ORIGINAL RESEARCH

Insurance Types, Usual Sources of Health Care, and Perceived Discrimination

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Introduction: **Discrimination can compromise access to and utilization of health care and lead to poorer health. As such, it is important to understand the factors associated with experiences of discrimination in health care.**

Methods: **Using data from the 2015 to 2017 California Health Interview Survey (n = 63,100), this study examined whether insurance types and sites of usual sources of care were associated with reasons for perceived discrimination in health care and whether the reasons were associated with delaying health care. Odds of study outcomes were calculated among insured adults using logistic regressions. Insurance coverage types and sites of usual sources of care were the main independent variables. Six reasons for lifetime discrimination in health care were examined: 1) dissatisfaction with the health care system, 2) race or skin color, 3) age, 4) way the participant speaks English or other barrier to communication, 5) insurance status or type, and 6) income or education.**

Results: **Adults with Medicaid perceived more discrimination due to race or skin color relative to those with employer-sponsored coverage. This association does not vary by race/ethnicity. Perceived discrimination due to 1) dissatisfaction with the health care system, 2) insurance status or type, and 3) barriers to communication were each associated with increased delays in getting needed medical care.**

Conclusions: **Findings highlight potential insurance types and sources of care that could contribute to perceptions of being discriminated. (J Am Board Fam Med 2020;33:580–591.)**

Keywords: **Access to Health Care, California, Ethnic Groups, Health Insurance, Insurance Coverage, Logistic Models, Medicaid, Racism, Surveys and Questionnaire**

Introduction

Experiences of discrimination, or feeling that one has been treated unfairly relative to another group,[1] can lead to biopsychosocial stress on the body that is associated with poor health,[2,3] especially when repeated over time.[4] This discrimination can be due to several different characteristics (eg, race, ethnicity, insurance status, income, education, gender). Because discrimination may be associated with other stressful life events, a compounded effect on the body that contributes further to poor health can result.[5,6] Discrimination is associated with negative health conditions such as increased psychological distress, increased mortality, mental illness, cancer, hypertension, cardiovascular disease, obesity, well-being, and risky health behaviors.[7–13] In the case of a specific reason for discrimination, discrimination due to race and ethnicity largely contributes to the existing health disparities in the United States, and, thus, understanding the effect of discrimination on population health is of great interest to the field of public health.[14]

Apart from the stressful toll discrimination can take on the body, research also suggests that it may

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lead individuals to use health care suboptimally, thereby negatively impacting health further.[15] For example, individuals who experience discrimination in a health care setting are less likely to receive preventive services such as cholesterol testing, eye exams for diabetes, flu shots, and cancer screenings.[16,17] These individuals also underutilize health services related to prescriptions, medical care, and mental health.[18,19]

Discriminatory experiences also have the potential to impact negatively the health care experience. Individuals who report experiences of discrimination in health care have higher rates of problems with the care they receive.[20] Racial and ethnic minority groups report higher rates of discrimination in health care than their non-Latino white counterparts,[21–25] which perhaps contributes to the lack of trust minority groups express in the health care system as a whole.[26] These negative experiences may promote poorer health, as they further dissuade affected groups from engaging in health care, which potentially exacerbates the heightened health risks they already experience.[27]

Apart from race and ethnicity, there is also evidence that discrimination in health care may occur because of other factors such as gender, age, and insurance type. For example, among patients suffering from ischemic heart disease, female patients may receive significantly fewer secondary preventive therapies than their male counterparts, despite their more frequent use of health services, and this potentially exposes them to a higher risk of myocardial infarction and mortality.[28,29] In addition, approximately one fifth of older Americans report experiencing age-based discrimination in health care.[30] Elderly patients are less likely to receive recommendations related to physical activity from their physicians even after accounting for mobility limitations,[31] which could suggest differential treatment of patients based on age. Finally, reporting discrimination in health care due to insurance is associated with higher levels of forgoing care due to costs[32] and lower rates of receiving postpartum care.[33]

Similarly, the implementation of the Patient Protection and Affordable Care Act (ACA) introduced provisions to the American health care system that increased the number of people who were insured by offering new ways by which insurance could be obtained. In particular, Medicaid expansion has allowed more lower-income individuals to gain insurance coverage, and the insurance exchanges have allowed individuals to purchase private insurance coverage with government subsidies.[34–37] The extent to which these changes to the health care system have impacted who experiences discrimination in health care remains unknown. Specifically, the newly insured and the new coverage options may result in differential exposure to discrimination within health care, and insurance coverage options or other characteristics of the health care setting may systematically attract populations with lower or higher prior burden of discrimination in health care.[38]

Given that discrimination is an important social determinant of health care utilization, recent work has started examining whether particular characteristics of health care are associated with perceived discrimination in health care. Specifically, coverage under Medicare and Medicaid is associated with higher reports of racial or ethnic discrimination in health care.[38] Likewise, recipients of public insurance programs are more likely to report discrimination in health care due to insurance type.[32] In addition, seeking care in the emergency department (ED) is associated with higher reports of racial or ethnic discrimination in health care. However, the research in this area has focused primarily on examining 1 type of discrimination at a time.[32,38,39] Therefore, this study extends the literature by examining whether types of insurance coverage and locations of usual sources of care were associated with different types of discrimination in health care. In addition, this study examined whether the effect of insurance type on discrimination due to race was moderated by race/ethnicity. Finally, this study examined the extent to which different types of discrimination were associated with utilization of health care services.

