Published in final edited form as:

J Diabetes Complications. 2017 January ; 31(1): 175–179. doi:10.1016/j.jdiacomp.2016.09.012.

The Association of Cumulative Discrimination on Quality of Care, Patient-Centered Care, and Dissatisfaction with Care in Adults with Type 2 Diabetes

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Abstract

Aims—Discrimination is linked to negative health outcomes, but little research has investigated how the cumulative effect of discrimination impacts perceptions of care. This study investigated the influence of cumulative perceived discrimination on quality of care, patient-centeredness, and dissatisfaction with care in adults with type 2 diabetes.

Methods—602 patients from two primary care clinics in Charleston SC. Linear regression models assessed associations between perceived discrimination and quality of care, patient-centered care, and dissatisfaction with care. The models control for race, site, age, gender, marital status, duration of diabetes, education, hours worked weekly, income, and health status.

Results—The mean age was 61.5 years, with 66.3% non-Hispanic blacks, and 41.9% earning less than \$20,000 annually. In final adjusted analyses, lower patient-centered care was associated with a higher discrimination score ($\beta = -0.28$; $p = 0.006$), reporting at least 1 category of discrimination ($\beta = -1.47$; $p = 0.002$), and reporting at least 2 categories of discrimination ($\beta = -1.34$; $p = 0.004$). Dissatisfaction with care was associated with at least 2 categories of discrimination ($\beta = 0.45$; $p = 0.002$). No significant associations were seen with quality of care indicators.

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Author Contributions: LEE obtained funding for the study. RJW and LEE acquired the data. DMC, JSW, RJW, and LEE designed the study, analyzed and interpreted the data, drafted the article and critically revised the manuscript for important intellectual content. All authors approved the final manuscript.

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Conclusions—Increased cumulative discrimination was associated with decreased feeling of patient-centeredness and increased dissatisfaction with care. However, these perceptions of discrimination were not significantly associated with quality indicators.

Keywords

cumulative discrimination; quality of care; patient-centered care; dissatisfaction with care; adults; diabetes

1. INTRODUCTION

Type 2 diabetes mellitus (T2DM) affects more than 29 million Americans, over 9% of the U.S. population.¹ Diabetes is associated with increased mortality and negative health outcomes in adults, such as heart disease, stroke, kidney failure, non-traumatic lower limb amputations, and blindness.¹ T2DM is the seventh leading cause of death in the United States and accounts for an annual societal cost of an estimated \$245 billion.^{1,2} Although the incidence of T2DM has decreased from over 1.7 million newly diagnosed cases per year to approximately 1.4 million cases per year over the last five years in the United States,³ ethnic minorities continue to develop T2DM at higher rates, experience a disproportionately higher disease burden and mortality rate from diabetes, and demonstrate disproportionately poorer glycemic control compared to their white counterparts.^{4–6}

One possible driver of the health disparities observed in diabetes is perceived discrimination acting as a stressor with downstream effects in disease processes such as negative diabetes outcomes and increased complications.⁷ Perceived discrimination has been defined as the belief that negative attitudes, judgment, or unfair treatment of members of a group cause stress due to a feeling of unpredictability.^{8,9} This unpredictability could negatively impact self-image, contribute to limiting socioeconomic status, and negatively affect health overall.^{8,10} It has been demonstrated that patients reporting perceived discrimination experience diminished well-being, increased depressive symptoms, higher continuous blood glucose levels, and decreased blood pressure control.^{8,10–13} In patients with diabetes, research has shown that perceived discrimination is associated with decreased reported quality of life,¹⁴ glycemic control,¹⁵ and self-care behaviors.¹⁶ Higher stress has shown a similar effect in patients with diabetes, and is associated with increased hemoglobin A1c and decreased self-care activities, which illustrates a theoretical pathway linking discrimination, stress, and poor outcomes.¹⁷ While much of the work on perceived discrimination has focused on race and ethnicity, discrimination can be based on sex, gender, language, sexual orientation and education level as well.^{18,19} Therefore, it is important to understand how the larger construct of discrimination is related to health outcomes.

