The Link Between Everyday Discrimination, Healthcare Utilization, and Health Status Among a National Sample of Women

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Abstract

Background: Research has not adequately examined the potential negative effects of perceiving routine discrimination on general healthcare utilization or health status, especially among reproductive-aged women. We sought to evaluate the association between everyday discrimination, health service use, and perceived health among a national sample of women in the United States.

Materials and Methods: Data were drawn from the Women's Healthcare Experiences and Preferences survey, a randomly selected, national probability sample of 1078 U.S. women aged 18–55 years. We examined associations between everyday discrimination (*via* a standardized scale) on frequency of health service utilization and perceived general health status using chi-square and multivariable logistic regression modeling.

Results: Compared with women who reported healthcare visits every 3 years or less (reference group), each one-point increase in discrimination score was associated with higher odds of having healthcare visits annually or more often (odds ratio [OR] = 1.36, confidence interval [95% CI] = 1.01–1.83). Additionally, each one-point increase in discrimination score was significantly associated with lower odds of having excellent/very good perceived health (OR = 0.65; 95% CI = 0.54–0.80).

Conclusion: Perceived discrimination was associated with increased exposure to the healthcare setting among this national sample of women. Perceived discrimination was also inversely associated with excellent/very good perceived health status.

Keywords: everyday discrimination, healthcare, health status

Introduction

OVER THE PAST few decades, a growing body of research has examined the impact of perceived discrimination on health status and outcomes. Individual experiences of discrimination have been linked to high blood pressure,[1–3] cigarette smoking,[4] inflammation,[5] atherosclerosis,[6] worse self-assessed physical[7] and mental health,[8] and overall mortality.[9] A commonly cited explanation of how these experiences might potentially lead to negative health outcomes is the biopsychosocial model. Under the biopsychosocial model, experiencing discrimination can cause a chronic physiological stress response, leading to biological and psychological dysfunction (*e.g.*, inflammatory and immune response, increased allostatic load, mental health symptoms), which in turn shapes long-term morbidity.[10,11] This model has been particularly useful in explaining the role of discrimination in chronic disease health disparities, including cardiovascular disease and depression, which disproportionately impact African Americans in the United States.[1–7]

Other research has suggested that perceived discrimination may influence healthcare utilization as another potential pathway to negative health outcomes.[12–14] Several studies have examined the association between discrimination experienced *within the healthcare system* (*i.e.*, provider discrimination) and health service utilization patterns,[4,12,14,15] including delayed medical care seeking[13] and decreased use of preventive health services.[4] Using data from the 2006/07

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adult New Zealand Health Survey ($n = 12,488$), Harris et al.[16] found that racial discrimination in healthcare settings as well as other contexts impacted men and women's healthcare use and experiences as a potential pathway to poor health. In a cross-sectional survey ($n = 11,245$), Crawley et al.[17] found a significant association between reported experience of racism in healthcare settings and lower breast and colorectal cancer screening in women.

A smaller body of research has examined the association between discrimination experienced routinely *outside* of health systems and healthcare utilization. Everyday discrimination is conceptualized as relatively minor, but chronic and fairly common, day-to-day experience of slights and insults.[7,18] In a study by Kessler et al. using a nationally representative sample of U.S. men and women aged 25–74, a majority of respondents (61%) reported experiencing at least one type of day-to-day perceived discrimination.[19] Using data from the Swedish National Survey of Public Health 2004 (a randomly selected sample of 33,328 men and women), Wamala et al. found that everyday discrimination, independent of socioeconomic disadvantage, was inversely associated with seeking necessary medical treatment in the past 3 months, a specific healthcare-seeking behavior.[20] Casagrande et al. used data from a cross-sectional face-to-face survey of the adult population in Baltimore City, a non-nationally representative sample, and showed that individuals who reported more lifetime discrimination experiences reported lower levels of healthcare utilization.[21]

Despite this body of work, evidence gaps remain regarding the impact of everyday discrimination as it may shape patterns of healthcare utilization, especially at the population level and particularly among reproductive-aged women in the United States. Such research is necessary as many groups, including socially disadvantaged women, potentially low-income, unemployed, or uninsured women, may be exposed to multiple unique forms of discrimination (*e.g.*, racism, sexism, classism) and also experience decreased access to healthcare for important preventive services, as well as poorer health outcomes, compared with their advantaged counterparts.[22] Finally, a more robust consideration of discrimination and healthcare in the context of general health status and perceptions of health is needed to better understand how discrimination may concurrently or uniquely impact both health behaviors and outcomes. We sought to evaluate the influence of everyday discrimination on health service utilization and perceived health status among a national probability sample of U.S. women aged 18–55 years. We hypothesized that self-reported experiences of everyday discrimination would be associated with less frequent use of health services and with worse perceived health status.

