# A Qualitative Evaluation of Racial Disparities in Glucose Control

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**Objective:** Type 2 diabetes is more prevalent and severe among African Americans than among Whites. To elucidate barriers to glucose control that are unique to African Americans with poor glucose control we conducted a qualitative study among veterans with diabetes in an academic Veterans Affairs medical center.

**Methods:** We enrolled African American and White veterans with diabetes; participants' glucose control was described as well controlled or poorly controlled, and groups were organized on the basis of ethnicity and glucose control. Discussions were conducted by using modified nominal group technique to define factors that aided or hindered glucose control.

**Results:** Well-controlled groups similarly reported that self-care, health care, and psychosocial factors were important in controlling glucose. Although poorly controlled African Americans cited self-care as important, they also noted difficulty following self-care practices and the interference of psychosocial factors with glucose control. Poorly controlled Whites were similar. Uniquely, poorly controlled African Americans were less likely to report positive healthcare experiences; their barriers were related to poor access and poor relationships with providers.

**Conclusions:** Poorly controlled African Americans endorsed healthy self-care behaviors but found it difficult to follow through. Interventions targeting the management of stress, depression, mood, and temptation, as well as improved access to and communication with providers may help these patients better manage their glucose and minimize disparities in diabetes outcomes. (*Ethn Dis*. 2009; 19:121–127)

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## Introduction

African Americans are disproportionately affected by the type 2 diabetes epidemic in the United States.[1] Compared with Whites, African Americans have worse glucose control and higher rates of microvascular complications associated with diabetes,[2–6] which are strongly linked to glucose control.[7,8] Disparities in glucose control exist even within the Veterans Health Administration (VHA), which is thought to minimize barriers in access to care.[9,10]

Large-scale quality improvement initiatives have reduced disparities in process measures; however, 2 recent evaluations of such initiatives in health maintenance organizations have shown that despite the improvement in process measures, disparities in glucose control persist and may have widened.[11,12] Specifically within the VHA, quality improvement initiatives have led to improved processes of care and have reduced racial disparities in care provided.[13,14] However, disparities persist in diabetes outcomes, which suggests that reducing racial disparities in glucose control may require a more focused approach. Recent community-based interventions show potential as a means to improving glucose control in low-income minority communities;[15–17] however, for providers such as the VHA, community-based interventions may not be useful since their patient population is not neighborhood-based.

Racially tailored interventions may help eliminate disparities in glucose control, especially within the VHA and other non–community-based healthcare providers. However, appropriate targets must be identified for these interventions. Qualitative research is useful in addressing persistent gaps in knowledge and in exploring individual-level characteristics, unique to a specific population.[18] Among African Americans, qualitative research has been used successfully to elucidate factors relating to glucose control, including family support, problem solving, and fatalism.[19–26] However, no prior study has employed qualitative methods to compare barriers to glucose control across race groups.

To identify potential targets for intervention, we performed a qualitative study of African American and White veterans with diabetes. Our objective was to identify barriers to good glucose control among African American veterans with poorly controlled diabetes to understand how these barriers differ from those faced by African Americans with good glucose control and Whites with both poor and good glucose control.

## Methods

### Participants

We identified potential participants by using Philadelphia VA Medical Center (PVAMC) administrative databases, identifying veterans with a diagnosis code consistent with diabetes and a pharmacy code for a hypoglycemic medication within the past year. We then reviewed laboratory data to determine glucose control. Good control was defined as having a glycosylated hemoglobin (HbA1C) level $\leq$7% on 2 occasions 9 months apart during the last 18 months. Poor control was defined as HbA1C level $\geq$ 9% on 2 occasions during the last 18 months. Invitations to participate in the study were sent by mail and followed with a

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telephone call to a random sample of potential participants, stratified by race and HbA1C status. Patients were excluded if they had labile control (HbA1cs 7%–9%), if they developed diabetes before the age of 30, were not African American or White, or were not capable of giving informed consent.

