

SOCIAL SUPPORT AMONG AFRICAN-AMERICAN ADULTS WITH DIABETES, PART 2: A REVIEW

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Diabetes mellitus affects African Americans in disproportionate numbers relative to whites. Proper management of this disease is critical because of the increased morbidity and mortality associated with poor diabetes management. The role of social support in promoting diabetes management and improved glycemic control among African Americans is a little-explored area. This review, the second in a two-part series, examines the relationship between social support and glycemic control among African-American adults with diabetes. The main findings of the study are that African Americans tend to rely more heavily than whites on their informal social networks to meet their disease management needs and that social support is significantly associated with improved diabetes management among members of this population. However, there remains a critical need to systematically include substantial numbers of African-American respondents in studies examining the relationship between social support and glycemic control. Only then can the effects of age, gender, socioeconomic status, and other variables on this relationship in African Americans become clear and interventions incorporating relevant aspects of social support be developed. (*J Natl Med Assoc.* 1998;90:425-432.)

Key words: African Americans ♦ diabetes
♦ social support

Editor's Note: This article is the second part of a two-part series examining social support among African-American adults with diabetes. The first part appeared in last month's issue.

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Research on the relationship between social support and diabetes-related health outcomes in adults is often limited by racial bias. Many studies in this area are based only on predominantly white samples.¹⁻⁴ Other researchers examining the relationship between social support and glycemic control have not specified the racial composition of their samples⁵⁻¹¹ (Table). For example, Schwartz et al⁹ argue that social support can buffer the effects of life stress and result in improved glycemic control in adults. However, their sample was comprised entirely of males and race was not reported. Glasgow and Toobert¹ found that receiving social support from family members was strongly related to adherence to diabetes treatment regimens; however, respondents were middle class and predominantly white (98.4%). Similarly, White et al³ found an association between social support and psychosocial adaptation, but their sample

was comprised of white women.

In a review of the literature pertaining to the relationship between social support and glycemic control (Table), six studies were found that addressed the subject of social support among African-American adults with diabetes. These studies are reviewed below. Five of the studies were cross-sectional in design, and one study was a clinical trial.

CROSS-SECTIONAL STUDIES

In general, cross-sectional designs are limited in that causality cannot be established between the phenomenon being studied, in this case social support, and its effect on an outcome, which we have defined as diabetes control.¹² In particular, the effects of social support on diabetes control over time cannot be assessed cross-sectionally. Also, in many cross-sectional studies, the cohort is a convenience sample of available individuals willing to participate, leading to a selection bias that could impact outcome.

Longitudinal studies allow the relationship between social support and diabetes control to be examined over time. However, respondent attrition may become a problem, and it can be difficult to separate the effects of other environmental or personal changes over time from the intervention effects. No longitudinal studies were identified.

Study 1

Summary. Murphy et al¹³ used a telephone survey to examine the role of social support among 131 adult patients (65% response rate) with noninsulin-dependent diabetes mellitus in a university hospital-based family practice residency program outpatient office in a Midwestern city. Forty-six percent of the respondents (ages 18 to 80) were African American. Nearly half of the respondents had either Medicare or Medicaid.

Social support was defined as 1) support provided by the identified "family health monitor" who functioned as the family's internal health expert and was typically contacted before outside help was sought, and 2) supportive activities of spouses and adult children in relation to the family member with diabetes. The principal supportive activities (grouping a total of 89 tasks) included help with diet supervision (48%), medication assistance (22%), general support (15%), blood sugar monitoring (9%), and "other activities" (6%). The individual in the family providing most of this assistance was deemed the

"helper." Murphy et al¹³ concluded that "many of the key factors influencing metabolic control are practiced within the social context of the family."

Seventy-four percent of the women and 77% of the men in the study identified a unique family health monitor. Eighty-seven percent of these identified family health monitors were women. There appeared to be an association between gender and relationship to the family health monitor; 51% of the men in the study identified their wives as the family health monitor, but only 8% of the women in the study identified their husbands as the family health monitor. In addition, 24% of these women were themselves their families' family health monitor, while only 6% of the men identified themselves as such.

People identified as helping the respondents most with their diabetes care often were not the same person as the identified family health monitor. Forty-eight percent of the women studied and 64% of the men identified someone who performed one or more specific helping tasks; 78% of these identified helpers were women. There appears to be a trend toward gender differences in the use of social support among individuals with diabetes. Men relied heavily on their wives for support, while women relied on other women for support.

