Internal Medicine Residents' Comfort with and Frequency of Providing Dietary Counseling to Diabetic Patients

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BACKGROUND: Resident physicians' preparedness to provide dietary counseling for the rising number of diabetic patients is unclear.

OBJECTIVE: To assess the comfort with, frequency of, and perceived effectiveness of diabetic dietary counseling by internal medicine (IM) residents.

DESIGN: Cross-sectional survey.

PARTICIPANTS: One hundred eleven IM residents at a single academic institution.

RESULTS: Survey response rate was 94%. Fewer residents (56%) were comfortable with diabetic dietary counseling compared with counseling on symptoms of hypo/hyperglycemia (90%, $p < 0.001$). Residents less frequently provided diabetic dietary counseling (63%), compared with counseling for medication adherence (87%, $p < 0.001$). The 28% of residents reporting prior education with chronic disease self-management were more comfortable with diabetic dietary counseling (OR 3.2, 95% CI 1.4–7.3, $p = 0.006$), and reported counseling more frequently, although this difference was not statistically significant (OR 1.8, 95% CI 0.86–3.8, $p = 0.12$). More frequent counseling was reported by those residents who were more comfortable (OR 1.5, 95% CI 1.0–2.2, $p = 0.03$) or felt more effective (OR 3.6, 95% CI 2.1–6.1, $p < 0.001$) with their diabetic dietary counseling.

CONCLUSION: Overall, IM residents reported low levels of comfort with and frequency of diabetic dietary counseling. However, residents who were more comfortable or who felt more effective with their dietary counseling counseled more frequently.

KEY WORDS: resident; counseling; diet; diabetes.

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INTRODUCTION

The prevalence of diabetes is rising in the United States¹. Because lifestyle modifications can alter the disease course², physicians should provide dietary counseling for patients. Subsequently, Healthy People 2010 aims to increase physician dietary counseling to 75% of all diabetic patient visits³.

Unfortunately, physicians infrequently provide dietary counseling to their diabetic patients^{4,5}. Furthermore, graduating residents in primary care fields do not feel prepared to provide general dietary counseling⁶. The proportion of internal medicine (IM) residents receiving formal education on dietary counseling is not well quantified, and the impact of existing educational programs is unclear. Thus, this study sought to 1) assess internal medicine (IM) residents' comfort with and frequency of providing diabetic dietary counseling compared with counseling for other aspects of diabetes care, 2) determine the proportion of residents who have had prior education in chronic disease counseling, and 3) evaluate the associations between the following variables: self-reported prior education in chronic disease counseling, perceived effectiveness of counseling, and comfort with and frequency of dietary counseling for diabetes.

METHODS

Study Design and Survey Development

Post-graduate year (PGY) 1–3 internal medicine (IM) residents and PGY1–4 Medicine-Pediatrics residents at an academic medical center were invited to complete a written survey regarding patient counseling between October and

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December 2006. The Institutional Review Board at the University of Chicago approved this research. Using an existing validated instrument⁷ and incorporation of new items, the authors developed a survey to assess attitudes and practices related to counseling of diabetic patients. Survey domains included comfort, frequency, and perceived effectiveness. Surveys were piloted among a group of resident team members (JT, BF, KT, TB, JK), and revisions were made to facilitate readability.

Measures

Residents rated on a 5-point Likert scale (1=very uncomfortable; 5=very comfortable) their level of comfort counseling diabetic patients on goals of care; measurement of blood sugars; insulin administration; symptoms of hypo/hyperglycemia; diabetic diet; and foot and eye care. Survey items on frequency and effectiveness were adapted from a previously validated tool for residents, the Preventive Medicine Attitudes and Activities questionnaire (PMAAQ)⁷. Items related to hypertension were modified for use for diabetes. Residents estimated their frequency of counseling patients on a 7-point scale (1=never; 7=always) regarding the following areas: health risks related to diabetes, weight loss, diabetic diet, and medication adherence. Residents rated their effectiveness in changing patient dietary practices on a 4-point scale (1=minimally effective; 4=very effective). Demographic data collected included gender, PGY-year, and career plans (primary care versus subspecialty). Residents were also asked whether they had ever received formal education on counseling patients regarding self-management of chronic diseases. No formal education addressing this topic was offered to residents prior to survey administration.