Methods

Data Source

This study used pooled data from the 2015 through 2017 adult California Health Interview Survey (CHIS). This telephone survey is administered annually to adults (18 years and over) residing in California.[40] To be representative of the state and several key demographic or geographic groups, participants were selected using random-digit dial of cellphones and landlines and using Japanese and Korean surname lists. CHIS was administered in

English, Cantonese, Korean, Mandarin, Spanish, Tagalog, and Vietnamese. Missing data for most variables were imputed by CHIS researchers.[40] Data were not imputed for all variables when proxy interviews were used (ie, questions were answered by another person on behalf of the respondent). For example, proxy interviews did not ask questions on discrimination; thus, missing data in these cases were not imputed.

The total number of participants for the 3 cycles of CHIS included in this study was 63,242. After excluding cases of missing data (eg, because the interview was complete via a proxy) on any study variable, 63,100 participants remained.

Variables

The main variable of interest in the analyses was lifetime perceived discrimination in health care. This functioned as the independent variable in some analyses and the dependent variable in other analyses. Participants were asked "Over your entire lifetime, how often have you been treated unfairly when getting medical care?" Response options were "Never," "Rarely," "Sometimes," or "Often." Those who responded with "Rarely," "Sometimes," or "Often" were coded as having perceived discrimination in health care in their lifetimes, for any reason. Participants were then asked to indicate the main reasons for this unfair treatment. Dichotomous variables were created for the 6 most common responses. These were the following: 1) dissatisfaction with the health care system, 2) race or skin color, 3) age, 4) way the participant speaks English or other barrier to communication, 5) insurance status or type, and 6) income or education. These categories comprised the 6 most common responses given by survey participants. Responses were elicited by giving participants specific reasons for discrimination. These reasons were because of 1) ancestry and national origin, 2) gender or sex, 3) race or skin color, 4) age, or 5) the way the respondent speaks English. In addition, respondents were allowed to name their own bases of discrimination. CHIS researchers then recoded responses into categories. In CHIS data that are publicly available for analyses, the verbatim reasons for discrimination (if the respondent gave their own reason) and the original response options were not available. Consequently, the information contained in the response categories used for the analyses are a function of responses given by participants and recoding by the CHIS. Thus, for the present study, we do not know what responses were coded into the "dissatisfaction with the health care system" category.

For some analyses, there were 2 main independent variables, type of current health insurance coverage and location of usual source of care. Types of insurance coverage were the following: 1) employer sponsored coverage, 2) private insurance coverage purchased through Covered California (the health insurance exchange in California), 3) private insurance coverage not purchased through Covered California (ie, the open-market/off-exchange), 4) Medicaid (called MediCal in California), 5) Medicare and Medicaid in combination, 6) Medicare alone or in combination with any other non-Medicaid insurance, and 7) other publicly funded insurance programs, and 8) uninsured. Employer-sponsored coverage served as the reference category in the analyses. The coding was consistent with a prior published study.[38] Usual sources of care consisted of the following categories: 1) no usual source of care; 2) doctor's office, health maintance organization (HMO) or Kaiser (a specific HMO); 3) ED; 4) clinic or health center; and 5) other or no one place.

Some analyses had the inability to receive needed health care as the dependent variable of interest. These variables were the following: 1) delayed or forwent needed medical care in the past 12 months for a reason other than costs or lack of insurance and, 2) delayed or forwent needed prescription drugs in the past 12 months for a reason other than costs or lack of insurance.

Finally, multivariable regression analyses included several variables as potential confounders, with a focus on known correlates of perceiving discrimination that were observed in a prior related publication using CHIS data.[22] Gender (male vs female), educational attainment (at least a bachelor's degree vs less than bachelor's degree), limited English proficiency (yes vs no) and urban or rural residence were measured as dichotomous indicators. Lifetime diagnoses of a chronic health condition (yes vs no) was included in analyses and created by combining responses for lifetime diagnoses of asthma, diabetes, high blood pressure, or heart disease into a single item. Race/ethnicity (non-Latino "White," Latino, non-Latino "Black," and Asian or other), citizenship status (US-born citizen, naturalized citizen, or noncitizen), age (18 to 29 years, 30 to 39 years, 40 to 49 years, 50 to 59 years, 60 to 69 years, or

70 years and over), household income as a percent of the federal poverty level (0% to 138%, 139% to 249%, 250% to 399% or 400% and higher), health status (excellent, very good, good, and fair, or poor), visual or hearing problem or impairment (yes or no), and survey year were included as categorical independent variables. While some of these variables are similar to the reasons for discrimination uses in this study, they represent respondent characteristics and not the reasons for perceived discrimination in health care.

Analyses

All analyses were conducted using Stata 16.0 (StataCorp, College Station, TX), using jackknife replicate weights to account for the complex survey design of the CHIS. Univariate statistics were calculated for all study variables. Logistic regression analyses were used to calculate adjusted odds ratios (AORs) and 95% CIs for each of the 6 different reasons given for perceiving discrimination in health care and for perceiving discrimination for any reason. In these analyses, insurance type and location of usual source of care were the main independent variables of interests. Analyses adjusted for the confounders described above. Post-hoc tests were used to compare outcomes for private health insurance purchased through covered California and insurance purchased off-exchange. Interaction terms between insurance type and race/ethnicity were also tested for perceived discrimination due to race or skin color and discrimination for any reason.