It has been hypothesized that perceived discrimination might adversely affect health outcomes, which can be evaluated by patient-centeredness and dissatisfaction in care.⁸ Evidence suggests perceived discrimination is associated with patient-centered care by increasing psychological and physiological stress and influencing health care utilization, patient-provider relationships, trust, decision-making, communication, and satisfaction with care.^{8,20–27} Patient-reported experience measures that capture patient-centered care engage

patients and provide insight into health care quality.²⁸ An increased perception of patient-centered care is often associated with better outcomes in T2DM.²⁹ Patients who chose their primary care physician and report an easier time obtaining an appointment reported less dissatisfaction and increased medication adherence compared to those who had a physician assigned to them or had difficulty obtaining an appointment.^{30–32} In terms of patient factors influencing dissatisfaction, those who reported poor health, failure to engage in self-management activities, inadequate patient education, or difficulty accessing diabetes care were more likely to report dissatisfaction.³³

Prior studies have not elucidated how the cumulative effect of discrimination, defined as overall magnitude and types experienced, impacts perceptions of care. This cross-sectional study evaluated a large sample of non-Hispanic Black and non-Hispanic White adults diagnosed with T2DM to investigate the influence of cumulative perceived discrimination on quality of care, patient-centeredness, and dissatisfaction in care. We hypothesize that increased cumulative perceived discrimination is negatively associated with patient-reported patient-centeredness and dissatisfaction in care, but that quality indicators of in-office tests including glycosylated hemoglobin A1c (A1c), cholesterol, diabetes education, and foot exams remain unaffected.

2. SUBJECTS, MATERIALS AND METHODS

2.1. Sample

Institutional review board approval was completed prior to any procedures beginning. A total of 602 adults with T2DM were recruited from two primary care clinics in the southeastern United States. Eligible adults (age 18+) with a diagnosis of T2DM in their medical record and able to communicate in English were sent letters of invitation or approached in the clinic waiting room. Research coordinators provided a detailed explanation of the study, consented participants, and oversaw completion of validated questionnaires. Patients were ineligible if they were determined to be cognitively impaired through interaction or chart documentation of significant dementia or active psychosis. Validated questionnaires capturing social determinants of health factors along with demographic and self-care information were included based on a modified version of the conceptual framework by Brown et al. relating social determinants of health to diabetes processes and outcomes.³⁴ Important covariates were included based on Pascoe and Richman's hypothesized pathways between discrimination and health outcomes.⁸

2.2. Demographic and Health Status Information

Previously validated questions from the 2002 National Health Interview Survey were used to collect demographic and health status information.³⁵ Demographics included were age, race (categorized as non-Hispanic white or non-Hispanic black), gender, marital status, number of hours worked, household income, and number of years of education. Years of diagnosis was used as duration of diabetes. Health status was assessed using a validated question asking self-report of a participant's health. Based on the 2010 Medical Expenditure Panel Survey Household Component, response options included excellent, very good, good, fair, and poor.³⁶

2.3. Perceived Discrimination

Perceived discrimination was assessed using 4 items from the Diabetes Study of Northern California (DISTANCE) survey.³⁷ Participants reported how often they were made to feel inferior in the past 12 months because of their (1) race/ethnicity, (2) education level, (3) gender, and (4) language. Response options were never, sometimes, usually, and often. Two separate measures of discrimination were created from these responses for each respondent. The first measure cumulatively added responses so higher numbers indicated higher amounts of experience with discrimination regardless of type. The second measure counted the number of types of discrimination a participant experienced, with categories of never, at least 1 of the 4 types, and 2 or more of the 4 types.