Materials and Methods

Study design and sample

We used population-based data from the Women's Healthcare Experiences and Preferences Study, which is an Internet-based survey of 1078 U.S. women aged 18–55 years conducted in September 2013. The study design and sample have been described elsewhere.[23] GfK (formally Knowledge Networks, KN, Menlo Park, CA) fielded the survey among their national household random probability panel comprising 50,000 residents aged 13 and older sampled from across all 50 states in the United States. The panel is sampled *via*

random digit dialing telephone and probability-based address mailing methods. GfK uses a sampling frame that includes both listed and unlisted phone numbers and is not limited to current Web users or computer owners. Unique login information is provided for each panelist and responses are deidentified by GfK. Nonspecific incentives are used to encourage complete survey response. The GfK panel and their sampling methods have been described in detail previously.[24] Panelists eligible for inclusion in our study (English-speaking women, ages 18–55) were randomly sampled and recruited to participate *via* an email invitation ($n = 2520$). A total of 1078 women consented and completed the survey (response rate of 43%). Sampling weights were applied to adjust for the complex, stratified sampling design and to bring our sample in line with national demographic benchmarks representative of all 50 states and reflective of the broader U.S. population of reproductive-aged women. This study was approved by the University of Michigan's Institutional Review Board.

The Women's Healthcare Experiences and Preferences survey is a 29-item survey primarily designed to measure women's experiences with and preferences for a variety of types of healthcare.[23] The survey also included items measuring perceived overall health status, health history, and social well-being, including perceived everyday discrimination. Information on women's sociodemographic characteristics was also collected. The average survey completion time was 15 minutes. To ensure readability and comprehension, the survey was pilot tested among 25 GfK participants and revised accordingly before it was administered to the larger sample.

Measures and outcome

For our primary independent variable, we used a short version of the Everyday Discrimination Scale (EDS), the most widely used measure of perceived discrimination in studies of health and well-being. The EDS assesses the frequency of fairly routine covert experiences of unfair treatment.[7] Specifically, women were asked, in their day-to-day life, how often they experienced unfair treatment with the following five distinct events on a six-point Likert scale (never, less than once a year, a few times a year, a few times a month, at least once a week, and almost every day): "you are treated with less courtesy or respect than other people," "you receive poorer service than other people at restaurants or stores," "people act as if they think you are not smart," "people act as if they are afraid of you," and "you are threatened or harassed." We examined discrimination in several ways. We calculated total EDS scores (range 0–25), mean response scores across all items (range 0–5), and mean response scores for each item. In analyses, we use the mean response scores as well as the scores for individual items (*i.e.*, specific discriminatory events).

Our primary outcome was the frequency of healthcare utilization. Women were asked how often, on average, they had seen a healthcare provider in the past 5 years on a seven-point scale ranging from once every 3 months or more frequently to not in the past 5 years. For analyses, we grouped responses into a three-point categorical variable: more than once a year, every 1–2 years, and less than every 3 years.

Our secondary outcome variable of interest was perceived overall health status. Women were asked, in general, how

they would rate their overall health on a five-point scale ranging from excellent to poor. We examined not only the five-point version but also examined perceived health as a binary indicator of excellent or very good health versus good, fair, or poor. We present results using the latter.

Based upon our previous related work on factors associated with healthcare utilization among women in this sample, we examined all sociodemographic factors available in the dataset as covariates: age, race/ethnicity, educational attainment, marital status, income level, employment status, political party affiliation, and type of health insurance.[23,24]

Statistical analysis

We first used descriptive statistics to describe the sample's characteristics. Continuous data were summarized using means and standard deviations; categorical data were summarized using weighted percentages. We then used Pearson's chi-square tests to identify sociodemographic covariates associated with our primary variables: perceived discrimination, perceived overall health status, and healthcare utilization. Last, we performed logistic regression models to further examine the influence of perceived discrimination on healthcare utilization and health status while controlling for sociodemographic covariates. Similar analysis was also performed to assess the individual effect of the five discriminatory experiences included in the EDS. For all analyses, we applied sampling weights and employed weighted statistical commands in STATA 12.0 (StataCorp LC, College Station, Texas). Results are presented as weighted means and proportions and adjusted point estimates from regression models.