Separate logistic regression analyses calculated AORs of delaying or forgoing care, while adjusting for confounders, insurance type, and location of usual source of care. In these analyses, the reasons for perceiving discrimination in health care were the independent variables of interest. Separate logistic regression models were fitted for each of the reasons.

Results

Table 1 shows the weighted sample characteristics. Over a fourth of participants perceived discrimination in health care in their lifetimes (28.52%). The most common reason for this discrimination was due to dissatisfaction with the health care system (5.63%). A plurality of participants received health insurance through their employers (42.00%). The most common place for usual source of care was in a doctor's office or HMO (54.95%). A small minority of participants had delayed or did not get needed prescriptions (5.59%) or medical care (6.77%). Most participants were US-born citizens (68.69%), women (51.17%), English proficient (74.37%), did not have a lifetime diagnosis of chronic disease (56.83%), did not have a visual or hearing problem or impairment (92.05%), and lived in an urban area (89.95%). A plurality of participants was White (41.53%), between 18 and 29 years old (22.10%) and had a household income 400% of federal poverty level and higher (42.00%).

Table 2 shows the odds of perceiving different types of discrimination in health care in the participants' lifetimes by insurance type and usual source of health care. Participants receiving Medicaid had higher odds of perceiving any kind of discrimination in health care (AOR = 1.28; 95% CI, 1.10 to 1.50) and discrimination due to race or skin color (AOR = 1.41; 95% CI, 1.04 to 1.90), relative to those with employer-sponsored coverage. Participants with private health insurance purchased off-exchange had lower odds of perceiving discrimination in health care due to their dissatisfaction with the health care system (AOR = 0.65; 95% CI, 0.43 to 0.99), relative to those with employer-sponsored coverage. Those who reported the ED as their usual source of care had higher odds of experiencing discrimination in health care for any reason (AOR = 1.54; 95% CI, 1.12 to 2.10), relative to those who reported a doctor's office or HMO as their usual sources of health care. Those who had claimed "other" or no one place as their usual source of care had higher odds of experiencing discrimination in health care due to dissatisfaction with the health care system (AOR = 2.16; 95% CI, 1.03 to 4.51), relative to those who had a doctor's office or HMO as their usual sources of health care.

Table 3 shows the interaction between insurance type and race/ethnicity on perceived discrimination, for respondents of all races. Here, the odds ratio for "Medicaid" indicates that, among non-Latino Whites, those with Medicaid had higher odds of perceiving discrimination due to race or skin color when compared with non-Latino Whites with employer-sponsored coverage (AOR = 3.49; 95% CI, 1.97 to 6.15). For the race/ethnicity odds ratios, these indicate that among those on employer-sponsored coverage, Latinos (AOR = 5.41; 95% CI, 3.06 to 9.55), Blacks (AOR = 20.32; 95% CI, 10.73 to

Table 1. Sample Characteristics, Adult California Health Interview Survey, 2015–2017 (n = 63,100)

	N	%	SE
Perceived discrimination in health care			
No	44,619	71.48	0.6
Yes	18,481	28.52	0.6
Main reason for discrimination in health care			
Did not experience discrimination	44,619	71.48	0.6
Dissatisfaction with the health care system	4,476	5.63	0.3
Race or skin color	2,709	5.23	0.25
Age	1,979	2.44	0.18
Way respondent speaks English or other barrier to communication	1,358	3.19	0.18
Insurance status or type	1,308	2.07	0.14
Income or education	991	1.52	0.12
Type of insurance coverage			
Employer-sponsored coverage	20,646	42	0.58
Medicaid	10,062	21.25	0.4
Private coverage, Covered California	1,726	3.08	0.18
Private coverage, off-exchange	2,028	3.88	0.25
Medicare and Medicaid	5,464	5.5	0.17
Medicare alone or with other insurance	18,392	13.46	0.23
Other public sponsored coverage	761	1.4	0.12
Uninsured	4,021	9.43	0.29
Delayed or didn't get needed prescription in past 12 months			
No	59,472	94.41	0.26
Yes	3,628	5.59	0.26
Delayed or didn't get needed medical care in past 12 months			
No	58,609	93.23	0.27
Yes	4,491	6.77	0.27
Site of usual source of care			
Doctor's office or HMO	38,851	54.95	0.46
No usual source of care	6,809	15.24	0.34
Clinic or health center	15,878	26.99	0.41
Emergency room	909	1.79	0.17
Other or no one place	653	1.02	0.11
Race/ethnicity			
White	36,816	41.53	0.04
Latino	15,021	35.51	0.01
Black	3,284	5.59	0
Asian	5,555	14.3	0.01
Other	2,424	3.07	0.04
Citizenship status			
US-born citizen	48,551	66.69	0.43
Naturalized citizen	8,688	17.59	0.34
Noncitizen	5,861	15.72	0.36
Limited English proficiency			
No	52,100	74.37	0.47
Yes	11,000	25.63	0.47
Gender			
Male	27,563	48.83	0.01
Female	35,537	51.17	0.01