Each group discussion included only one type of patient: poorly controlled African Americans, well controlled African Americans, poorly controlled Whites and well controlled Whites. We attempted to hold two groups discussion for each patient type with 8–10 participants in each group but had difficulty filling the groups with poorly controlled Whites. In total we enrolled 54 participants: poorly controlled African Americans (group 1 n=9 group 2 n=8), well controlled African Americans (group 1 $n$=8 group 2 $n$=8), poorly controlled whites (group 1 $n$=1 group 2 $n$=3) and well controlled whites (group 1 $n$=10 group 2 $n$=7). All participants were compensated $20 after participating. The study was approved by the PVAMC institutional review board, and all participants provided informed consent.

## Data Collection

Group sessions began with a statement that the goal of the discussion was to ''identify factors that help promote or hinder blood glucose control.'' A modified nominal group technique was used to generate ideas and promote discussion.[27,28] All participants were asked to write down 2 or 3 factors or conditions which they perceive ''make it easy'' for them to keep their blood sugar in control. Participants were then asked to share the most important items from their lists, and the moderator encouraged discussion on each topic. Discussion continued until no new ideas were elicited. This process was repeated for factors that ''make it hard'' to keep their blood sugar in the desired range.

The moderator then led a structured discussion on the basis of the domains of a conceptual model of disparities in glucose control that was developed for this study.[29] Participants were asked to discuss the importance of self-care practices (medication adherence, exercise, diet, home blood sugar monitoring), the role of family and friends (how they influence diet, medication adherence, and mood), the role of their neighborhood (food availability, places to exercise, street safety, their neighbors), the importance of psychosocial characteristics (mood, stress, knowledge, ability to establish new healthy habits), health care (access, patient-provider relationship, trust, respect, health system organization), and the influence of socioeconomic characteristics (education, employment, money) in their ability to control blood sugar.

Sessions were conducted by a moderator and were attended by at least 1 of 3 other researchers who observed the sessions and took notes. All sessions were recorded and transcribed verbatim. To ensure that all participants were comfortable talking freely, no personal or demographic information was collected, and only first names were used in the discussions.

## Analysis

We used constant comparison methods to generate a working coding scheme based on the conceptual model's domains and refined in accordance with the content of the first transcript. Using the working coding scheme, we independently coded the first 2 transcripts and revised the scheme until no new themes were identified. The scheme consisted of 88 total codes divided into 7 domains: self-care, family/friends, neighborhood, psychosocial influences, health care, socioeconomic status, and other. Codes were designated as spontaneous or prompted, positive, or negative.

We independently applied the final coding scheme to all transcripts, using consensus to resolve discrepancies. If a statement addressed multiple themes, it could receive multiple different codes, while repetitive statements by a single person were coded only once. Codes were enumerated by using NVivo software (QSR International, Cambridge, Mass). The analysis focused on comparisons between groups; we looked for thematic differences and compared the relative importance placed on themes by each group, particularly African Americans with poor glucose control. Finally we used a $\chi^2$ test to determine if the percentage of codes in any particular domain cited by poorly controlled African Americans was significantly different from the percentage cited by any other group.

# RESULTS

## Overall Trends

Of the 54 participants, 60% were African American and all but 1 were men. There were 995 total coding references across the 8 transcripts. All groups endorsed each of the model's domains, and self-care, psychosocial factors, and health care were the most frequently referenced of the domains and accounted for 73% of all codes (Table 1). Positive self-care practices were among the most commonly endorsed domains among poorly controlled African Americans (19.4%), well-controlled African Americans (24.7%), and well-controlled Whites (21.8%), and difficulty with self-care was mentioned more often by poorly controlled African Americans (17.4%) and poorly controlled Whites (18.0%). Positive psychosocial factors were frequently reported as

**Table 1. Rate of comments among 54 African American and White veterans with type 2 diabetes who participated in focus groups on barriers and facilitators to glucose control**