Gender did not play a significant role in the types of help provided, except in the case of monitoring blood sugar, a task performed only by female helpers. Good metabolic control was defined as hemoglobin (Hb) A_{1c}<9, fair control as HbA_{1c}=9 to 12, and poor control as HbA_{1c}>12. While no relationship was found between the presence or absence of a family health monitor and HbA_{1c} level, the study found family relationship of the helper to be significantly related to glucose control. Specifically, respondents with spouse or child helpers were in significantly better control than those with "other" helpers. In addition, the presence of a spouse or adult child helper was found to be related to better control than was the availability of more distant family or nonfamily relationships. Murphy et al¹³ noted that the most involved family members were the spouses of middle-aged and older adult men and the adult daughters of older single women.

Limitations. While equal proportions of adult African-American (n=60) and white (n=60) respondents from an inner-city area were included in the study, outcomes were not analyzed by race. Other

Table. Social Support Measures and Racial Composition in Studies of Patients With Diabetes

Authors	Study Design/Social Support Measure(s)	Sample & Racial Composition	Major Findings	Study Limitation(s)
Belgrave & Lewis ¹⁵	Cross-sectional/measure of frequency & availability of social support	127 African-American patients; 49 with sickle cell & 78 with diabetes	Social support associated with health behaviors & compliance	Homogeneity & selectivity of study cohort in terms of urbanicity & SES
Butler et al ¹⁸	Cross-sectional/nine-item subscale of Social Networks	73 older African-American adults; 38% had hypertension/diabetes, 58% had hypertension only, & 5% had diabetes only	Social support & health-care utilization were correlated	Data not analyzed separately by disease; the sample was likely homogeneous in (low) SES
Glasgow & Toobert ¹	Longitudinal/Diabetes Family-Behavior Checklist II	127 adults; 98.4% white; type II diabetes	Regimen-specific family support predicted HbA _{1c}	Almost all (98.4%) patients were white
Heitzmann & Kaplan ⁵	Cross-sectional/SSQ-N & SSQ-S*	37 adults; type II diabetes	Interaction found between gender & social support	Race not reported; median split for division into high & low social support groups not assessed separately for women & men; small sample size
Maxwell et al ²³	Randomized trial/social support group as adjunct to diabetes training	204 IDDM & NIDDM patients randomized into control & experimental groups; 147 white, 40 African American, 9 Hispanic, & 8 "other"	Social support associated with improved HbA _{1c} levels & other measures in IDDM & NIDDM groups	Only 22% attended at least half of the meetings offered, only 42% attended at least one meeting, & 58% did not attend any meetings; racial differences not reported
Murphy et al ¹³	Cross-sectional/supportive family members, eg, health expert & helper	131 respondents with type II diabetes; 60 African Americans, 60 whites, & 11 "others"	HbA _{1c} levels related to helper, but not to health expert	Outcomes not analyzed by race; size of social support networks not indicated; perceived social support not assessed
O'Connor et al ²	Longitudinal/family function & social support	169 referrals for care/diabetes education; 67% white & 33%non-white	Social support & race not significant predictors of HbA _{1c} levels	Nonwhites grouped as single category; specific components of the diabetes education program related to improved glycosylated hemoglobin values not identified
O'Toole et al ⁶	Longitudinal/family household members (ESCROW Scale)	60 peripheral vascular amputees, 52% of whom had diabetes	Greater need for social support from admission to discharge was determined; these social support needs not well met	Race & SES not reported; study limited to individuals with diabetes who had experienced amputation, which may reflect poor diabetes management & low levels of social support prior to the amputation

Table. Social Support Measures and Racial Composition in Studies of Patients With Diabetes (continued)