Results

Sample characteristics (N = 1078)

A description of the sample and key study variables is presented in Table 1. The mean age of women was 39 years. The majority identified as white (61%), while 14% identified as black and 17% as Hispanic. College educational attainment was common (64%). Two-thirds of women were employed (62%) and 41% had incomes >$75k. Over two-thirds of women had private, commercial, or employer-based health insurance (70%); 12% had Medicaid/Medicare and 18% were uninsured.

Women's discrimination scores across sociodemographic variables are presented in Table 2. Women's mean discrimination score was 1.98 ± 1.16 (range 0–5). In unadjusted bivariate analyses, sociodemographic factors associated with perceived discrimination included level of educational attainment ($p = 0.007$), annual income ($p < 0.001$), insurance type ($p < 0.001$), political affiliation ($p = 0.009$), and marital status ($p < 0.001$) (Table 2).

Nearly half (45%) of women reported healthcare visits more often than annually, 39% reported visits every 1–2 years, and 16% reported visits every 3 years or less. Women's age ($p = 0.016$), educational attainment ($p < 0.001$), income level ($p = 0.002$), employment status (0.046), political party affiliation (0.033), and type of health insurance ($p < 0.001$) were associated with their use of healthcare services in unadjusted analyses (Table 1).

Half of women (49%) rated their overall health status as very good/excellent, while half (51%) rated their health as

good or worse. Women's age ($p = 0.009$), race ($p = 0.03$), educational attainment ($p < 0.001$), income level ($p < 0.001$), employment status ($p < 0.001$), political party affiliation ($p = 0.027$), and type of health insurance ($p < 0.001$) were associated with perceived health.

Relationships between perceived discrimination, healthcare utilization, and perceived health

In unadjusted analyses, perceived discrimination, healthcare utilization, and perceived health were all associated with one another. Women who reported using healthcare services more than annually had higher discrimination scores (2.04 ± 0.90) than women who used services every 3 years or less frequently (1.84 ± 0.95) ($p = 0.008$) (Table 2). Discrimination scores were also higher among women who rated their health status as good or worse (2.12 ± 0.997) than among women with excellent/very good perceived health (1.77 ± 0.75) ($p < 0.001$) (Table 2). Additionally, women who reported healthcare visits every 1–2 years had higher proportions of having excellent/very good perceived health (63%) compared with those who reported visits annually (39%) and every 3 years or less frequently (45%) ($p < 0.001$) (Table 1).

In multinomial regression models predicting healthcare utilization (Table 3), compared with women who reported healthcare visits every 3 years or less (reference group), each one-point increase in discrimination score was associated with higher odds of having healthcare visits annually or more often (odds ratio [OR] = 1.36, confidence interval [95% CI] = 1.01–1.83). Similar effects were noted for individual discriminatory events (EDS items), including the items, "People act as if they think you are not smart" (OR = 1.31, 95% CI = 1.08–1.60) and "People act as if they are afraid of you" (OR = 1.32, 95% CI = 1.03–1.68).

In logistic regression models predicting perceived health status (Table 3), each one-point increase in discrimination score was significantly associated with lower odds of having excellent/very good perceived health (OR = 0.65; 95% CI = 0.54–0.80).

Finally, other factors associated with healthcare utilization in regression models included level of education and insurance status. For instance, women with college education had higher odds of having healthcare visits every 1–2 years ($p = 0.047$) or more than once a year ($p = 0.013$) than women with less than high school education. In addition, compared with women who reported healthcare visits every 3 years or less, women with private insurance or Medicaid/Medicare coverage had higher odds of having healthcare visits every 1–2 years ($p < 0.0001$ and $p = 0.018$, respectively) or more than once a year ($p < 0.0001$ and $p < 0.0001$, respectively) than uninsured women. Similarly, factors associated with perceived health status were age ($p = 0.017$), educational attainment ($p = 0.019$), and employed status ($p = 0.024$), with age being inversely related to and the latter two being positively associated with excellent/very good health.

