Health-related Quality of Life in Urban African Americans with Type 2 Diabetes

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OBJECTIVE: To examine the association of socioeconomic barriers, familial barriers, and clinical variables with health-related quality of life (HRQL).

METHODS: A cross-sectional study was conducted of 186 African Americans with type 2 diabetes recruited from 2 primary care clinics in East Baltimore, Maryland. Physical functioning, social functioning, mental health, and general health were measured using the Medical Outcomes Study 36-item short form. Socioeconomic (money, housing, street crime) and familial (family problems, caretaker responsibilities) barriers were assessed by standardized interview. Insulin use, comorbid disease, and measured abnormalities in body mass index, hemoglobin A1c (HbA1c), blood pressure, lipids, and renal function were investigated.

RESULTS: Mean HRQL scores were: physical functioning, 61 ± 29; social functioning, 76 ± 26; mental health, 69 ± 21; and general health, 48 ± 21. Linear regression analyses revealed that each barrier to care was significantly associated with lower scores in 1 or more HRQL domain. As number of socioeconomic and familial barriers increased from 0 to 5, HRQL scores decreased by 18 for social functioning, 21 for general health, 23 for physical functioning, and 28 for mental health (all P for trend <.01). Clinical variables significantly associated with reduced HRQL were obesity, impaired renal function, insulin use, and comorbid disease. Blood pressure, lipids, and HbA1c were not significantly associated with HRQL.

CONCLUSIONS: An independent, graded relationship was found between socioeconomic and familial barriers to care and HRQL. This relationship was at least as strong as the association between HRQL and the clinical variables more likely to be perceived by participants as causing symptomatic distress or impacting lifestyle.

KEY WORDS: health status; chronic illness; socioeconomic factors; urban health.
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Type 2 diabetes imposes a heavy public health burden on African Americans. This has been well documented with regard to diabetes-related morbidity and mortality.1 Despite growing attention to quality of life as a health outcome measure,2 much less is known about health-related quality of life (HRQL) in this population. HRQL in urban African Americans could be adversely affected by diabetes complications and by socioeconomic problems unique to or exaggerated within a poor, inner city environment. Previous studies of HRQL in persons with diabetes have included few African Americans and have not assessed urban socioeconomic problems.3 We, therefore, conducted a cross-sectional study to examine in a sample of urban African Americans with type 2 diabetes: 1) the relationship between HRQL and socioeconomic and familial barriers to care, including problems with money, housing, street crime, family, and caretaker responsibilities, and 2) the relationship between HRQL and clinical variables including insulin use, comorbid disease, and measured abnormalities in body mass index (BMI), hemoglobin A1c (HbA1c), blood pressure, lipids, and renal function. We hypothesized that socioeconomic problems would be associated with reduced physical functioning, social functioning, mental health, and general health in this inner city, African-American, type 2 diabetes sample.

RESEARCH DESIGN AND METHODS
Setting and Population

The study sample was comprised of 186 African Americans with type 2 diabetes who lived in East Baltimore, Maryland. The study was conducted as part of Project Sugar 1, a randomized controlled trial of the effectiveness of a multi-faceted behavioral intervention to improve metabolic control and health behaviors of urban African Americans with type 2 diabetes. To be eligible for the study, subjects had to meet the following criteria: age 35 to 75 years, African-American ancestry by self report, presence of type 2 diabetes as indicated by physician diagnosis, absence of comorbid conditions limiting probable lifespan to <4 years (e.g., cancer, AIDS), residence in 1 of 7 East Baltimore zip codes, attendance at either of 2 Johns Hopkins–affiliated primary care clinics within the previous year, and no indication of end-stage complications of diabetes (e.g., kidney dialysis or transplant, blindness, or lower extremity amputation). Following review of 3,800 medical charts, 822 individuals were identified as African Americans with type 2 diabetes. Telephone screenings revealed that 156 of these individuals did not meet eligibility criteria. An additional 241 refused participation, 78 did not show for an initial screening visit, and 161 persons were unable to be contacted. These 480 persons

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were considered nonresponders. One hundred eighty-six completed both of 2 required screening visits and were randomized into the study. Further details regarding sample selection are reported elsewhere. Comparisons of participants and nonparticipants revealed that the groups were similar with regard to age and sex, but HbA1c was lower in participants than nonparticipants. At baseline (1995–1997), detailed interview and clinical data were collected. The study was approved by the Joint Committee on Clinical Investigation of the Johns Hopkins University School of Medicine, and written informed consent was obtained for each subject.

Data Collection

Socioeconomic and Familial Barriers to Care. Participants were asked the following questions to assess presence of 5 types of socioeconomic and familial barriers in relation to diabetes self-care: “Does lack of money make it hard for you to take care of your diabetes?” “Do housing problems make it hard for you to take care of your diabetes?” “Does being concerned about street crime make it hard for you to take care of your diabetes?” “Do family problems make it hard for you to take care of your diabetes?” “Does having to take care of someone who depends on you make it hard for you to take care of your diabetes?” Number of socioeconomic and familial barriers to care was determined by adding the number of barriers reported, ranging from 0 (none) through 5 (all).

Clinical Variables. Blood samples after a 10- to 12-hour fast were analyzed for: HbA1c (using high-pressure liquid chromatography), plasma lipids, and serum creatinine (using Jaffe reaction). A first morning urine sample was analyzed using a urine dipstick. Blood pressure was measured 3 times at each of 2 visits by a trained technician using a random-zero sphygmomanometer. The mean of 6 readings was used to determine elevated blood pressure. Height and weight were measured during clinical examination, and values were converted to BMI for use in analyses.

These physiological data were used to create dichotomous definitions of the following conditions: elevated HbA1c was defined as >9.0%6; impaired renal function was defined as ≥1+ proteinuria or serum creatinine >1.5 mg/dL7; abnormal lipids was defined as HDL <40 mg/dL and/or LDL >130 mg/dL8; and elevated blood pressure was defined as mean systolic blood pressure >140 mmHg and/or diastolic blood pressure >90 mmHg.9 Abnormal BMI was separated into 2 categories of obesity, BMI 30 to 35 kg/m² and BMI >35 kg/m².10

Diabetes treatment was assessed on structured interview. The Charlson Comorbidity Index11 was used to classify comorbid disease, based on a baseline review of the participants’ medical records. This weighted index is based upon the number and severity of comorbid disease, with higher scores indicating greater comorbidity. Valida-

RESULTS

Sample Characteristics

Sociodemographic Characteristics. Selected characteristics of the study sample are presented in Table 1. The