Authors	Study Design/Social Support Measure(s)	Sample & Racial Composition	Major Findings	Study Limitation(s)
Schafer et al ⁷	Longitudinal/Diabetes Family Behavior Checklist	54 adults & 18 adolescents; type I diabetes	Higher adult scores marginally related to higher HbA _{1c} levels	Race, demographics not reported; scale reliability could be improved by generating other items related to subscales: insulin injection, glucose testing, diet, & exercise
Schwartz et al ⁸	Longitudinal/SSNI	19 patients: 11 on insulin, 4 on oral hypoglycemics, & 4 using diet to control diabetes	High SSNI scores, indicating high level of social support, associated with normal HbA _{1c} levels	Small sample size; race, other demographics not reported
Schwartz et al ⁹	Longitudinal/SSNI	112 males; 54 used insulin & 43 used diet to control diabetes	Decreased social support predicted worsening HbA _{1c} levels over time	Race not reported; all study participants were men, limiting generalizability
Toth & James ¹⁰	Longitudinal/weekly psychotherapy support group	21 adults; predominantly IDDM group	No significant differences in HbA _{1c} levels found before & after therapy	Only small number attended each session (20% to 32%); race & SES not reported
Uzoma & Feldman ¹⁷	Cross-sectional/social network size; satisfaction with support	100 African-American adults; IDDM patients	Social support & self-reported adherence to insulin were correlated	Relied on self-reported adherence to insulin regimen; small sample & therefore low power to detect differences; patients represented one SES
White et al ³	Retrospective & longitudinal/PRQ85	158 adult women; types I & II (predominantly white)	PRQ85 associated with psychological adjustment	Sample limited to children & adolescents in poor control with recurrent ketoacidosis; race, gender, & SES not reported but most families reported limited financial resources
Wing et al ¹¹	Longitudinal/groups of adults with & without spouses taught social support strategies in 20-week program	49 obese adults; type II diabetes; 24 with & 25 without spouses	Women's HbA _{1c} levels improved in spouse group; men's HbA _{1c} levels improved in without spouse group	Small sample size; race & SES not reported
Zink et al ⁴	Longitudinal/Norbeck Social Support Questionnaire	25 older (60-88 years) adults; IDDM & NIDDM; 64% white, 28% African American, and 8% "other"	Ongoing assessment of patients' social support by health-care providers necessary in developing individualized home care plans for older adults with diabetes	Small sample size; data on glycemic reactions not reported by race

Abbreviations: SES=socioeconomic status, SSQ-N & SSQ-S=Social Support Questionnaire, IDDM=insulin-dependent diabetes mellitus, NIDDM=noninsulin-dependent diabetes mellitus, SSNI=Social Support Network Inventory, and PRQ85=Personal Resource Questionnaire.
*From reference 26.

limitations in the study were the failure to indicate variations in the size of the helping networks and the lack of distinction between the social support perceived on the part of the provider and the support perceived by the recipient. These factors may be important in assessing racial differences. For example, while African Americans often have less support from spouses and children than do whites, African Americans tend to expand network membership to include fictive kin, who “function in the absence of blood relatives or when family relationships are unsatisfactory.”¹⁴

Study 2

Summary. Belgrave and Lewis¹⁵ examined the role of social support in compliance and other health behaviors of African Americans with diabetes in a descriptive study. The 78 patients (51 women and 27 men) in the convenience sample, attendees at a diabetes outpatient clinic at an inner-city hospital, were interviewed by trained interviewers. The patients ranged in age from 23 to 84 (mean age: 57 years). Data on respondents’ socioeconomic status were not presented.

Belgrave and Lewis¹⁵ defined social support as emotional, informational, and instrumental support from health-care providers, family, friends, and community. They hypothesized that receiving these types of social support makes it easier for patients to keep their medical appointments and to understand their medical conditions. The Social Support Index¹⁶ was used to assess social support. This instrument measures the frequency of supportive and helpful behaviors performed by others and the perceived availability of emotional, cognitive, and instrumental support. Acceptable reliability and validity have been established previously for this index, and Cronbach’s alpha reliabilities of .88 and .90 also were established using Belgrave and Lewis’ sample of African-American adults with diabetes. Because appointment-keeping patterns were based on patients’ self-report, Belgrave and Lewis reviewed the medical records of a small subset of respondents (n=20) to obtain an objective measure of appointment-keeping. The self-reported measure of appointment keeping was found to be correlated with the measure obtained from medical record review.

Social support was significantly associated with the positive health behaviors of appointment keeping and adherence to health activities.¹⁵ Of all the

health activities chosen by Belgrave and Lewis, which included diet, exercise, having regular blood pressure tests, taking medication as prescribed, and foot care, social support was found to have the greatest impact on diet and foot care. A significant relationship between social support and a composite rating of health activities also was seen.¹⁵

Limitations. This study¹⁵ was limited by the homogeneity and selectivity of the study cohort in terms of urbanicity and most likely socioeconomic status.

