

Disease Management Advice Provided to African-American and Chinese-American Patients With Type 2 Diabetes

LAWRENCE FISHER, PHD¹
 MARILYN M. SKAFF, PHD¹
 CATHERINE A. CHESLA, RN, DNSC²
 KEVIN M. CHUN, PHD³

JOSEPH T. MULLAN, PHD⁴
 RICHARD A. KANTER, MD, FACE⁵
 PHILLIP S. GARDINER, DPH⁵

Patients from diverse communities with diabetes have poorer glycemic control (1) and more complications (2) than other patients with diabetes. Ethnicity alone, however, is insufficient to account for these differences because considerable within-group variation also occurs (3). To gain a better understanding of factors that contribute to this variation, we asked African-American and Chinese-American patients with type 2 diabetes what they had been advised to do to manage their disease by their diabetes practitioners and linked their responses to their reports of actual behavior. We also investigated what factors accounted for differences in reported advice received among members of each community. Understanding these issues highlights deficits in informational exchange for these populations and identifies characteristics of minority patients that place them at risk of not obtaining specific kinds of disease-management information.

RESEARCH DESIGN AND METHODS

As part of a larger study (3,4), patients who met the following inclusion criteria were identified from 10 community health care settings: a diagnosis of type 2 diabetes for at least 1 year, age between 25 and 70 years, no evidence of major diabetes complications, living in

the U.S. for a minimum of 1 year, and self-identified as Chinese American (born in the U.S. or Asia) or African American (born in the U.S.).

Screening identified 412 eligible Chinese-American patients, and 194 agreed to participate (47%). This modest acceptance rate is consistent with past reports on the many challenges of obtaining a high response rate among Asian Americans (11). Screening identified 300 eligible African-American patients, and 205 agreed to participate (68%). Complete data were available for 159 African Americans and 158 Chinese Americans.

The Diabetes Management Scale (DMS) in landscape format asks respondents, on the left side of each page, how they were advised by their health care professional to manage their diabetes, followed by a comparable question, on the right side of the same page, about what they actually do to manage their diabetes. Questions included: "were you advised to check and to write down your blood glucose regularly," "does your health professional measure your HbA_{1c} regularly," "do you record the result of your most recent HbA_{1c} test," and "were you advised to wear a medical alert bracelet, check your feet, lose weight, take medications, and exercise (yes, no, or don't remember)?" Assessment of diet included advice

to follow a meal plan, limit saturated fat, eat high-fiber foods, and limit calories. Parallel items about completing each disease-management area behavior regularly followed each question about advice. The DMS was translated into Chinese, and Chinese-American patients chose either the Chinese or English versions.

RESULTS— Compared with African Americans, the Chinese-American sample contained significantly more men, was older, was less educated, and had lower HbA_{1c} and BMI values. No significant differences occurred for income or years since diagnosis. Approximately 20% of Chinese Americans completed the DMS in English.

There was considerable similarity in the profiles of reported advice received across groups. The mean percentage of patients who reported receiving advice was 73.3% for African Americans and 54.2% for Chinese Americans. Most advice was reported for testing blood glucose, undertaking regular exercise, and taking medications, and the least advice was for wearing a medical alert bracelet and limiting calories. No differences occurred by patient sex.

Using multivariate analysis, higher income, longer time since diagnosis, and, for Chinese Americans, speaking English were linked to receiving more advice; high BMI was linked to receiving more advice about monitoring HbA_{1c}, diet, and calories; and high HbA_{1c} was linked to more advice about monitoring HbA_{1c}, reducing saturated fat, and increasing medication use.

When Chinese Americans were asked to record their most recent HbA_{1c}, 13.8% ($n = 20$) responded with a score in the appropriate range, 15.2% ($n = 24$) responded with a score reflective of blood glucose, and 65.0% ($n = 114$) reported that they did not know. Similar scores for African Americans were 16% ($n = 23$), 10.1% ($n = 16$), and 75% ($n = 120$), respectively. Of those patients who reported an HbA_{1c} in the appropriate range, the mean difference, disregarding the di-

From the ¹Department of Family and Community Medicine, University of California, San Francisco, San Francisco, California; the ²Department of Family Health Care Nursing, University of San Francisco, San Francisco, California; the ³Department of Psychology, University of San Francisco, California; the ⁴Department of Social and Behavioral Sciences, Northern California Kaiser Permanente Medical Group, San Francisco, California; and the ⁵Office of the President, University of California, Oakland, California.

Address correspondence and reprint requests to Lawrence Fisher, PhD, Department of Family and Community Medicine, Box 0900, University of California, San Francisco, San Francisco, CA 94143. E-mail: fisher@itsa.ucsf.edu.

Received for publication 30 April 2004 and accepted in revised form 16 June 2004.