Continued

Table 1. Continued

	N	%	SE
Educational attainment			
Less than bachelor's degree	37,168	61.92	0.38
Bachelor's degree or above	25,932	38.08	0.38
Age, y			
18–29	8,368	22.1	0
30–39	6,384	18.02	0
40–49	7,306	17.26	0
50–59	11,166	16.43	0.2
60–69	13,660	14.16	0.35
70+	16,216	12.01	0.3
Household income (as % of FPL)			
0–138% of FPL	15,169	26.6	0.57
139–249% of FPL	10,822	17.26	0.37
250–399% of FPL	10,067	16.13	0.42
400% of FPL and higher	27,042	40	0.04
Urban or rural residence			
Rural	11,758	9.96	0.36
Urban	51,342	90.04	0.36
Health status			
Excellent, very good, or good	49,205	77.91	0.44
Fair or poor	13,895	22.09	0.44
Visual or hearing problem or impairment			
No	6,743	7.95	0.24
Yes	56,357	92.05	0.24
Chronic condition			
No	30,088	56.83	0.44
Yes	33,012	43.17	0.44
Survey year			
2015	21,034	33.12	0
2016	20,916	33.34	0.01
2017	21,150	33.54	0

FPL, Federal poverty level; SE, standard error; HMO, health maintenance organization.
All frequencies and standard errors are weighted. Sample sizes are unweighted.

37.75), Asians (AOR = 4.85; 95% CI, 2.86 to 8.25) and those in the other race category (AOR = 10.71; 95% CI, 5.28 to 21.29) had higher odds of perceiving discrimination due to race when compared with non-Latino Whites. However, there was no significant interaction between insurance type and race/ethnicity in this model ($P = .0515$); thus the individual coefficients for interaction terms should not be interpreted. For discrimination for any reason, there was also no significant interaction between insurance type and race/ethnicity ($P = .2298$).

Table 4 shows odds of delaying or forgoing needed health care in the past 12 months for a reason other than costs, with different reasons for discrimination as the independent variables of interest. Each AOR in the table represents a different model. Discrimination due to dissatisfaction with the health care system (AOR = 1.66; 95% CI, 1.28 to 2.15), race or skin color (AOR = 1.69; 95% CI, 1.17 to 2.46) and for any reason (AOR = 1.75; 95% CI, 1.48 to 2.07) were associated with higher odds of delaying or forgoing needed prescriptions. Discrimination due to dissatisfaction with the health care system (AOR = 1.79; 95% CI, 1.38 to 2.33), way the participant speaks English or other communication barrier (AOR = 1.97; 95% CI, 1.33 to 2.92), insurance status or type (AOR = 1.61; 95% CI, 1.08 to 2.25) and for any

Table 2. Logistic Regression Models for Odds of Perceiving Discrimination in Health Care, by Reason for Discrimination (n = 63,100)

	Dissatisfaction with Health Care		Race or Skin Color		Age		Way Respondent Speaks English or Other Barrier to Communication		Insurance Status or type		Income or Education		Any Reason	
Reason for Discrimination	AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI
Type of insurance coverage														
Employer-sponsored coverage	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Medicaid	1.16	(0.86, 1.56)	**1.41**	**(1.04, 1.90)**	0.85	(0.51, 1.41)	0.77	(0.48, 1.23)	1.25	(0.79, 1.98)	1.52	(0.78, 2.96)	**1.28**	**(1.10, 1.50)**
Private coverage, Covered California	1.17	(0.62, 2.21)	0.99	(0.53, 1.85)	1.11	(0.62, 2.00)	1.12	(0.54, 2.33)	0.88	(0.40, 1.92)	1.48	(0.41, 5.33)	1.25	(0.92, 1.70)
Private coverage, off-exchange	**0.65**	**(0.43, 0.99)**	0.68	(0.31, 1.48)	1.25	(0.69, 2.30)	0.88	(0.36, 2.19)	0.82	(0.12, 5.63)	1.70	(0.70, 4.13)	0.92	(0.72, 1.17)
Medicare and Medicaid	0.95	(0.62, 1.46)	1.26	(0.80, 2.00)	0.87	(0.50, 1.56)	0.73	(0.35, 1.53)	0.85	(0.43, 1.69)	1.54	(0.72, 3.26)	1.14	(0.82, 1.58)
Medicare alone or with other insurance	0.98	(0.73, 1.31)	0.85	(0.52, 1.38)	0.98	(0.61, 1.59)	0.82	(0.39, 1.71)	0.76	(0.43, 1.36)	0.73	(0.32, 1.67)	1.06	(0.83, 1.34)
Other public sponsored coverage	1.36	(0.72, 2.60)	0.58	(0.27, 1.26)	1.11	(0.34, 3.62)	0.37	(0.08, 1.69)	0.76	(0.23, 2.50)	0.98	(0.32, 3.03)	1.07	(0.73, 1.59)
Uninsured	0.95	(0.65, 1.39)	1.21	(0.80, 1.83)	1.00	(0.44, 2.23)	0.71	(0.40, 1.25)	0.84	(0.44, 1.61)	1.07	(0.52, 2.19)	0.99	(0.79, 1.24)
Site of usual source of care														
Doctor's office or HMO	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
No usual source of health care	0.76	(0.49, 1.18)	1.02	(0.71, 1.48)	1.09	(0.61, 1.95)	0.92	(0.63, 1.34)	1.35	(0.79, 2.42)	0.96	(0.56, 1.65)	0.96	(0.82, 1.13)
Clinic or health center	1.07	(0.88, 1.29)	1.00	(0.80, 1.26)	1.27	(0.82, 1.96)	1.19	(0.83, 1.71)	1.05	(0.72, 1.52)	1.06	(0.69, 1.62)	1.10	(0.98, 1.24)
Emergency room	1.30	(0.63, 2.72)	1.29	(0.72, 2.31)	0.85	(0.22, 3.28)	1.06	(0.46, 2.48)	1.67	(0.64, 3.55)	1.05	(0.40, 2.76)	**1.54**	**(1.12, 2.10)**
Other or no one place	**2.16**	**(1.03, 4.51)**	1.38	(0.64, 2.99)	1.68	(0.58, 4.88)	0.35	(0.08, 1.61)	0.48	(0.24, 3.17)	0.64	(0.20, 2.02)	1.20	(0.80, 1.80)
Other comparisons														
Covered California versus off-exchange	1.81	(0.95, 3.43)	1.46	(0.64, 3.31)	0.88	(0.43, 1.82)	1.27	(0.40, 3.99)	1.07	(0.12, 9.74)	0.87	(0.18, 4.18)	1.36	(0.90, 2.06)