2.4. Quality of Care

Previously validated items from the 2010 Medical Expenditure Panel Survey were used to capture quality of care measures documenting the frequency of standard diabetes care. Questions included whether participants had an HbA1c measure taken in the past year, whether they had their feet examined by their physician in the past year, whether they had a cholesterol test in the past year, and whether they had diabetes education in the past year.³⁶

2.5. Patient-Centered Care

Patient-Centered Care was measured using previously validated questions from the 2010 Medical Expenditure Panel Survey Household Component.³⁶ Questions included whether the physician gives enough time to explain reasons for your visit, whether they receive questions that are understandable, whether the physician takes time to answer questions, whether the physician asked about family or living situations that affect health, whether they received as much medical information as they wanted, whether they had questions about their care they wanted to discuss but did not, and whether they are as involved in decisions about their care as they want to be. Answer could be 'always', 'usually', 'sometimes', and 'never'.³⁶

2.6. Dissatisfaction with Care

A previously validated question from the 2010 Medical Expenditure Panel Survey Household Component was also used to assess dissatisfaction with care. Participants were asked if they agreed or disagreed with the statement 'Looking over the past 12 months, I can say that I am very dissatisfied with the care received from my primary care provider'. Response options ranged from 'strongly agree' to 'strongly disagree'.³⁶

2.7. Statistical Analysis

Multiple linear and logistic models were run using Stata version 13 to assess the independent association between discrimination and quality of care, patient-centered care, and dissatisfaction with care. The primary independent variable was discrimination, as measured by one of two different measures (cumulative discrimination or count of discrimination types). The primary dependent variable for logistic regressions were the individual measures of quality of care (HbA1c measure, foot exam, cholesterol measure, and diabetes education). The primary dependent variable for linear regressions were patient-

centered care and dissatisfaction with care. After unadjusted analyses were completed, each model was adjusted for age, race, gender, site, marital status, education, employment, income, diabetes duration, and health status. A two-tailed alpha of 0.05 was used to determine significance.

3. RESULTS

Sample demographics for the 602 non-Hispanic black and non-Hispanic white participants are presented in Table 1. The mean age was 61.5 and average duration of diabetes was 12.3 years. The majority of the sample was male (61.3%), black (66.3%), and had fair to good health status. Table 2 provides descriptive information on discrimination and outcome variables. While 72.3% of the sample never experienced discrimination as a result of race, gender, education, or language, 12.5% experienced at least one of the four, and 15.2% experienced two or more categories of discrimination.

Table 3 shows the unadjusted relationships between discrimination and patient-centered care, dissatisfaction with care, and quality of care measures. Using the discrimination score, discrimination was significantly associated with lower patient-centered care (β -coefficient: -0.47 , $p<0.0001$) and more dissatisfaction with care (0.11 , $p<0.0001$). Using a count of the number of categories an individual experienced discrimination, those who experienced one discrimination category were significantly associated with lower patient-centered care (-1.73 , $p=0.001$), whereas those who experienced two or more categories was significantly associated with lower patient-centered care (-1.96 , $p<0.0001$), more dissatisfaction with care (0.62 , $p<0.0001$), and were 48% less likely to have an A1c measure in the past year (OR: 0.52 , $p<0.05$) than those who reported never experiencing discrimination.

Once models were adjusted for race, gender, education, income, age, site, marital status, duration of diabetes, employment, and health status, no significant associations were seen with reported quality of care measures. Significant associations remained, however, for patient-centered care and dissatisfaction with care (Table 4). Lower patient-centered care was significantly associated with a higher discrimination score (-0.28 , $p=0.006$), reporting at least 1 category of discrimination (-1.47 , $p=0.002$), and reporting 2 or more categories of discrimination (-1.34 , $p=0.004$). More dissatisfaction with care was significantly associated with reporting 2 or more categories of discrimination when compared to those who reported none (0.45 , $p=0.002$).