| | | African American | | White | |
|---|---|---|---|---|---|
| | **All** | **Poor Glucose Control** | **Good Glucose Control** | **Poor Glucose Control** | **Good Glucose Control** |
| Total codes, *n* | 995 | 304 | 247 | 150 | 294 |
| Total codes, % | | | | | |
| Self-care | 32.8 | 36.8 | 34.0 | 26.7* | 30.6 |
| Family/friends | 10.9 | 13.2 | 10.1 | 12.0 | 8.5 |
| Neighborhood | 6.6 | 6.2 | 5.2 | 8.0 | 7.4 |
| Psychosocial | 21.8 | 22.1 | 22.2 | 22.0 | 21.1 |
| Health care | 18.6 | 11.9 | 20.7* | 21.3* | 22.5* |
| Socioeconomic status | 5.4 | 4.6 | 3.6 | 8.0 | 6.5 |
| Other | 3.9 | 5.3 | 4.0 | 2.0 | 3.4 |
| Positive codes, % | | | | | |
| Self-care | 19.8 | 19.4 | 24.7 | 8.7* | 21.8 |
| Family/friends | 7.0 | 7.9 | 7.3 | 9.3 | 4.8 |
| Neighborhood | 3.0 | 1.6 | 2.0 | 6.0* | 3.7 |
| Psychosocial | 11.3 | 6.3 | 18.6* | 4.7 | 13.6* |
| Health care | 13.4 | 4.3 | 16.6* | 18.0* | 17.7* |
| Socioeconomic status | 3.9 | 1.6 | 3.2 | 7.3* | 5.1* |
| Other | .2 | 0 | .4 | 0 | .3 |
| Negative codes, % | | | | | |
| Self-care | 13.0 | 17.4 | 9.3* | 18.0 | 8.8* |
| Family/friends | 3.8 | 5.3 | 2.8 | 2.7 | 3.7 |
| Neighborhood | 3.6 | 4.6 | 3.2 | 2.0 | 3.7 |
| Psychosocial | 10.6 | 15.8 | 3.6* | 17.3 | 7.5* |
| Health care | 5.2 | 7.6 | 4.1 | 3.3 | 4.8 |
| Socioeconomic status | 1.5 | 3.0 | .4* | .7 | 1.4 |
| Other | 3.7 | 5.3 | 3.6 | 2.0 | 3.1 |

* $\chi^2$ *P* value $< .05$ compared with African Americans with poor glucose control.

promoting glucose control among well-controlled groups and as interfering with control among poorly controlled groups. Positive healthcare experiences were also common, except among poorly controlled African Americans (4.3%). These observations were supported by $\chi^2$ tests (Table 1).

The following discussion primarily focuses on self-care, psychosocial factors, and health care, since these domains were the most frequently endorsed by all groups and because health care was the domain for which poorly controlled African Americans differed from all other groups.

## Self-care

Self-care was discussed by all groups as important for glucose control (Table 2). Poorly controlled African Americans endorsed the importance of healthy behaviors, including following a diet, exercising, and taking medication regularly; however, they just as frequently cited difficulty with dietary issues, both following a diabetic diet and eating at regular intervals. Representative statements included, "I'm just a mess. I don't count at all. I eat too much"; "Yeah, but being me, if I decide I'm going to eat that cake that they cooked, I'm going to get it"; and "Sometimes you get to go through a day when you do everything on time, now, the next day you wake up you may not feel hungry. So you say 'I know I'm supposed to eat between 7 and 8. I'm fine now so now I want to eat around 12.'"

The balance in discussion between the positive and negative influences of self-care among poorly controlled African Americans was more similar to the discussion among the well-controlled groups than among the poorly controlled Whites, who did not frequently endorse healthy self-care practices.

## Psychosocial Factors

The well-controlled groups had high rates of positive codes, while the poorly controlled groups had high rates of negative codes. Poorly controlled African Americans frequently discussed having trouble managing stress and depression/mood and struggling with temptation. Representative statements included, "Stress causes you to have a lack of control"; "Well, your mood swings—when I get upset, then I get more withdrawn, and I will eat more and just exercise less. I just kick back in a comfortable chair, get some junk food I'm not supposed to have—get some pretzels or potato chips"; and "When I

