99 (0.61, 2.09)	0.58 (0.20, 1.65)	0.83 (0.44, 1.56)	0.80 (0.46, 1.35)	0.98 (0.55, 1.75)
Income							
Problems paying bills	1.31 (0.68, 2.51)	0.80 (0.38, 1.71)	1.13 (0.59, 1.63)	2.40 (0.96, 6.05)	1.32 (0.64, 2.74)	1.25 (0.67, 2.35)	1.44 (0.77, 2.69)
No insurance	1.14 (0.64, 2.01)	1.02 (0.53, 1.93)	1.17 (0.61, 2.09)	1.27 (0.53, 3.06)	1.45 (0.77, 2.76)	0.57 (0.32, 1.82)	0.76 (0.43, 1.35)
Physical health							
Fair to poor self-rated health	1.29 ^a (1.04, 1.63)	1.00 (0.77, 1.31)	1.52 ^b (1.22, 1.89)	1.59 ^a (1.08, 2.33)	1.74 ^b (1.31, 2.32)	1.45 ^b (1.16, 1.82)	1.23 (0.97, 1.56)
Diabetes	8.32 ^b (2.65, 26.15)	4.65 ^b (1.72, 12.59)	1.75 (0.70, 4.40)	2.68 (0.74, 9.70)	0.81 (0.27, 2.1)	4.53 ^b (1.68, 12.18)	2.08 ^a (1.90, 4.81)
Hypertension	2.65 ^b (1.47, 4.69)	6.97 ^b (3.74, 13.00)	1.92 ^a (1.09, 3.40)	1.04 (0.39, 2.80)	1.12 (0.55, 2.30)	1.76 ^a (1.01, 3.07)	1.53 (0.82, 2.84)
Discrimination							
Perceived discrimination	0.58 ^a (0.37, 0.93)	0.75 (0.44, 1.30)	0.70 (0.45, 1.09)	0.90 (0.41, 1.97)	0.63 (0.37, 1.09)	0.76 (0.48, 1.20)	0.57 ^a (0.35, 0.90)

a p < 0.05

b p < 0.01

hypertension was consistently associated with being advised to adopt recommended preventive behaviors.

Discussion

Our goal was to identify factors associated with patient-reported receipt of advice to engage in well-established preventive health behaviors. Race/ethnicity has been previously reported to be associated with disparities in health care.³⁷⁻⁴⁰ In our study, African Americans were more likely to report receiving advice to reduce sodium intake, but otherwise there were no other racial or ethnic differences. In addition, perceived discrimination was not a major determinant of whether or not patients reported receiving lifestyle advice, being significantly associated only with advice to lose weight and to reduce intake of fast food. Our data suggest that the primary factors associated with receiving lifestyle advice are the presence and perception of illness. That is, the presence of diabetes or hypertension, as well as poorer self-reported

health, were consistently associated with reporting receiving advice to adopt healthy lifestyle recommendations. However, even among those with hypertension and diabetes, lifestyle advice was not universal. In our study, less than 63% of those individuals with a diagnosis of hypertension reported receiving advice to adopt lifestyle changes that have been proven to improve blood pressure control, such as weight loss, reduced sodium intake, reduced alcohol use, reduced fat intake, and a healthy dietary pattern (assessed indirectly as reduced fast food intake).^{2,41} Although respondents with diabetes reported receiving advice to adopt lifestyle changes more often than those with hypertension, advice was still not optimal among people with diabetes.

Our findings suggest that health care providers recognize the importance of lifestyle interventions in the treatment of conditions such as diabetes and hypertension, but might be missing the opportunity to engage in primary prevention for these conditions. A plausible alternative explanation is that health care providers are providing advice to a broader group

of patients, but those with diabetes or hypertension are more likely than others to recall and/or report that they got this advice. Regardless of the explanation, the percent of individuals reporting receiving any advice was lower among those without diabetes and hypertension. For example, only 26.2% of respondents without a diagnosis of hypertension or diabetes reported receiving advice to control or lose weight, despite clear evidence that even losing a little weight leads to significant reductions in the incidence of these conditions.^{6,42} In the Trials of Hypertension Prevention Phase II, sustained weight loss of only 2 kg (4.4 lbs.) was associated with an approximate 20% reduction in incident hypertension,⁴³ and in the Diabetes Prevention Program, weight loss of only 1 kg (2.2 lbs.) reduced the incidence of diabetes by 16%.⁶ Although the current dataset did not contain body weight measurements, population statistics would suggest that it is highly likely that more than the 26% without hypertension or diabetes who were advised to lose weight were in need of this advice.^{44,45}