Discussion

A number of investigators have documented the experience of discrimination across a range of healthcare settings,[25–30] which in some cases has been attributed to health system factors, including provider prejudice.[26,31] The majority of

TABLE 1. WOMEN'S DISCRIMINATION SCORES, PERCEIVED HEALTH STATUS, AND SOCIODEMOGRAPHIC
CHARACTERISTICS BY HEALTHCARE UTILIZATION

		Frequency of health service use (n=1059, 100%)			
	Total sample (n=1078, 100%) mean±SE or %	More than once a year (n=475, 45%) mean±SE or %	Every 1–2 years (n=437, 39.1%) mean±SE or %	Every 3 years or less (n=147, 15.9%) mean±SE or %	p
Perceived discrimination score	1.98±0.04	2.04±0.04	1.87±0.04	1.84±0.08	0.008**
Perceived health status					
Good or worse	50.78	61.30	37.29	54.97	<0.001***
Very good or better	49.22	38.70	62.71	45.03	
Age groups					
18–24 years	15.19	13.41	13.96	21.23	0.016*
25–34 years	27.80	23.92	29.88	32.90	
35–44 years	26.47	24.92	29.07	25.62	
45–55 years	30.54	37.75	27.09	20.25	
Race					
Non-Hispanic white	60.63	61.74	61.80	52.74	0.29
Non-Hispanic black	13.50	16.02	10.80	13.36	
Hispanic	17.25	13.88	18.58	24.02	
Other	8.62	8.36	8.82	9.88	
Highest level of education attained					
<High school	9.45	9.99	4.13	18.70	<0.001***
High school diploma	26.83	27.17	24.91	32.28	
Any college	32.09	30.27	36.55	27.56	
>college	31.63	32.58	34.41	21.46	
Annual income					
<25,000	17.71	21.44	10.74	22.93	0.002**
25,000–49,999	22.23	22.44	20.74	25.87	
50,000–74,999	18.75	14.23	23.93	18.04	
≥75,000	41.31	41.89	44.59	33.16	
Employment situation					
Employed	61.50	60.16	67.58	54.29	0.046*
Unemployed	38.50	39.84	32.42	45.71	
Insurance type					
Uninsured	17.61	11.76	15.15	40.30	<0.001***
Private	59.29	60.14	69.17	34.63	
Medicare/Medicaid	12.02	17.89	7.42	5.69	
Other	11.08	10.21	8.26	19.38	
Political affiliation					
Democrat	35.15	37.44	35.66	25.78	0.033*
Republican	23.08	25.38	21.85	19.00	
Independent	11.93	8.89	14.72	14.39	
No affiliation	29.84	28.29	27.77	40.83	
Marital status					
Now married	53.12	50.80	60.44	44.30	0.09
Previously married	9.21	10.89	7.57	7.92	
Never married	27.19	27.30	23.49	32.76	
Cohabiting	10.48	11.01	8.50	15.02	

p-Values significant at *<0.05, ** <0.01, and *** <0.001.
SE, standard error.

these studies have focused on specific groups, especially racial/ethnic minorities, or specific health contexts and healthcare settings (e.g., pregnancy and obstetrical care, family planning).[27–30,32,33] Less research has examined the negative effects of perceiving daily discrimination, especially outside the health system, on general healthcare utilization or overall health status among women at the population level.[14,15,17,21,34–36]

Among our national sample of women, ages 18–55, in the United States, we found higher discrimination scores among women who reported healthcare visits more often than annually. Additionally, perceived discrimination was inversely associated with excellent/very good perceived health status. These associations remained robust even after controlling for a number of relevant confounders, such as socioeconomic and health insurance status.

TABLE 2. FACTORS ASSOCIATED
WITH PERCEIVED DISCRIMINATION

	Daily discrimination score (1.98±1.16) mean±SD	p
Perceived health status		
Good or worse	2.13±0.99	<0.001***
Very good or better	1.77±0.75	
Health service use		
More than once a year	2.04±0.90	0.008**
Every 1–2 years	1.88±0.87	
Every 3 years or less	1.84±0.95	
Age		
Cat 1	2.07±0.91	0.30
Cat 2	1.98±0.10	
Cat 3	1.92±0.88	
Cat 4	1.91±0.84	
Race		
Non-Hispanic white	1.92±0.87	0.21
Non-Hispanic black	2.08±1.11	
Hispanic	1.91±0.84	
Other	2.07±0.99	
Highest level of education attained		
<High school	2.26±1.21	0.007**
High school diploma	1.96±0.92	
Any college	1.96±0.88	
>College	1.87±0.80	
Annual income		
<25,000	2.11±1.15	<0.001***
25,000–49,999	2.13±0.96	
50,000–74,999	1.93±0.85	
≥75,000	1.77±0.70	
Employment situation		
Employed	1.91±0.83	0.08
Unemployed	2.01±1.01	
Insurance type		
Uninsured	2.05±1.06	<0.001***
Private	1.87±0.79	
Medicare/Medicaid	2.26±1.11	
Other	1.91±0.92	
Political affiliation		
Democrat	2.03±0.91	0.009**
Republican	1.79±0.78	
Independent	2.03±0.98	
No affiliation	1.96±0.95	
Marital status		
Now married	1.84±0.83	<0.001***
Previously married	2.10±0.96	
Never married	2.14±0.10	
Cohabiting	1.99±0.92	

p-Values significant at *<0.05, ** <0.01, and *** <0.001.