4. DISCUSSION

Based on a sample of 602 patients with type 2 diabetes, this study showed that discrimination is significantly associated with patient-centered care and dissatisfaction with care; however, it is not associated with quality of care measures once adjusted for demographic and health status covariates. Lower patient-centered care was significantly associated with higher levels of discrimination regardless of whether it was measured as a continuous score, taking frequency of experiences into account, or as a categorical variable, noting how many types of discrimination an individual has experienced over the past month. More dissatisfaction with care was associated with discrimination in those who reported

experiencing more than one category of discrimination (based on race, education, gender, or language), but was not associated with a continuous score measuring frequency of experiences. These findings suggest discrimination is a factor that can negatively impact health by heightening undesirable perceptions of care and increase vulnerability for physiological responses that ultimately create poorer clinical outcomes.

Our findings are supported by evidence from previous studies that suggest discrimination has a negative impact on outcomes in patients with type 2 diabetes.^{11, 14–17, 20–21} In this sample, discrimination was associated with lower patient-centered care and higher levels of dissatisfaction with care. In a study to investigate the effects of perceived discrimination on diabetes management, discrimination was found to inversely influence health care utilization and patient-provider relationships.²⁰ Additionally, patients were less likely to follow prescribed recommendations by providers such as filling pharmacy prescriptions and completing medical tests and had lower levels of satisfaction.²⁰ This was particularly so for racial and ethnic minority groups.²⁰ An additional finding in this sample was the result that more dissatisfaction with care was associated with experiences of more than one category of discrimination. This is similar to the findings of Piette et al. who found that patients who reported at least one type of discrimination reported experiences with other types of discrimination, and these patients also reported less satisfaction with their provider interactions compared to patients who had not experienced any forms of discrimination.²¹ This suggests that efforts should be made to reduce perceptions of discrimination in order to improve patient-centered care and satisfaction with care.

Perceived discrimination affects health through psychological and physiological stress responses,⁸ which reflexively affects attitudes, health behaviors, and outcomes. Perceived discrimination is characterized as a social stressor that causes a physiological response, resulting in higher blood pressure, increased heart rate, and elevated cortisol levels, the culminating effect of which can have a deleterious impact on overall health long-term.⁸ Perceived discrimination is also tied to trust, often serving as a barrier to adherence, diabetes management,²⁰ and receipt of preventive services such as A1c testing, cholesterol checks, eye examinations, and influenza immunizations^{8,22} when perceived or experienced by individuals. Furthermore, perceptions of discrimination can also affect patient experiences, influence patient-provider encounters, and serve as a determinant for satisfaction with care.^{23,24} Given the pervasive and widespread manner in which perceptions of discrimination can influence health outcomes and experiences, it is important to have appropriate mechanisms in place to diffuse its intrinsic and extrinsic effects. Patient-centered care is such a mechanism and is an important tool designed to provide respectful and preferential care that aligns with personal values in decision making.²⁵ Patient-centeredness encourages patient-provider partnerships, effective communication, and health promotion as a means of improving patient satisfaction and medical outcomes.²⁶ Satisfaction results when an individual's experiences meet their expectations.²⁷ If employed appropriately, patient-centeredness can serve as a mediator between perceived discrimination and patient satisfaction, when the goal is to achieve positive health outcomes.

This study has limitations that should be acknowledged. First, data was collected in a cross-sectional manner; therefore, causal associations cannot be inferred. Second, this study was

conducted with participants residing in the southeastern United States and may not be generalizable to other regions within the country. Additional research should be conducted elsewhere to validate these findings. Third, because discrimination is a measure based on perception and self-report, actual events influencing the participants' perspectives cannot be verified. Current research suggests, however, that perceived discrimination is a source of stress, which negates the need for verification.⁸ Finally, we did not control for potential psychosocial (i.e., depression, diabetes distress, and social support) or behavioral (i.e., self-management practices) factors that may have influenced the results.