Study 3

Summary. Psychosocial factors influencing adherence to insulin regimens were explored by Uzoma and Feldman.¹⁷ Their sample consisted of 100 adult African Americans (32 men and 68 women) treated for insulin-dependent diabetes mellitus (IDDM) in an outpatient inner-city teaching hospital clinic. Study participants were chosen using a systematic sampling procedure as they reported for their diabetes-related clinic visit, based on the order in which they arrived at the clinic. The majority of respondents had annual incomes <\$10,000, were ≥65 years, and had completed 10 to 12 years of education.

Perceived social support was conceptualized in this study as several dimensions, including network size (the number of people one interacts with) and satisfaction with received social support. The perceived social support measure consisted of 12 items asking patients to indicate the number of individuals giving them emotional, instrumental, and informational support. The reliability of this measure was not reported. Respondents also were asked to rate their level of satisfaction with the individuals providing these types of social support.

Social support was not found to be significant in affecting positive health behaviors when the data for men and women were examined together. However, separate analyses for men and women with diabetes revealed significant differences in this relationship. Black women, but not black men, reported lack of information as a barrier to insulin adherence. In addition, a larger social support network was found to negatively influence compliance with insulin regimens in men, while women had higher compliance with insulin regimens when satisfaction with social support was reported.

Limitations. This study¹⁷ relied on self-reported adherence to insulin regimen, rather than glycosy-

lated hemoglobin levels, a more stable index of metabolic control. The finding of gender differences in black patients with diabetes may reflect the smaller number of men studied, compared with the number of women in the study, and lower power to detect differences. More research is necessary to determine whether such differences actually exist. Also, as is the case with the other studies reviewed here, the patient population represents only one socioeconomic class.

Study 4

Summary. Butler et al¹⁸ investigated, in a major urban setting, the health-care utilization patterns of older African Americans. A convenience sample of 73 African Americans aged ≥ 60 with a medical diagnosis of hypertension or diabetes was interviewed by appointment within each respondent's home in this descriptive study. Approximately 58% of these respondents reported having high blood pressure, 5% had diabetes, and 38% had both hypertension and diabetes.

Use of social services was measured by a nine-item scale, a subscale of a larger "Social Networks" scale, that indicated the number of services used. The data collected included household composition and family and social networks as well as several other important psychosocial variables. Significant positive correlations were found between social support systems and the frequency of doctor/clinic visits.

Limitations. Data were not analyzed separately by disease. This is a minor concern as only a small number of respondents (5%) reported a diagnosis of diabetes alone, and comorbidities are common in patients with diabetes. The group studied therefore may be more representative of patients with diabetes in general than would a sample consisting only of patients with diabetes and no comorbidities. Although the socioeconomic status of respondents is not reported, the fact that all respondents were reportedly residing in an inner-city area of a large city at the time of the study suggests that the sample may have been homogeneous in terms of low socioeconomic status.

Study 5

Summary. Zink et al⁴ examined social support in a sample of 25 adult patients of a large home health-care agency in Westchester County, New York. The respondents, all of whom had diabetes, ranged in

age from 60 to 88 years (mean age: 73 years). Eighty percent were women, and more than half of the sample were widowed. Nine of the respondents had completed grade school only, 12 had completed high school, and 4 had college degrees. Sixty-four percent were white, 28% were African American, and 8% had "other" racial/ethnic backgrounds. Sixty-eight percent of the respondents had insulin-dependent diabetes mellitus, while 32% were noninsulin dependent. The average duration of diabetes in the noninsulin-dependent diabetes mellitus group was 11 years (range: 4 to 20 years).

Social support was measured using the Norbeck Social Support Questionnaire.^{19,20} Zink et al⁴ discovered that the average number of people listed as being part of the respondents' support system was 5, with a range from 1 to 13 people. All respondents listed at least 1 family member (other than a spouse/partner) as a support source (responses ranged from 1 to 10). Only 16% of the respondents listed a spouse/partner as a source of support. Home health-care nurses and aides/homemakers were each listed as a support source by 14 respondents.