Analyses

Wilcoxon signed-rank tests of the ordinal data were used to assess for differences in comfort or counseling frequency among various counseling domains. Wilcoxon rank sum tests of the ordinal data were used to compare level of comfort and frequency of counseling by gender, PGY year, and prior education. Post-graduate year was dichotomized (PGY1 vs. PGY2–4) because PGY2, 3 and 4 residents share a similar clinic schedule with 6–8 patients and fewer inpatient obligations compared with PGY1 residents who only have four patients per clinic and more inpatient obligations. Further, no significant differences in evaluated variables were identified between PGY 2, 3 or 4 residents. Ordinal logistic regression, controlling for PGY level, was used to test the relationship between prior education and level of comfort with dietary counseling; prior education and frequency of dietary counseling; level of comfort with dietary counseling and frequency of dietary counseling; and perceived effectiveness and frequency of dietary counseling. For purposes of descriptive presentation, subjects' responses were dichotomized for the following variables: comfort level (comfortable=4–5/uncomfortable=1–3), counseling frequency (frequent=5–7/infrequent=1–4), and perceived effectiveness (effective=3–4/ineffective=1–2). STATA 8.0 (College Station, TX) was used to conduct analyses. Statistical significance was defined as $P<0.05$.

RESULTS

Sample Characteristics

Of 118 eligible residents, 111 (94%) completed the survey. Ninety-four percent were IM residents, and 6% were medicine-pediatrics residents. Forty percent were PGY1 residents, and 50% were female. Most (77%) planned to enter a subspecialty, 14% planned to enter primary care, 5% were undecided and 3% were preliminary year interns.

Comfort with and Frequency of Counseling

While 90% of residents reported comfort with counseling on symptoms of hypo/hyperglycemia, fewer residents (56%) reported comfort with diabetic diet counseling ($p<0.001$ compared to symptoms of hypo/hyperglycemia). Comfort was lowest for insulin administration (37%, $p=0.001$ compared to diabetic diet). Compared with PGY2–4 residents, fewer PGY1 residents reported comfort with counseling on goals of care (80% vs. 90%, $p=0.05$) and insulin administration (25% vs. 45%, $p<0.01$), and showed a trend toward decreased comfort with diabetic dietary counseling (43% vs. 64%, $p=0.08$) (Table 1). While the majority (87%) of residents reported frequent counseling for medication adherence, fewer residents (63%) reported frequent dietary counseling ($p<0.001$ compared to medication adherence). Compared to more senior residents, PGY1 residents were less likely to counsel in all four areas queried (Table 2).

Importance of Prior Education

Less than a third of residents (31/113, 28%) reported prior education in chronic disease counseling. Among individuals with prior education, comfort with counseling was significantly higher for diabetic diet (77% education vs. 46% no education, $p=0.003$), goals of care (90% education vs. 83% no education, $p=0.008$), and blood sugar measurement (77% education vs. 67% no education, $p=0.03$). Using ordinal regression controlling for resident year, a significant difference persisted only for diabetic dietary counseling. Residents with prior education had a 3.2 times greater odds of reporting a higher comfort level with diabetic dietary counseling than residents without prior education (95% CI 1.4–7.3, $p=0.006$). Although residents with prior education had a 1.8 times greater odds of reporting more frequent diabetic dietary counseling than residents without prior education, this difference was not statistically significant (95% CI 0.86–3.8, $p=0.12$).

Association Between Comfort, Perceived Effectiveness and Frequency of Counseling

Residents who were more comfortable with diabetic dietary counseling provided more frequent diabetic dietary counseling (OR 1.5, 95% CI 1.0–2.2, $p=0.03$). Perceived effectiveness of dietary counseling was low at 12%, with no differences by gender, year of training, or prior education. However, residents who felt more effective with their diabetic dietary counseling were more likely to report more frequent diabetic dietary counseling (OR 3.6, 95% CI 2.1–6.1, $p<0.001$).

Table 1. Comfort with Patient Counseling by Resident Year

Counseling Domain	Very uncomfortable N (%)	Somewhat uncomfortable N (%)	Neither comfortable nor uncomfortable N (%)	Somewhat comfortable N (%)	Very comfortable N (%)	P value
Symptoms of hypo/hyperglycemia						
PGY 1 (N=44)	1 (2%)	1 (2%)	1 (2%)	27 (61%)	14 (32%)	0.26
PGY 2–4 (N=67)	3 (4%)	2 (3%)	3 (4%)	27 (40%)	32 (48%)	
Goals of diabetic care and reducing long-term complications						
PGY 1 (N=44)	0 (0%)	2 (5%)	7 (16%)	22 (50%)	13 (30%)	0.05
PGY 2–4 (N=67)	2 (3%)	3 (4%)	2 (3%)	28 (42%)	32 (48%)	
Routine foot care and eye care						
PGY 1 (N=44)	1 (2%)	1 (2%)	5 (11%)	25 (57%)	12 (27%)	0.74
PGY 2–4 (N=67)	0 (0%)	6 (9%)	9 (13%)	27 (40%)	25 (37%)	
Measurement of blood sugars						
PGY 1 (N=44)	0 (0%)	4 (9%)	10 (23%)	21 (48%)	9 (31%)	0.59
PGY 2–4 (N=67)	2 (3%)	8 (12%)	10 (15%)	27 (40%)	20 (30%)	
Initiating and maintaining an appropriate diabetic diet						
PGY 1 (N=44)	1 (2%)	9 (20%)	15 (34%)	14 (32%)	5 (11%)	0.08
PGY 2–4 (N=67)	0 (0%)	9 (13%)	15 (22%)	37 (55%)	6 (9%)	
Administration of insulin shots						
PGY 1 (N=44)	7 (16%)	14 (32%)	12 (27%)	9 (20%)	2 (5%)	<0.01
PGY 2–4 (N=67)	1 (1%)	18 (27%)	18 (27%)	21 (31%)	9 (13%)	