AOR, adjusted odds ratio; HMO, health maintenance organization, CI, confidence interval.
Significant associations denoted in bold, at $P < .05$.
All models control for race, citizenship status, gender, educational attainment, age, household income, health status, diagnosis of chronic conditions, visual or hearing problem or impairment, survey year, and urban or rural residence.

Table 3. Logistic Regression Models for Odds of Perceiving Discrimination in Health Care, by Reason for Discrimination with Interactions by Race (n = 63,100)

	Race or Skin Color		Any Reason	
Reason for discrimination	AOR	95%CI	AOR	95%CI
Type of insurance coverage				
Employer-sponsored coverage	Reference		Reference	
Medicaid	**3.49**	**(1.97, 6.15)**	**1.81**	**(1.42, 2.30)**
Private coverage, Covered California	0.93	(0.30, 2.88)	1.33	(0.80, 2.21)
Private coverage, off-exchange	0.85	(0.25, 2.96)	1.21	(0.89, 1.63)
Medicare and Medicaid	2.41	(0.96, 6.04)	**1.54**	**(1.07, 2.23)**
Medicare alone or with other insurance	0.54	(0.25, 1.16)	1.18	(0.94, 1.47)
Other public sponsored coverage	0.40	(0.06, 2.84)	0.99	(0.62, 1.61)
Uninsured	2.64	(0.24, 29.15)	1.16	(0.71, 1.91)
Race/ethnicity				
White	Reference		Reference	
Latino	**5.41**	**(3.06, 9.55)**	**1.17**	**(0.97, 1.41)**
Asian	**4.85**	**(2.86, 8.25)**	**0.76**	**(0.59, 0.98)**
Black	**20.12**	**(10.73, 37.75)**	**1.94**	**(1.31, 2.89)**
Other	**10.60**	**(5.28, 21.29)**	**1.59**	**(1.18, 2.14)**
*Type of insurance coverage*Race/ethnicity*				
Medicaid*Latino	**0.40**	**(0.20, 0.81)**	**0.59**	**(0.44, 0.80)**
Medicaid*Asian	**0.27**	**(0.11, 0.69)**	0.62	(0.37, 1.05)
Medicaid*Black	**0.37**	**(0.17, 0.83)**	**0.55**	**(0.32, 0.94)**
Medicaid*Other	**0.23**	**(0.08, 0.63)**	0.77	(0.42, 1.38)
Private coverage, Covered California*Latino	1.57	(0.36, 6.91)	0.84	(0.37, 1.88)
Private coverage, Covered California*Asian	0.84	(0.08, 8.61)	1.12	(0.39, 3.19)
Private coverage, Covered California*Black	1.00	(0.16, 6.34)	0.96	(0.29, 3.11)
Private coverage, Covered California*Other	**0.07**	**(0.01, 0.55)**	0.56	(0.13, 2.48)
Private coverage, off-exchange *Latino	0.64	(0.11, 3.78)	0.57	(0.29, 1.14)
Private coverage, off-exchange*Asian	1.07	(0.18, 6.36)	0.66	(0.24, 1.86)
Private coverage, off-exchange*Black	0.91	(0.15, 5.65)	0.36	(0.10, 1.26)
Private coverage, off-exchange*Other	0.17	(0.00, 6.07)	0.49	(0.15, 1.61)
Medicare and Medicaid*Latino	0.46	(0.14, 1.53)	0.59	(0.38, 0.91)
Medicare and Medicaid*Asian	0.41	(0.08, 2.07)	0.52	(0.24, 1.12)
Medicare and Medicaid*Black	0.51	(0.11, 2.50)	0.56	(0.31, 1.00)
Medicare and Medicaid*Other	0.47	(0.11, 2.49)	1.26	(0.51, 3.13)
Medicare alone or with other insurance*Latino	1.41	(0.47, 4.24)	0.70	(0.47, 1.06)
Medicare alone or with other insurance*Asian	1.86	(0.49, 7.00)	1.07	(0.64, 1.80)
Medicare alone or with other insurance*Black	2.20	(0.86, 5.51)	0.70	(0.42, 1.16)
Medicare alone or with other insurance*Other	2.01	(0.54, 7.39)	1.11	(0.62, 2.00)
Other public sponsored coverage*Latino	0.91	(0.06, 13.11)	1.13	(0.48, 2.66)
Other public sponsored coverage*Asian	4.51	(0.20, 96.67)	1.75	(0.44, 6.89)
Other public sponsored coverage*Black	0.79	(0.06, 10.79)	0.89	(0.27, 2.95)
Other public sponsored coverage*Other	1.76	(0.14, 22.34)	0.60	(0.15, 2.43)
Uninsured*Latino	0.45	(0.03, 6.38)	0.76	(0.44, 1.32)
Uninsured*Asian	0.49	(0.04, 6.73)	0.67	(0.27, 1.66)
Uninsured*Black	0.36	(0.02, 5.58)	0.80	(0.29, 2.16)
Uninsured*Other	0.13	(0.01, 2.74)	0.68	(0.29, 1.57)