**Table 2. Rates of common self-care, psychosocial, and healthcare codes among 54 African American and White veterans with type 2 diabetes who participated in focus groups on barriers and facilitators to glucose control**

| | | African American | | White | |
|---|---|---|---|---|---|
| | All | Poor Glucose Control | Good Glucose Control | Poor Glucose Control | Good Glucose Control |
| Self-care | | | | | |
| Positive self-care codes, % | | | | | |
| Follow diet | 14.2 | 9.2 | 16.7 | 5.0 | 22.2 |
| Exercise regularly | 10.5 | 11.9 | 13.1 | 2.5 | 10.0 |
| Take medications regularly | 12.4 | 11.9 | 14.3 | 12.5 | 11.1 |
| Negative self-care codes, % | | | | | |
| Have trouble following diet | 17.3 | 20.2 | 9.5 | 32.5 | 14.4 |
| Have trouble eating at regular intervals | 5.9 | 10.1 | 4.8 | 2.5 | 3.3 |
| Do not take medications regularly | 4.3 | 5.5 | 1.2 | 12.5 | 2.2 |
| Psychosocial characteristics | | | | | |
| Positive psychosocial codes, % | | | | | |
| Have skills/experience/knowledge | 12.4 | 4.5 | 23.6 | 6.1 | 14.5 |
| Desire to avoid diabetes complications | 12.0 | 1.5 | 14.6 | 6.1 | 24.2 |
| Control old habits/establish new habits | 8.3 | 4.5 | 14.6 | 0 | 11.3 |
| Negative psychosocial codes, % | | | | | |
| Unable to handle stress | 7.4 | 16.4 | 0 | 3.0 | 6.5 |
| Difficulty with depression/mood | 11.1 | 16.4 | 7.3 | 12.1 | 8.1 |
| Unable to avoid temptation | 10.6 | 14.9 | 0 | 27.3 | 6.5 |
| Health care | | | | | |
| Positive healthcare codes, % | | | | | |
| Good relationship with provider | 30.1 | 22.2 | 41.2 | 27.3 | 27.3 |
| Have access to care | 10.2 | 2.8 | 15.7 | 9.1 | 10.6 |
| Given general support/diabetes education | 7.5 | 0 | 5.9 | 15.2 | 9.1 |
| Negative healthcare codes, % | | | | | |
| Poor relationship with provider | 8.6 | 19.4 | 9.8 | 9.1 | 1.5 |
| Do not have access to care | 9.1 | 25.0 | 7.8 | 3.0 | 4.6 |
| Travel a barrier to care | 3.8 | 0 | 2.0 | 3.0 | 7.6 |

get aggravated, bad, violent like that, I don't care what I eat." These quotations also display directionality; most patients noted that negative psychosocial factors influence self-care practices (in particular diet), which in turn affect glucose control. Few participants felt their mood directly affected their glucose control.

Poorly controlled Whites were similar to poorly controlled African Americans in struggling with temptation and depression; however, they put more emphasis on their lack of knowledge and skills and less on their ability to handle stress. The well-controlled groups were similar and endorsed the positive influence of psychosocial characteristics, specifically being motivated by a desire to avoid diabetes complications.

## Health Care

All groups, except for poorly controlled African Americans, frequently noted that health care helped control glucose. Poorly controlled African Americans had the lowest percentage of overall codes relating to health care and the highest percentage of negative health care codes. When poorly controlled African Americans mentioned health care, they noted both good and poor relationships with their providers. The following is an example of a comment coded as referencing a poor relationship: "I'm pretty sure he doesn't know that much about me. He's always pushing me off on somebody else."

Poorly controlled African Americans were also more likely to cite having limited access to care, unrelated to travel. One participant observed, "It's been 2 months ago. I've been trying. I've been calling. I can't get no help—I don't even know when I'm gonna get my next blood drawn. You can't get no heads or tails." Although all groups noted lengthy wait times in the PVAMC clinics, all groups except for poorly controlled African Americans believed that long wait times were not a problem. A well-controlled White patient noted, "When I come down here, I figure I'm gonna be here for the whole day anyway, so it don't matter." Neither African American group referenced trusting their provider, while both White groups made these comments.

## Additional Categories

Previously hypothesized mechanisms for disparities in glucose control

include the influence of family and friends, neighborhood, socioeconomic status, and factors relating to other existing medical conditions.[15,16,25] However, among this sample of veterans, these factors, although endorsed, were not voluntarily reported as having a large effect on glucose control. When endorsed, these factors were, like the psychosocial factors, noted primarily to influence individual ability to carry out effective self-care practices: ''She [my wife] tries to give me the right food to eat'' (poorly controlled African American); ''I want to take the other side of the coin here and say my wife gets on my nerves and makes me eat'' (well controlled White); and ''They took all the markets out [of my neighborhood]. You want fried food, you can get that anywhere in my neighborhood'' (well controlled African American).