In terms of diabetes management, 44% of the respondents had experienced no glycemic reaction during the time they had been patients of the home health-care agency, 28% had experienced a hypoglycemic reaction, and 12% experienced a hyperglycemic reaction.

Limitations. Zink et al⁴ did not state the process by which their sample was selected, and data were not analyzed by race. Another study limitation is that the relationship between the level of social support experienced on the part of the respondents and their diabetes management, as indicated by the extent of their glycemic reactions, was not articulated. Glycemic reaction, rather than the more stable clinical index, HbA_{1c} level,^{21,22} was used as an indicator of glycemic control. It is unclear whether the extent of the glycemic reactions experienced by the respondents are typical of the glycemic reactions of other older patients or whether this is a more severely ill group of patients.

CLINICAL TRIAL

Well-designed randomized clinical trials represent a less biased means of directly testing the effects of social support on diabetes control as the outcome.

Study 6

Summary. Maxwell et al²³ studied 204 patients

with diabetes who were randomly divided into two groups. Seventeen percent of the patients in the control group and 22% in the experimental group were African American. The control group received the training program only, whereas the experimental group was offered the same program in addition to eight support group meetings, where they had the opportunity to receive informational and emotional support.

After 7 months of follow-up, patients in both groups showed improved metabolic control (HbA_{1c}), diabetes knowledge, frequency of practicing recommended diabetes management behaviors, and emotional adjustment. Of note is that no additional improvement was seen in those outcome measures in patients who attended support group meetings. The authors concluded, therefore, that improvements in metabolic control and other objective measures resulted from the training program.

Maxwell et al²³ suggest that a better understanding of the possible contribution of support groups to health is necessary before such groups are routinely recommended to patients with diabetes. It is also possible that sufficient social support developed among the participants in the training group setting, in which individual self-disclosure, mutual comparison and support, interpersonal feedback, and other elements that are thought to evolve in support groups may have been facilitated.

Limitations. The finding of no difference in the two groups included in the Maxwell et al²³ study also may be explained by the fact that only 24 (or 22%) of the 111 patients in the experimental group attended at least half of the meetings offered. Additionally, only 47 out of 111 patients attended at least one meeting, and 64 patients (58%) did not attend any support group meetings. Although further analysis revealed no statistically significant differences in age, sex, race, years of education, marital status, household income, and duration of diabetes between patients who attended the support groups and those who did not attend, a large number of patients did not receive the intervention. Racial differences within the two groups were not reported.

DISCUSSION

The rising incidence of diabetes among African Americans needs to be confronted. The prevalence of noninsulin-dependent diabetes mellitus is 50% to 60% higher in African Americans than in whites.²⁴

Psychosocial factors may play an important role in more clearly understanding why African Americans develop diabetes more often than whites and experience more severe complications.¹⁸ However, an in-depth review of the research literature revealed that few studies included adequate samples of African Americans to provide sufficient information on the role of various aspects of social support in disease management among African-American adults with diabetes.

In addition, socioeconomic status was not emphasized in the studies reviewed, although one would expect education and income to positively influence health outcomes and glycemic control. In the studies reviewed, either socioeconomic status was not discussed or all of the African-American study participants were from the same, low socioeconomic stratum. The extent to which these participants represent other African Americans in the United States is somewhat questionable, particularly as Williams²⁵ notes that two thirds of African Americans are not poor. As the heterogeneity of African Americans was not captured in the studies reviewed, the generalizability of the previous studies to African Americans with diabetes as a whole is also questionable.

There remains a critical need to systematically include African Americans in studies examining the link between social support and glycemic control and to analyze these results by race across a broad spectrum of socioeconomic strata. The effects of satisfaction with social support, social network size, and perceived availability of social support on glycemic control among members of this population also need to be examined.

CONCLUSION

Clearly, more research, particularly randomized trials, is needed regarding the influence of age, gender, and ethnicity on social support and glycemic control among African Americans with diabetes. Additional randomized trials are needed because while social support may be associated with better glycemic control, increased social support may not be accompanied by an increase in glycemic control; only a randomized trial can rigorously test this hypothesis. A better understanding of the role of social support in diabetes management may lead to randomized trials of culturally appropriate treatment interventions that can help African-American patients with diabetes achieve better control of their

disease, reduce complications, and improve their quality of life.

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