RACIAL AND ETHNIC DISPARITIES IN SELF-MONITORING OF BLOOD GLUCOSE AMONG US ADULTS: A QUALITATIVE REVIEW

Julienne K. Kirk, PharmD, CDE; Darby E. Graves, MPH, RD, CDE; Ronny A. Bell, PhD; Carol A. Hildebrandt, BA; K. M. Venkat Narayan, MD, MPH, MBA

Objective: To review existing data to determine whether racial/ethnic disparities exist for self-monitoring of blood glucose (SMBG) among adults in the United States.

Study Design: A literature search of diabetes-related studies published from 1970 through June 2005 was conducted. Our search strategy included SMBG in minority populations with diabetes.

Methods: Studies were selected for review if they reported SMBG rates from a specific racial/ethnic minority group or if there were comparisons of SMBG rates across racial/ethnic groups.

Results: Twenty-two studies were reviewed that met the search criteria. Twelve studies included data from a single racial/ethnic minority group, and 10 studies included comparisons between non-Hispanic Whites and at least one racial/ethnic minority group. Data represented studies conducted in a variety of settings, such as healthcare facilities in a state or region of the United States and nationally representative surveys. Most of the data indicate that SMBG rates are generally low, regardless of the population. In comparative studies, some racial/ethnic differences overall were found in SMBG rates among all racial/ethnic minority groups when compared to non-Hispanic Whites. Across studies, patients taking insulin performed SMBG more frequently than did those not taking insulin.

Conclusions: Despite widespread recommendations for self-monitoring of blood glucose, compliance is reported to be low in all groups in the United States, especially among racial/ethnic minorities. (*Ethn Dis*. 2007;17:135–142)

Key Words: African Americans, American Indians, Asian Americans, Blood Glucose Self Monitoring, Diabetes, Hispanic, Latino, Mexican Americans, Non-Hispanic Whites, Review

From the Department of Family and Community Medicine (JKK, DEG, CAH), Division of Public Health Sciences (RAB), Wake Forest University School of Medicine, Winston-Salem, North Carolina; Division of Diabetes Translation, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia (KVN).

Address correspondence and reprint requests to Julienne K. Kirk, PharmD CDE; Associate Professor; Department of Family and Community Medicine; Wake Forest University School of Medicine; Medical Center Boulevard; Winston-Salem, NC 27157-1084; 336-716-9043; 336-716-9126; jkirk@wfubmc.edu

INTRODUCTION

Self-monitoring of blood glucose (SMBG) by persons with diabetes is an integral part of intensive glycemic treatment and is widely believed to improve the control of blood glucose levels and health outcomes. The results of the Diabetes Control and Complications Trial (DCCT) among persons with type 1 diabetes showed that intensive glycemic control slowed the progression of diabetes complications significantly.[1] The DCCT protocol required SMBG at least four times each day and multiple injections of insulin. Furthermore, the United Kingdom Prospective Diabetes Study (UKPDS) found that a reduction in hemoglobin A1C (HbA1C) was associated with a decreased risk of microvascular complications in persons with type 2 diabetes. In the UKPDS, persons who were on >14 units of insulin per day or those on short-acting insulin performed SMBG regularly.[2]

The American Diabetes Association (ADA) first set forth guidelines for SMBG in 1987, and current recommendations suggest persons with diabetes perform regular SMBG.[3,4] The recommendations include the use of SMBG by a person with diabetes to develop a longitudinal glucose profile and as an aid in making day-to-day decisions.[3] One objective of *Healthy People 2010* is to increase the proportion of all adults with any type of diabetes who perform SMBG at least once daily.[6] The baseline value from the 1998 Behavioral Risk Factor Surveillance System (BRFSS), representing data from 39 US states, was reported to be 42%. The *Healthy People 2010* SMBG target is 60%.

Lack of regular SMBG predicts hospitalization for diabetes-related complications.[5] Although health practitioners are skeptical about the effectiveness of SMBG as a self-management tool for persons with type 2 diabetes who are not taking insulin, a recent meta-analysis of SMBG in 2005 indicated a significant decrease of HbA1C in favor of SMBG compared to the control group.[7]

An evaluation of racial/ethnic differences in SMBG among ethnic minority individuals has not been conducted. Minority populations with diabetes are more likely than non-Hispanic Whites to develop complications such as neuropathy, nephropathy, and retinopathy and are also more likely to require amputations than are non-Hispanic Whites with diabetes.[8–11] The cause for these disparities is unknown, but one possible explanation is poor glycemic control, which is improved by SMBG. This qualitative systematic re-