In conclusion, the results of our study are important and provide new information about the association between perceived discrimination and multiple outcomes. In our sample of adults with type 2 diabetes, discrimination was significantly associated with patient-centered care and dissatisfaction with care, but not with quality of care indicators after adjusting for multiple covariates. Lower patient-centered care was associated with higher perceptions of discrimination, despite experiences of continuous discrimination or discrimination experienced as different types. Further, dissatisfaction with care was associated with discrimination, particularly when experienced in various forms. These findings reinforce a need for patient-provider communication that is inclusive and eliminates perceptions of discrimination and bias, increases patient-centeredness, and improves overall clinical care. Additionally, these results stress the need for more research investigating the relationship between discrimination and outcomes in adults with type 2 diabetes, as perceived discrimination manifests as a significant barrier to effective disease management. Finally, based on these findings, health systems must be transparent in the development, dissemination, and reinforcement of policies and practices used to combat discriminatory processes and improve satisfaction within their respective organizations.

Acknowledgments

Funding Source: This study was supported by Grant K24DK093699 from The National Institute of Diabetes and Digestive and Kidney Disease (PI: Leonard Egede).

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Table 1

Sample demographic characteristics (n=602)

	% or mean and standard deviation
Age (years)	61.5 ± 10.9
Education (years)	13.4 ± 2.9
Employment (hours worked per week)	12.3 ± 18.9
Diabetes duration (years)	12.3 ± 9.2
<i>Health status</i>	
Excellent	1.3
Very good	12
Good	38.9
Fair	38.2
Poor	9.6
<i>Gender</i>	
Women	38.7
Men	61.3
<i>Race/ethnicity</i>	
Black	66.3
White	33.7
<i>Marital status</i>	
Never married	11.3
Married	49.3
Separated/divorced	28.3
Widowed	11.1
<i>Site of care</i>	
Academic Medical Center	51.8
VAMC	48.2
<i>Annual income level</i>	
<\$10,000	20.1
\$10,000–14,999	11.5
\$15,000–19,999	10.3
\$20,000–24,999	10.1
\$25,000–34,999	14.8
\$35,000–49,999	13.4
\$50,000–74,999	10.3
\$75,000+	9.5

Table 2

Descriptive characteristics of outcome variables

	%
Discrimination	
Never for all 4 categories	72.3
At least 1 category	12.5
2 or more categories	15.2
A1c in last year	
Yes	13.9
No	86.1
Foot exam in last year	
Yes	80.3
No	19.7
Cholesterol checked in last year	
Yes	94.1
No	5.9
Diabetes education in last year	
Yes	65.6
No	34.4

Unadjusted linear and logistic models for the relationship between discrimination and patient-centered care, dissatisfaction with care, and quality of care

Table 3

	Patient-centered Care (β -coefficient)	Dissatisfaction with Care (β -coefficient)	A1c in past year (Odds Ratio)	Foot exam (Odds Ratio)	Cholesterol checked in past year (Odds Ratio)	Diabetes education in past year (Odds Ratio)
Discrimination Score	-0.47 ***	0.11 ***	--	--	--	--
Discrimination Categories						
Never (ref)	--	--	--	--	--	--
At least one	-1.73 **	-0.11	0.95	0.95	1.35	1.28
2 or more	-1.96 ***	0.62 ***	0.52 *	0.86	1.73	1.18

p<0.05*, p<0.01 **, p<0.001 ***.
Reference group is no discrimination categories.

Table 4

Fully Adjusted Linear Regression Models for Relationships between Discrimination, Patient-Centered Care, and Dissatisfaction with Care

	Patient-Centered Care	Dissatisfaction with Care
Discrimination Score	−0.28 (−0.49, −0.08) **	0.06 (−0.00, 0.12)
Discrimination Categories		
None (ref)	--	--
At least one	−1.48 (−2.42, −0.54) **	−0.17 (−0.45, −0.12)
2 or more	−1.34 (−2.26, −0.43) **	0.45 (0.17, 0.72) **

Significant at p<0.05*, p<0.01**, p<0.001***

Reference group is no discrimination categories

Models adjusted for race, gender, education, income, site, age, marital status, duration of diabetes, employment, and health status.