These findings begin to fill an important gap in evidence regarding the impact of perceived everyday discrimination on healthcare utilization. From these cross-sectional data, which precluded an adequate assessment of temporality, it is unclear why or how discrimination may positively impact frequency of health service use. Contrary to our findings, models of stigma-induced identity threat and disengagement strategy would suggest that individuals who have experienced discrimination may avoid dominant culture institutions, such as healthcare, where

they fear they may be discriminated against,[25] unless care is unavoidable. Additionally, perceptions of provider-based discrimination may result in patient's mistrust and noncompliance with medical advice and treatment and delayed or avoided healthcare seeking, subsequently contributing to poorer health status. Like among women in our study, discrimination is also independently linked with poorer health status. Collectively, these interrelationships may result in a greater, but unmet, need for healthcare.

Indeed, our findings may support others' work, which has suggested that discrimination not only negatively impacts health and well-being, but also that the healthcare encounter is a potential source of discrimination (*i.e.*, reverse causality).[13,37–39] Among the five discrimination experiences included in EDS, two specific items, "people act as if they think you are not smart" and "people act as if they are afraid of you," had a significant positive association with the greater frequency of healthcare use. Despite increased health service efforts to improve patient-centered models of care and shared decision-making, patients continue to feel required to assume socially sanctioned roles where the physician is the authoritarian.[40] Low health literacy levels may intensify this assumption. Level of education, one of the factors strongly associated with discrimination in our study, has been shown to be highly correlated with health literacy.[41] Individuals with inadequate health literacy may be less satisfied with their provider's communication,[42] potentially leading to perceptions of healthcare discrimination,[43] specifically the perception of being not smart. Additionally, some medical conditions common to this age group of women are more socially stigmatized than other (*e.g.*, mental illness, infectious diseases, cancer), which may further contribute to discrimination and marginalization, even by healthcare staff.[44–49]

While several sociodemographic factors in our study, including younger age, lower levels of education and income, and democratic political affiliation, were associated with greater perceived discrimination and to a lesser extent greater healthcare use, race/ethnicity was not. These findings are in contrast with a few studies by Thorburn and Bogart examining race-based discrimination among African American women in receipt of family planning services.[29,30] However, consistent with our findings, another study by Casagrande et al.[21] reported lifetime rates of discrimination experienced in the healthcare system among their study participants did not differ by race. In addition, the relationship between discrimination and healthcare utilization was similar for whites and African Americans while controlling for socioeconomic and environmental factors.[21] Other research has shown that socioeconomic characteristics, such as income level and insurance status, are correlated with some specific types of health-related discrimination and healthcare experiences, for instance, insurance-based discrimination and receipt of postpartum support and contraceptive services.[27–30] Additionally, specific health issues common among women of reproductive age, such as sexually transmitted diseases,[50] unwanted pregnancy,[51] and abortion,[52] are also known predictors of perceived discrimination in healthcare.[53] Collectively, these experiences disproportionately occur among socially disadvantaged groups of women. Unfortunately, our study did not fully explore interactions between race, socioeconomic status, and sociodemographics or fully consider the robust range of health, social, and reproductive factors likely related to women's experiences with

TABLE 3. LOGISTIC REGRESSION MODELS OF THE EFFECTS OF DISCRIMINATION
ON WOMEN'S HEALTHCARE UTILIZATION AND PERCEIVED HEALTH STATUS

Discrimination variables[a]	Health service use models[b]						Health status models[c]	
	Every 3 years or less		Every 1–2 years		More than once a year		Very good/excellent	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Mean discrimination score	Base outcome		1.21	0.89–1.64	1.36*	1.01–1.83	0.65***	0.54–0.80
Individual discrimination items								
"treated with less courtesy"	Base outcome		1.09	0.89–1.26	1.12	0.91–1.31	0.80***	0.70–0.91
"receive poorer service"	Base outcome		1.09	0.84–1.41	1.13	0.88–1.45	0.70***	0.67–0.93
"you are not smart"	Base outcome		1.18	0.96–1.46	1.31**	1.08–1.60	0.81***	0.71–0.92
"people are afraid of you"	Base outcome		1.15	0.91–1.47	1.32*	1.03–1.68	0.80***	0.68–0.93
"threatened or harassed"	Base outcome		1.19	0.90–1.59	1.23	0.92–1.66	0.71***	0.59–0.85