Continued

Table 3. Continued

Reason for discrimination	Race or Skin Color		Any Reason	
	AOR	95%CI	AOR	95%CI
Overall Test for Insurance Type* Race Interaction				
	F	P-Value	F	P-Value
	1.52	0.0515	1.33	0.1354

AOR, adjusted odds ratio.
Significant associations denoted in bold, at $P < .05$.
95%CI = 95% confidence interval.
All models control for race, citizenship status, gender, educational attainment, age, household income, health status, diagnosis of chronic conditions, visual or hearing problem or impairment, survey year, and urban or rural residence.

reason (AOR = 2.04; 95% CI, 1.70 to 2.44) were associated with higher odds of delaying or forgoing needed health care.

Discussion

This study observed that insurance type and sources of care are associated with lifetime perceptions of discrimination in health care. Perceived discrimination in health care was higher for those whose regular source of care is the ED relative to those whose regular source of care is a doctor's office or HMO, but it did not vary substantially once specific reasons for discrimination were considered. In addition, participants receiving Medicaid were more likely to perceive discrimination in health care, with race or skin color being the only specific reason, when compared with their counterparts with employer-sponsored coverage. This supports prior work that observed that Medicaid patients reported lower satisfaction when compared with individuals with other types of insurance.[41] The present study built on prior research that focused solely on racial and ethnic discrimination and showed that individuals with Medicaid were more likely to report perceiving racial or ethnic discrimination in health care. However, this prior work also showed disparities between other publicly funded insurance programs and employer sponsored coverage. The divergent findings may represent the difference between asking about racial and ethnic discrimination via a 1-stage approach (eg, asking only about

Table 4. Logistic Regression Models for Odds of Delaying Medical Needed Medical Care or Prescription Drugs in the Past 12 Months, by Reason for Discrimination (n = 63,100)

	Delayed or Did Not Get Needed Prescriptions in Past 12 Months		Delayed or Did Not Get Needed Medical Care in Past 12 Months	
	AOR	95%CI	AOR	95%CI
Reason for Discrimination				
Dissatisfaction with the health care system	**1.66**	**(1.28, 2.15)**	**1.79**	**(1.38, 2.33)**
Race or skin color	**1.69**	**(1.17, 2.46)**	1.13	(0.80, 1.59)
Age	1.30	(0.87, 1.96)	1.41	(1.00, 1.99)
Way respondent speaks English or other barrier to communication	1.06	(0.56, 1.84)	**1.97**	**(1.33, 2.92)**
Insurance status or type	0.92	(0.61, 1.39)	**1.61**	**(1.11, 2.35)**
Income or education	1.35	(0.83, 2.20)	1.61	(0.96, 2.71)
Any reason	**1.75**	**(1.48, 2.07)**	**2.04**	**(1.70, 2.44)**

Significant associations denoted in bold, at $P < .05$.
AOR, adjusted odds ratio.
95%CI = 95% confidence interval.
All models control for race, citizenship status, gender, educational attainment, age, household income, health status, diagnosis of chronic conditions, visual or hearing problem or impairment, survey year, and urban or rural residence.
Each row in the table represents a separate model.

racial and ethnic discrimination) and a 2-stage approach (eg, asking about discrimination more broadly, and then asking for the main reason for this discrimination).[42]

Discrimination for any reason was associated with increased odds of delaying or not getting needed prescription medications or medical care. Discrimination, in general, was associated with more delays in health care utilization. When examining specific reasons for discrimination, dissatisfaction with health care was the only one associated with delaying or forgoing both needed prescriptions and medical care. As such, patients may avoid receiving health care if they perceive that their expression of dissatisfaction with health care will be negatively perceived by their providers, which potentially leads to a feedback loop that further makes individuals dissatisfied with the health care system. Conversely, these individuals may be receiving low-quality care, which fuels negative attitudes about the health care system and subsequently makes them more likely to be discriminated against and more likely to avoid seeking health care. Furthermore, we found that the different reasons for discrimination had different effects on health care. Interestingly, perceived discrimination due to race or skin color was associated with only delay of prescriptions, which is contrary to previous findings that showed race was associated with delays in getting prescriptions and medical care.[38] Again, this may be attributable to the use of the 2-step approach to measuring racial discrimination in this study.