Additionally, when the subject was raised by the moderator, many participants felt that without the VHA, it would be financially difficult to manage their glucose and that the economic cost of managing their diabetes would greatly reduce their quality of life: ''Cause I got to pay rent, gas, electric, and all this other stuff to pay, and if I didn't have this condition I'd be okay. But if I had it and didn't have the VA—you know?'' (well-controlled African American); ''Yes it does help me. It helps me good because if I wasn't a vet, my medicine would kill me'' (well-controlled African American).

## DISCUSSION

The results show clear differences between poorly controlled African Americans and other groups. While poorly controlled African Americans endorsed healthy self-care behaviors, they lacked the skills to follow through, citing stress, depression/mood, and temptation as interfering with their ability to adhere to a diabetic diet and manage other self-care practices important to good glucose control. Further, poorly controlled African Americans were the least likely to cite positive healthcare experiences and the most likely to cite negative healthcare experiences as affecting their glucose control. All who use the VHA have access to primary care providers,[30] but poorly controlled African Americans were the only participants to note limited access, poor relationships with providers, and problematic wait times at the clinic.

Racial disparities in diabetes outcomes are well established.[2–6] While community interventions can address behaviors in the context in which they occur, healthcare systems often serve geographically dispersed patient populations. Much remains to be gained by identifying healthcare system approaches to eliminating disparities and improving care for African Americans with diabetes. In fact, in June of 2007, the National Institute of Diabetes and Digestive and Kidney Diseases put out a request for applications that called for studies to reduce disparities in diabetes outcomes in the healthcare system.[31] This study identifies several targets pertinent to African Americans with poorly controlled diabetes. Interventions designed for low-income and minority populations often focus on improving education and knowledge base; however, these results show that knowledge is not sufficient as a tool for glucose control and does not seem to motivate African Americans with poorly controlled diabetes. Interventions that target psychosocial factors that affect self-care, including the provision of skills to help manage stress and depression and to avoid temptation, may be more successful.

There are many models of behavior change. Given that the veterans in this study identified personal emotional states as being more important than family or environment, behavior modification interventions may be particularly pertinent. In obesity treatment and prevention interventions, behavior modification frequently relies on operant conditioning and social learning theory.[32] Tailoring an intervention to the specific needs of each person may further enhance effectiveness of interventions aimed at behavior change in minority populations.[33]

Motivational interviewing may encourage the typical aims of behavioral change interventions and make behavior change personally salient to each participant. Motivational interviewing is a technique aimed at enhancing intrinsic motivation to change by exploring and resolving ambivalence.[34] Through one-on-one sessions the motivational interviewer engages in reflective listening, providing objective feedback, supporting self-efficacy and offering optimism for action.[35] Motivational interviewing has been used extensively to help treat addiction disorders,[36] but more recently has been used in chronic disease management[37] and dietary behavioral change.[38]

Our results also identified healthcare barriers to good control, even though patients from each group saw physicians in the same primary care clinics. African Americans with good diabetes control did not have the same negative experiences, which suggests that difficulties with access and patient/provider communication may be due to differences in expectations or reaction to the experience and not due to systematic differences in treatment for racial minorities. Programs that increase access to providers and communications around diabetes may specifically address many of these issues and are being implemented throughout the VHA for all veterans with poor diabetes control. These programs include telemedicine programs, diabetes clinics, and group appointments. To date, early evidence from these programs show improved outcomes for veterans with poorly controlled diabetes, and these programs may be particularly beneficial to minority patients.[39–41]

This study relies on comments from a small number of veterans from 1 VHA

*…poorly controlled African Americans were the least likely to cite positive healthcare experiences and the most likely to cite negative healthcare experiences as affecting their glucose control.*

medical center. The results need to be verified with a larger cohort of patients and by using a structured questionnaire so that more robust statistical comparisons can be made and potential confounders adjusted for. Finally, we did not collect data regarding socioeconomic status, diabetes duration, or other clinical co-morbidities, which may have influenced participant's perceptions of their diabetes control. However, racial disparities in glucose control persist despite widespread quality improvement initiatives, and this study identifies potential targets for interventions intended for African Americans with poor glucose control.

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