p-Values significant at *<0.05, ** <0.01, and *** <0.001. Point estimates are from models with each discrimination indicator mean score modeled as primary independent variables in separate models. Models controlling for age, race, education, income, marital status, employment situation, political affiliation, insurance type, and perceived health status. Results are presented as OR and 95% CI.
[a]Discrimination variables derived from the short version of the Everyday Discrimination Scale[7]
[b]Multinomial logistic regression models with frequency of health service use as outcome.
[c]Multiple logistic regression models with very good/excellent perceived health status as outcome.
CI, confidence interval; OR, odds ratio.

discrimination and health service utilization. Further research is warranted to understand the complex interrelated factors shaping discrimination, healthcare access and utilization, and health outcomes for reproductive-aged women.

A strength of this study is the use of a national sample of mostly reproductive-aged women, which allowed us to describe the impact of everyday discrimination on population-based patterns of healthcare utilization and perceived health, more broadly than previously done. Our main findings validate other research in this area, suggesting that exposure to the healthcare system could be a source of discrimination. In addition, we looked at individual constituents of perceived discrimination such as perception of being not smart and people being afraid of you. A better understanding of individual elements of perceived discrimination can be applied to inform the development of both patient- and provider-based interventions specifically toward these specific perceptions.

However, several important limitations are noteworthy. While we used standardized measures of discrimination, health status, and healthcare utilization, our assessments were all based upon self-report, which may underestimate the frequency of women's discrimination experiences or overestimated frequency of their healthcare use, for instance. Our cross-sectional design limited our ability to determine causal associations between discrimination and healthcare use. While our sample was drawn from a broader national probability panel of U.S. women, we had lower numbers of minority and poor women participating in our study. Thus, our sample may not fully reflect the experiences of socially disadvantaged groups and the impact of perceived discrimination in shaping their healthcare utilization and health status. Furthermore, our study sample was drawn from participants of a broader study about women's experiences with and preferences for a variety of types of healthcare. Therefore, our sample was limited to the women, ages 18–55, who are mostly reproductive-aged women. Yet, future studies focusing on both the younger and older age groups (*e.g.*, ages 15–18, ages >65 years), who potentially have distinct healthcare needs and experiences, would be a great contribution.

Conclusion

Among these women, perceived discrimination was associated with increased exposure to the healthcare setting, more so than other factors traditionally focused on discrimination and health research, including race. Future research using prospective designs and more robust assessments of social context and health service interactions can help disentangle the directions of relationships between discrimination, healthcare utilization, and health outcomes. Studies that further explore the role of discrimination for women's health and healthcare across the life course and for different types of service settings can provide additional valuable insights into interrelationships between women's health and social well-being. Our findings may inform interventions that increase awareness of and address women's experiences of discrimination. Healthcare models that more explicitly and fully consider women's social and interpersonal experiences, both outside and within the health system, are needed. The broader context of health literacy, access to quality care, and health provider/system interactions can inform service delivery models that better engage and empower women and foster positive provider–patient relationships and shared medical decision-making. Such strategies may facilitate reduced inequities in treatment uptake and delivery and improve health outcomes for women in the United States.

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References

1. Tomfohr L, Cooper DC, Mills PJ, Nelesen RA, Dimsdale JE. Everyday discrimination and nocturnal blood pressure

dipping in black and white americans. Psychosom Med 2010;72:266–272.

2. Krieger N, Sidney S. Racial discrimination and blood pressure: The CARDIA Study of young black and white adults. Am J Public Health 1996;86:1370–1378.

3. Steffen PR, McNeilly M, Anderson N, Sherwood A. Effects of perceived racism and anger inhibition on ambulatory blood pressure in African Americans. Psychosom Med 2003; 65:746–750.

4. Trivedi AN, Ayanian JZ. Perceived discrimination and use of preventive health services. J Gen Intern Med 2006;21: 553–558.

5. Lewis TT, Aiello AE, Leurgans S, Kelly J, Barnes LL. Self-reported experiences of everyday discrimination are associated with elevated C-reactive protein levels in older African-American adults. Brain, Behav, Immun 2010;24: 438–443.

6. Lewis TT, Everson-Rose SA, Powell LH, et al. Chronic exposure to everyday discrimination and coronary artery calcification in African-American women: The SWAN Heart Study. Psychosom Med 2006;68:362–368.