* P value refers to comparison between PGY 1 and PGY 2-4 residents. P values were calculated using Wilcoxon rank sum tests

DISCUSSION

To our knowledge, this is the first study to examine comfort, frequency, prior education, and effectiveness of diabetic dietary counseling in a sample of IM residents. When comparing dietary counseling with other aspects of diabetes care, comfort with and frequency of dietary counseling were low. Although most residents did not have prior education in this area, those who did were more comfortable with diabetic dietary counseling. While prior education was not significantly associated with increased counseling frequency, comfort and perceived effectiveness with diabetic dietary counseling were associated with more frequent diabetic dietary counseling. The low levels of comfort with and frequency of diabetic dietary counseling in this study are consistent with the rates of general dietary counseling in other studies of physicians and residents^{6,8-11}.

Dietary counseling is an important component of counseling for many chronic diseases, particularly diabetes¹². However, less

than a third of residents reported prior education in chronic disease counseling. Efforts to improve resident dietary counseling will need to integrate dietary counseling training into residency curricula.

It is important to understand why prior education was not associated with increased frequency of diabetic dietary counseling. Although lack of time or appropriate resources^{11,13,14} may be causes, another explanation may be that educational efforts have not addressed physicians' low perceived effectiveness with dietary counseling. To reform these perceptions, it is important to educate physicians that physician advice can prompt patients to improve their diet¹⁵⁻¹⁷. Beyond standard nutritional education, residents also need tangible skills that translate directly to the clinical setting and a forum in which to practice their skills to boost their confidence in delivering dietary counseling. Further studies to evaluate the effects of such educational interventions on comfort and frequency of counseling are also needed.

Table 2. Frequency of Patient Counseling by Resident Year

Counseling Domain	Never 0% N (%)	Rarely 1–20% N (%)	Sometimes 21–40% N (%)	Half the time 41–60% N (%)	Often 61–80% N (%)	Usually 81–99% N (%)	Always 100% N (%)	P value
Discuss importance of taking medications regularly								
PGY 1 (N=44)	0 (0%)	1 (2%)	6 (14%)	3 (7%)	14 (32%)	12 (27%)	8 (18%)	0.01
PGY 2–4 (N=66)	0 (0%)	0 (0%)	0 (0%)	4 (6%)	18 (27%)	25 (38%)	19 (29%)	
Advise weight loss in overweight patients								
PGY 1 (N=44)	0 (0%)	0 (0%)	7 (16%)	6 (14%)	19 (43%)	10 (23%)	2 (5%)	<0.001
PGY 2–4 (N=67)	0 (0%)	0 (0%)	0 (0%)	5 (7%)	16 (24%)	31 (46%)	15 (22%)	
Review health risks of diabetes								
PGY 1 (N=44)	0 (0%)	2 (5%)	11 (25%)	5 (11%)	14 (32%)	11 (25%)	1 (2%)	0.01
PGY 2–4 (N=67)	0 (0%)	1 (1%)	5 (7%)	12 (18%)	18 (27%)	23 (34%)	8 (12%)	
Discuss an appropriate diabetic diet								
PGY 1 (N=44)	0 (0%)	5 (11%)	12 (27%)	8 (18%)	9 (20%)	7 (16%)	3 (7%)	<0.001
PGY 2–4 (N=67)	0 (0%)	1 (1%)	5 (7%)	10 (15%)	22 (33%)	20 (30%)	9 (13%)	

* P value refers to comparison between PGY 1 and PGY 2-4 residents. P values were calculated using Wilcoxon rank sum tests

There are limitations to this study. First, this study sample draws from IM residents at a single institutional site and may not be generalizable to all residents. Second, we used self-reported counseling frequency. Given that physicians often overestimate the frequency of preventive service delivery^{18,19}, it is likely that counseling rates are even lower than reported. Third, because prior education was not strictly defined, residents may have interpreted it differently. Lastly, the impact of prior education on comfort level was observational, which prohibits causal inferences.

In summary, comfort with and frequency of diabetic dietary counseling remain low among IM residents. The majority of residents do not receive education in chronic disease counseling. However, more frequent diabetic dietary counseling was noted among residents who reported greater comfort or effectiveness with dietary counseling. Given these results, IM residency programs may wish to modify their curricula to include dietary counseling. Successful curricula should place emphasis on both knowledge and boosting physicians' low perceived effectiveness.

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