The 2-stage approach allowed for us to examine insurance disparities in perceived discrimination attributed to reasons other than race or ethnicity. First, adults with coverage off-exchange were less likely to perceive discrimination due to dissatisfaction with health care services relative to those with employer sponsored coverage. However, no differences were observed between private coverage purchased off-exchange and purchased through Covered California. This suggests that on- and off-exchange plans are attracting patients with similar prior histories of discrimination or provide access to health care with comparable levels of discrimination. In addition, findings suggest that there is variability in exposure and burden of discrimination between private health insurance purchased by individuals and group plans purchased by employers. This builds on a growing base of research showing disparities in outcomes and health care experiences between private insurance offerings in the ACA era.[37,43]

When examining the impact of perceived discrimination specifically, our study showed that the impact of insurance type on discrimination due to race or skin color did not depend on race/ethnicity. This is consistent with prior work that measured racial discrimination using a 1-stage approach.[38]

This study has limitations that need to be considered when interpreting results. First, CHIS data are self reported; thus, potential reporting biases may exist. Second, the cross-sectional nature of the study makes it difficult to determine the exact chain of causation among the variables we studied. For instance, the measure of discrimination is lifetime and the sources of care and insurance types are past year. Third, this study may not be generalizable to all states in the US, particularly because some states did not implement the ACA in the same way and may have different demographic characteristics. However, relative to prior work the racial diversity of the CHIS sample allowed for the examination of the impact of perceived discrimination among multiple racial and ethnic minority groups. Finally, the measure of discrimination in health care does not provide information on the characteristics of the individuals the respondents see as perpetuating the discrimination. For example, non-Latino White individuals may report discrimination due to race or skin color directed at them by a non-White individual. As such, we do not know whether experiences of discrimination in health care mean the same thing for members of the majority group.

Conclusions

This study observed that, even considering substantial health care reform, the experiences patients have in the health care setting vary systematically. Because this seems to be conditioned, at least in part, on the type of insurance a person has and where he or she receives health care, future reforms to the health care system are needed that provide a stronger overhaul of health care quality and must be better at addressing the effects of patients' prior experiences with health care. In particular, because patients with several different public insurance coverage options experienced a higher burden of discrimination, not addressing these problems will disproportionally affect populations that are poorer

and experience worse social determinants of health (eg, Medicaid enrollees). Furthermore, while perceived discrimination has a negative effect on health care utilization, our study suggests that the health care system needs to improve its ability to address certain types of discrimination to promote better population health.

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References

1. Hausmann LRM, Jeong K, Bost JE, Ibrahim SA. Perceived discrimination in health care and health status in a racially diverse sample. Medical Care 2008;46:905–14.
2. Sawyer PJ, Major B, Casad BJ, Townsend SS, Mendes WB. Discrimination and the stress response: psychological and physiological consequences of anticipating prejudice in interethnic interactions. Am J Public Health 2012;102:1020–6.
3. Pascoe EA, Smart Richman L. Perceived discrimination and health: a meta-analytic review. Psychol Bulletin 2009;135:531–54.
4. Juster RP, McEwen BS, Lupien SJ. Allostatic load biomarkers of chronic stress and impact on health and cognition. Neuroscience Biobehav Rev 2010;35:2–16.
5. Stevens-Watkins D, Perry B, Pullen E, Jewell J, Oser CB. Examining the associations of racism, sexism, and stressful life events on psychological distress among African-American women. Cultural Divers Ethnic Minor Psychol 2014;20:561–9.
6. Slopen N, Williams DR. Discrimination, other psychosocial stressors, and self-reported sleep duration and difficulties. Sleep 2014;37:147–56.
7. Byrd DR. Race/ethnicity and self-reported levels of discrimination and psychological distress, California, 2005. Prev Chronic Dis 2012;9:E156.
8. Shavers VL, Fagan P, Jones D, et al. The state of research on racial/ethnic discrimination in the receipt of health care. Am J Public Health 2012;102:953–66.
9. Harris R, Tobias M, Jeffreys M, Waldegrave K, Karlsen S, Nazroo J. Racism and health: The relationship between experience of racial discrimination and health in New Zealand. Social Sci Med 2006;63:1428–41.
10. Stepanikova I, Baker EH, Simoni ZR, et al. The role of perceived discrimination in obesity among African Americans. Am J Prevent Med 2017;52:S77–S85.
11. Ayotte BJ, Hausmann LR, Whittle J, Kressin NR. The relationship between perceived discrimination and coronary artery obstruction. Am Heart J 2012;163:677–83.
12. Krieger N, Jahn JL, Waterman PD. Jim Crow and estrogen-receptor-negative breast cancer: US-born black and white non-Hispanic women, 1992-2012. Cancer Causes Control 2017;28:49–59.
13. Jackson SE, Hackett RA, Steptoe A. Associations between age discrimination and health and well-being: cross-sectional and prospective analysis of the English Longitudinal Study of Ageing. The Lancet Public Health 2019;4:e200–e208.
14. Williams DR, Mohammed SA. Discrimination and racial disparities in health: evidence and needed research. J Behav Med 2009;32:20–47.
15. Lee C, Ayers SL, Kronenfeld JJ. The association between perceived provider discrimination, health care utilization, and health status in racial and ethnic minorities. Ethnic Dis 2009;19:330–7.
16. Hausmann LRM, Jeong K, Bost JE, Ibrahim SA. Perceived discrimination in health care and use of preventive health services. J Gen Intern Med 2008;23:1679–84.
17. Trivedi AN, Ayanian JZ. Perceived discrimination and use of preventive health services. J Gen Intern Med 2006;21:553–8.
18. 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;20:578–83.
19. 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.
20. Hausmann LRM, Kressin NR, Hanusa BH, Ibrahim SA. Perceived racial discrimination in health care and its association with patients' healthcare experiences: does the measure matter? Ethnic Dis 2010;20:40.
21. Stepanikova I, Oates GR. Perceived discrimination and privilege in health care: the role of socioeconomic status and race. Am J Prevent Med 2017;52:S86–S94.
22. Abramson CM, Hashemi M, Sánchez-Jankowski M. Perceived discrimination in U.S. healthcare: Charting the effects of key social characteristics within and across racial groups. Prevent Med Rep 2015;2:615–21.
23. Vina ER, Hausmann LRM, Utset TO, Masi CM, Liang KP, Kwoh CK. of racism in healthcare among patients with systemic lupus erythematosus: a cross-sectional study. Lupus Sci Med 2015;2:e000110.
24. Hausmann LRM, Jeong K, Bost JE, Kressin NR, Ibrahim SA. Perceived racial discrimination in health care: a comparison of veterans affairs and other patients. Am J Public Health 2009;99:S718–S724.
25. Schulson LB, Paasche-Orlow MK, Xuan Z, Fernandez A. Changes in perceptions of discrimination in health care in California, 2003 to 2017. JAMA Netw Open 2019;2:e196665-e196665.