7. Williams DR, Yan Y, Jackson JS, Anderson NB. Racial Differences in Physical and Mental Health: Socio-economic Status, Stress and Discrimination. J Health Psychol 1997;2: 335–351.

8. Stuber J, Galea S, Ahern J, Blaney S, Fuller C. The association between multiple domains of discrimination and self-assessed health: A multilevel analysis of Latinos and blacks in four low-income New York City neighborhoods. Health Serv Res 2003;38(6 Pt 2):1735–1759.

9. Barnes LL, de Leon CF, Lewis TT, Bienias JL, Wilson RS, Evans DA. Perceived discrimination and mortality in a population-based study of older adults. Am Journal Public Health 2008;98:1241–1247.

10. Clark R, Anderson NB, Clark VR, Williams DR. Racism as a stressor for African Americans. A biopsychosocial model. Am Psychol 1999;54:805–816.

11. Williams DR. Racism and health: A research agenda. Ethnic Dis 1996;6:1–8.

12. Bird ST, Bogart LM. Perceived race-based and socioeconomic status (SES)-based discrimination in interactions with health care providers. Ethnic Dis 2001;11:554–563.

13. Lee C, Ayers SL, Kronenfeld JJ. The association between perceived provider discrimination, healthcare utilization and health status in racial and ethnic minorities. Ethnic Dis 2009;19:330–337.

14. Van Houtven CH, Voils CI, Oddone EZ, et al. Perceived discrimination and reported delay of pharmacy prescriptions and medical tests. J Gen Intern Med 2005;20:578–583.

15. Burgess DJ, Ding Y, Hargreaves M, van Ryn M, Phelan S. The association between perceived discrimination and underutilization of needed medical and mental health care in a multi-ethnic community sample. J Health Care Poor Underserved 2008;19:894–911.

16. Harris R, Cormack D, Tobias M, et al. Self-reported experience of racial discrimination and health care use in New Zealand: Results from the 2006/07 New Zealand Health Survey. Am J Public Health 2012;102:1012–1019.

17. Crawley LM, Ahn DK, Winkleby MA. Perceived medical discrimination and cancer screening behaviors of racial and ethnic minority adults. Cancer Epidemiol Biomarkers Prev 2008;17:1937–1944.

18. Lewis TT, Troxel WM, Kravitz HM, Bromberger JT, Matthews KA, Hall MH. Chronic exposure to everyday discrimination and sleep in a multiethnic sample of middle-aged women. Health Psychol 2013;32:810–819.

19. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. J Health Soc Behav 1999; 40:208–230.

20. Wamala S, Merlo J, Bostrom G, Hogstedt C. Perceived discrimination, socioeconomic disadvantage and refraining from seeking medical treatment in Sweden. J Epidemiol Community Health 2007;61:409–415.

21. Casagrande SS, Gary TL, LaVeist TA, Gaskin DJ, Cooper LA. Perceived discrimination and adherence to medical care in a racially integrated community. J Gen Intern Med 2007;22:389–395.

22. Health Insurance–Women of Reproductive Age. Child Health USA 2013; 2013 [cited 2015 May]. Available at: http://mchb.hrsa.gov/chusa13/health-services-utilization/p/ health-insurance-women-reproductive-age.html Accessed July 10, 2016.

23. Hall KS, Fendrick AM, Zochowski M, Dalton VK. Women's health and the Affordable Care Act: High hopes versus harsh realities? Am J Public Health 2014;104:e10–e13.

24. Hall KS, Patton EW, Crissman HP, Zochowski MK, Dalton VK. A population-based study of U.S. women's preferred versus usual sources of reproductive health care. Am J Obstet Gynecol 2015;213:352.e1–e14.

25. Quach T, Nuru-Jeter A, Morris P, et al. Experiences and perceptions of medical discrimination among a multiethnic sample of breast cancer patients in the Greater San Francisco Bay Area, California. Am J Public Health 2012;102:1027–1034.

26. Schulman KA, Berlin JA, Harless W, et al. The effect of race and sex on physicians' recommendations for cardiac catheterization. N Engl J Med 1999;340:618–626.

27. Thorburn S, De Marco M. Insurance-based discrimination during prenatal care, labor, and delivery: Perceptions of Oregon mothers. Matern Child Health J 2010;14:875–885.

28. De Marco M, Thorburn S, Zhao W. Perceived discrimination during prenatal care, labor, and delivery: An examination of data from the Oregon Pregnancy Risk Assessment Monitoring System, 1998–1999, 2000, and 2001. Am J Public Health 2008;98:1818–1822.