Our data are consistent with other research studies demonstrating that lifestyle advice is reported more frequently in patients with cardiovascular disease (CVD), diabetes,⁴⁶ and dyslipidemia.⁴⁷ It stands to reason that health care providers focus their attention on those individuals already affected by CVD risk factors. Such attention is consistent with national guidelines,^{2,41,48} and certainly can improve treatment and control. However, national guidelines also call for lifestyle advice to prevent CVD risk factors, and our study is consistent with other research that suggests that less advice is given when the goal is primary prevention.^{47,49,50} Overall, lifestyle advice, though of potential benefit to all patients, is reported by a minority of patients, with rates apparently falling since the early 1990s,²⁸ despite increasing evidence of efficacy and feasibility over this period of time.

Limitations and Strengths

Our study results are based on a cross-sectional study among a diverse group of individuals in one county in North Carolina. The results are based on a survey; therefore responses may be subject to recall and social desirability bias as well as sample error. Social desirability bias is the tendency of respondents to reply in a manner that will be viewed as acceptable by others. Further, it is possible that patients with hypertension and diabetes are more attentive to lifestyle advice and therefore more likely to report that they received it. Also, relying on self-reported receipt of health advice precludes the assessment of health care providers' behavior. However, to the extent that health care providers' advice leads to lifestyle change, it is the patient's perception of receiving advice that will drive engagement in the behavior. Ultimately, the larger public health goal of future prevention interventions is to increase the likelihood that lifestyle advice is provided, heard, remembered, and adopted. It is also important to recognize that due to the nature of this investigation there was no follow-up on whether individuals who reported receiving advice actually did change

their behavior. In addition, our study was limited by a lack of baseline information on participants' behavioral risk, such as information regarding use of tobacco and alcohol, and the institution where the participants obtain health care. Further, not knowing the type of organization, financing, and nature of the practice is considered a limitation in our study because there is evidence that the type of organization, financing, and nature of the practice may have a big effect on whether practitioners will offer preventive health behavioral advice. Finally, participants were not required to have a primary care provider to be included in this study. Not knowing if the subjects included in this investigation had a primary care provider is important as we posit that the degree to which the individual reports receiving this advice could be directly affected by the presence or absence of a established relationship with a health care provider. Although generalizability may be limited by the exclusion of individuals without a telephone in the home, an important strength of this study is the fact that it is based on a random sample of telephone numbers that oversampled African Americans and Latinos.

Conclusion

In a racially and ethnically diverse population in one county in the state of North Carolina, patients with health problems were more likely than others to report being advised to adopt healthy lifestyle recommendations. While lifestyle advice in those with hypertension or diabetes is an important goal, the results of this investigation suggest that health care providers may be missing the opportunity to engage in primary prevention. It is estimated that 65% of CVD events could be prevented by adoption of lifestyle recommendations.⁵¹ By patient report, it also appears that a large proportion of the population who could benefit from these recommendations are not being advised to adopt them or the advice is not being given effectively. Thus, the information reported in this investigation may serve as ground to expand our knowledge of patient education in North Carolina and also help health care providers to increase the discussion of lifestyle advice with those without pre-existing illness. Finally, future research should examine methods to facilitate health care providers providing lifestyle advice with the ultimate goal of primary prevention. **NCMJ**

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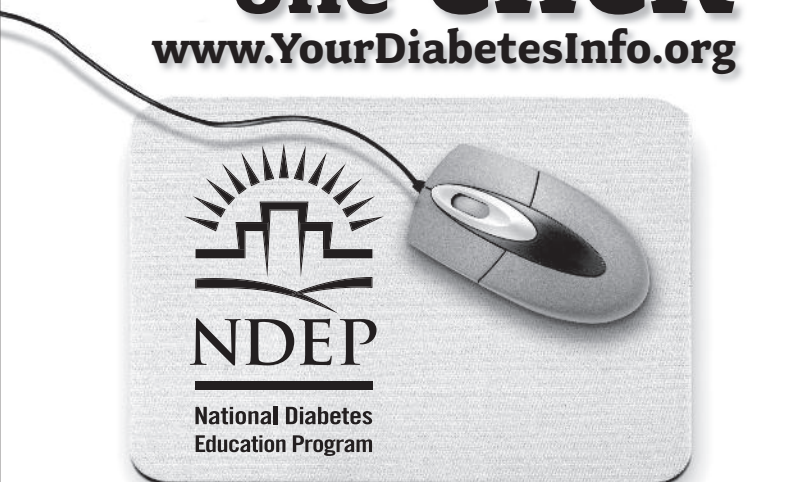


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