26. Boulware LE, Cooper LA, Ratner LE, LaVeist TA, Powe NR. Race and trust in the health care system. Pub Health Reports 2003;118:358–65.
27. Nazroo JY. The structuring of ethnic inequalities in health: economic position, racial discrimination, and racism. Am J Public Health 2003;93: 277–84.
28. Bugiardini R, Navarro Estrada JL, Nikus K, Hall AS, Manfrini O. Gender bias in acute coronary syndromes. CVP 2010;8:276–84.
29. Williams DR, Bennett K, Feely J. Evidence for an age and gender bias in the secondary prevention of ischaemic heart disease in primary care. Brit J Clin Pharmacol 2003;55:604–8.
30. Rogers SE, Thrasher AD, Miao Y, Boscardin WJ, Smith AK. Discrimination in Healthcare settings is associated with disability in older adults: health and retirement study, 2008–2012. J Gen Intern Med 2015;30:1413–20.
31. Austin S, Qu H, Shewchuk RM. Age bias in physicians' recommendations for physical activity: a behavioral model of healthcare utilization for adults with arthritis. J Phys Act Health 2013;10:222–31.
32. Han X, Call KT, Pintor JK, Alarcon-Espinoza G, Simon AB. Reports of Insurance-Based Discrimination in Health Care and Its Association With Access to Care. Am J Public Health 2015;105: S517–S525.
33. Attanasio L, Kozhimannil KB. Health care engagement and follow-up after perceived discrimination in maternity care. Med Care 2017;55:830–3.
34. Blumenthal D, Collins SR. Health care coverage under the Affordable Care Act — A progress report. N Engl J Med 2014;371:275–81.
35. Carman KG, Eibner C, Paddock SM. Trends In Health Insurance Enrollment, 2013-15. Health affairs (Project Hope) 2015;34:1044–8.
36. Sommers BD, Musco T, Finegold K, Gunja MZ, Burke A, McDowell AM. Health Reform and changes in health insurance coverage in 2014. N Engl J Med 2014;371:867–74.
37. Alcalá HE, Roby DH, Grande DT, McKenna RM, Ortega AN. Insurance Type and access to health care providers and appointments under the Affordable Care Act. Med Care 2018;56:186–192.
38. Alcalá HE, Cook DM. Racial discrimination in health care and utilization of health care: a cross-sectional study of California adults. J Gen Intern Med 2018;33:1760–7.
39. D'Anna LH, Stevens GD, Malotte CK, Tsai K-Y. Does health care setting matter in reports of discrimination? J Ambulatory Care Manage 2010; 33:314–27.
40. California Health Interview Survey. Report 1: Sample Design. Los Angeles, CA: UCLA Center for Health Policy Research; 2016.
41. Weech-Maldonado R, Hall A, Bryant T, Jenkins KA, Elliott MN. The relationship between perceived discrimination and patient experiences with health care. Med Care 2012;50:S62–S68.
42. Johnson TP, Shariff-Marco S, Willis G, et al. Sources of interactional problems in a survey of racial/ethnic discrimination. Int J Public Opinion Res 2015;27:244–63.
43. Kemmick Pintor J, Alcalá HE, Roby DH, et al. Disparities in Pediatric Provider Availability by Insurance Type After the ACA in California. Acad Pediatr 2019;19:325–32.