29. Thorburn S, Bogart LM. African American women and family planning services: Perceptions of discrimination. Women Health 2005;42:23–39.

30. Thorburn Bird S, Bogart LM. Birth control conspiracy beliefs, perceived discrimination, and contraception among African Americans: An Exploratory Study. J Health Psychol 2003;8:263–276.

31. Smedley BD, Stith AY, Nelson AR. Unequal treatment: Confronting racial and ethnic disparities in health care. Washington, DC: Institute of Medicine, 2003.

32. Dehlendorf C, Rodriguez MI, Levy K, Borrero S, Steinauer J. Disparities in family planning. Am J Obstet Gynecol 2010;202:214–220.

33. Dehlendorf C, Harris LH, Weitz TA. Disparities in abortion rates: A public health approach. Am J Public Health 2013; 103:1772–1779.

34. Blanchard J, Lurie N. R-E-S-P-E-C-T: Patient reports of disrespect in the health care setting and its impact on care. J Fam Pract 2004;53:721–730.

35. Schuster MA, Collins R, Cunningham WE, et al. Perceived discrimination in clinical care in a nationally representative sample of HIV-infected adults receiving health care. J Gen Intern Med 2005;20:807–813.

36. Lamkaddem M, Essink-Bot ML, Deville W, Foets M, Stronks K. Perceived discrimination outside health care settings and health care utilization of Turkish and Moroccan GP patients in the Netherlands. Eur J Public Health 2012;22:473–478.

37. Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: Findings from community studies. Am J Public Health 2003;93:200–208.

38. Gee GC, Ro A, Shariff-Marco S, Chae D. Racial discrimination and health among Asian Americans: Evidence, assessment, and directions for future research. Epidemiol Rev 2009;31:130–151.

39. Nadimpalli SB, Hutchinson MK. An integrative review of relationships between discrimination and Asian American health. J Nurs Scholarsh 2012;44:127–135.

40. Frosch DL, May SG, Rendle KA, Tietbohl C, Elwyn G. Authoritarian physicians and patients' fear of being labeled 'difficult' among key obstacles to shared decision making. Health Aff (Millwood) 2012;31:1030–1038.

41. Kutner M, Greenberg E, Jin Y, Paulsen C. The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy. Washington, DC: National Center for Education Statistics, 2006.

42. Schillinger D, Bindman A, Wang F, Stewart A, Piette J. Functional health literacy and the quality of physician-patient communication among diabetes patients. Patient Educ Couns 2004;52:315–323.

43. Lyles CR, Karter AJ, Young BA, et al. Correlates of patient-reported racial/ethnic health care discrimination in the Diabetes Study of Northern California (DISTANCE). J Health Care Poor Underserved 2011;22:211–225.

44. Baral SC, Karki DK, Newell JN. Causes of stigma and discrimination associated with tuberculosis in Nepal: A qualitative study. BMC Public Health 2007;7:211.

45. Chapple A, Ziebland S, McPherson A. Stigma, shame, and blame experienced by patients with lung cancer: Qualitative study. BMJ 2004;328:1470.

46. Fee E. The stigma of HIV. Am J Public Health 2013;103:1747.

47. Des Jarlais DC, Galea S, Tracy M, Tross S, Vlahov D. Stigmatization of newly emerging infectious diseases: AIDS and SARS. Am J Public Health 2006;96:561–567.

48. Spencer MS, Chen J, Gee GC, Fabian CG, Takeuchi DT. Discrimination and mental health-related service use in a national study of Asian Americans. Am J Public Health 2010;100:2410–2417.

49. Oaten M, Stevenson RJ, Case TI. Disease avoidance as a functional basis for stigmatization. Philos Trans R Soc Lond B Biol Sci 2011;366:3433–3452.

50. Rusch ML, Shoveller JA, Burgess S, Stancer K, Patrick DM, Tyndall MW. Preliminary development of a scale to measure stigma relating to sexually transmitted infections among women in a high risk neighbourhood. BMC Womens Health 2008;8:21.

51. Hall KS, Kusunoki Y, Gatny H, Barber J. Social discrimination, stress, and risk of unintended pregnancy among young women. J Adolesc Health 2015;56:330–337.

52. Norris A, Bessett D, Steinberg JR, Kavanaugh ML, De Zordo S, Becker D. Abortion stigma: A reconceptualization of constituents, causes, and consequences. Womens Health Issues 2011;21(3 Suppl):S49–S54.

53. Cook RJ, Dickens BM. Reducing stigma in reproductive health. Int J Gynaecol Obstet 2014;125:89–92.

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