Abbreviations: DMS, Diabetes Management Scale.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

© 2004 by the American Diabetes Association.

rection of the difference, from their actual HbA_{1c} was $0.54 \pm 0.49\%$ (\pm SD) for Chinese Americans and $0.56 \pm 0.54\%$ for African Americans. Among African Americans, low BMI, low HbA_{1c}, and high income were all linked to knowing their HbA_{1c} level. Among Chinese Americans, high income and speaking English were linked to knowing their HbA_{1c} level.

Reports of following advice were available for 9 of the 12 disease-management areas. The average percentage of patients who reported performing a behavior when given advice to do so was 69.84% for Chinese Americans and 63.88% for African Americans compared with performing a behavior when no advice to do so was given (15.84 and 24.05%, respectively). Advice had the biggest effect on checking and recording blood glucose, checking feet, and eating high-fiber foods for Chinese Americans and on checking blood glucose, wearing a medical alert bracelet, eating food low in saturated fat and high in fiber for African Americans. For both ethnic groups, advice had the least effect on monitoring HbA_{1c}, following a dietary plan, and curbing calories.

CONCLUSIONS— Defining compliance and adherence remains a complex problem (5). It is difficult empirically to distinguish among what a patient was actually told or agreed to, what a patient understood initially, what a patient remembered over time, and how the information was interpreted and applied by the patient in the real world. What a patient remembers and understands at any point in time, however, is the practical point of reference for intervention because it is this information, regardless of what was originally communicated by the practitioner, that the patient is most likely to act upon. It is not clear if patients actually received more advice than they report now. If they did, the information was

not retained, and ongoing follow-up is needed to reinforce disease-management programs introduced earlier.

Patient characteristics that most distinguish between those receiving and not receiving advice fall within two broad categories. Patients with higher incomes, which may be linked to greater access to care, report receiving more advice than patients with lower incomes. In addition, advice received is related to specific aspects of the patient's disease presentation. Understandably, particular patient problems elicit specific advice that addresses these problems.

The low level of HbA_{1c} awareness is striking and is far lower than that in community-based reports of awareness of cholesterol levels (49% [6]) and hypertension (54% [7]). Other studies of HbA_{1c} awareness show similarly low percentages (8,9). These findings suggest a need to enhance HbA_{1c} awareness as a guide for both behavioral and pharmacological intervention. Repeated patient assessment about specific aspects of disease management and ongoing re-education and behavioral intervention by bilingual, culturally competent practitioners are called for.

Acknowledgments— This study was supported by grants DK-49816 and DK-53203 from the National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

The authors thank the following individuals and clinical settings for their assistance in recruitment: Alta Bates Medical Center, Brown & Toland Medical Group, CA Pacific Medical Center, Clinica de la Raza—Oakland, Marin Community Clinic, Mills—Peninsula Medical Group, Northern California Kaiser Permanente Medical Centers, Northeast Medical Services, San Francisco General Hospital and Neighborhood Health Centers, The University of California San Francisco Clinics, and Drs. K.K. Pun, F. Tzeng, and Y. Yeung.

Appreciation is expressed to Dr. Katie

Weinger for her assistance on an earlier version of the DMS.

References

1. Auslander WF, Thompson S, Dreitzer D, White NH, Santiago JV: Disparity in glycemic control and adherence between African-American and Caucasian youths with diabetes: family and community contexts. *Diabetes Care* 20:1569–1575, 1997
2. Centers for Disease Control and Prevention: *National Diabetes Fact sheet: National Estimates and General Information on Diabetes in the U.S.* Atlanta, GA, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1998
3. Fisher L, Chesla CA, Skaff MA, Gilliss C, Kanter R, Lutz CP, Bartz RJ: Disease management status: a typology of Latino and Euro-American patients with type 2 diabetes. *Behav Med* 26:53–66, 2000
4. Fisher L, Chesla CA, Chun KM, Skaff MM, Mullan JT, Kanter RA, Gardiner PS: Patient appraised couple emotion management and disease management among Chinese American patients with type 2 diabetes. *J Fam Psychol* 18:302–310, 2004
5. Gonder-Frederick LA, Cox DJ, Ritterband LM: Diabetes and behavioral medicine: the second decade. *J Consult Clin Psychol* 70:611–625, 2002
6. Nash IS, Mosca L, Blumenthal RS, Davidson MH, Smith SC, Pasternak RC: Contemporary awareness and understanding of cholesterol as a risk factor. *Arch Intern Med* 163:1597–1600, 2003
7. Egan BM, Lackland DT, Cutler NE: Awareness, knowledge, and attitudes of older Americans about high blood pressure. *Arch Intern Med* 163:681–687, 2003
8. Harwell TS, Dettori N, McDowall JM, Quesenberry K, Priest L, Butcher MK, Flook BN, Helgeson SD, Gohdes D: Do persons with diabetes know their (A1C) number? *Diabetes Educ* 28:100–105, 2002
9. Polonsky WH, Zee J, Ahjee M, Crosson MA, Jackson R: Patients' awareness and understanding of their own A1C test results (Abstract). *Diabetes* 52 (Suppl. 1): A31, 2003