



Discrimination in Medical Settings and Attitudes toward Complementary and Alternative
Medicine: The Role of Distrust in Conventional Providers

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Abstract

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Keywords

Discrimination; Complementary Medicine; Race/Ethnicity; Nativity; Trust

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ABSTRACT

This study examines the relationship between racial/ethnic discrimination in medical settings, distrust in conventional medicine, and attitudes toward complementary and alternative medicine (CAM) among a racially/ethnically diverse sample. We also investigate how this relationship differs by nativity. Data are from a 2008 statewide stratified sample of publicly insured adults in Minnesota (N=2,194). *Discrimination* was measured as self-reported unfair treatment in medical settings due to race, ethnicity, and/or nationality. Outcomes are *trust in conventional providers/medicine* and *attitudes toward CAM modalities*. Discrimination in medical settings was positively associated with 1) distrust in conventional providers and 2) favorable attitudes toward CAM. Foreign-born status was associated with more distrust in conventional providers/medicine and more positive attitudes toward CAM. Our findings show that for publicly insured, and especially minority and foreign-born individuals, CAM may represent a response to disenfranchisement in conventional medical settings and resulting distrust.

Keywords: Discrimination, Complementary Medicine, Race/Ethnicity, Nativity, Trust

INTRODUCTION

Discrimination in health care settings is measurably detrimental to the health of minority individuals (Gee, 2002; Pascoe & Smart Richman, 2009), as well as to their help-seeking behavior and adherence to treatment (Casagrande, Gary, LaVeist, Gaskin, & Cooper, 2007). A growing body of literature has documented that racial and ethnic minority populations are uniquely affected by discrimination in medical encounters (Napoles-Springer, Santoyo, Houston, Perez-Stable, & Stewart, 2005; Thorburn, Kue., Keon, & Lo, 2012), less satisfied with conventional medical care (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003; Perez, Sribney, & Rodriguez, 2009; Saha, Komaromy, Koepsell, & Bindman, 1999), and less likely to trust their physicians (Doescher, Saver, Franks, & Fiscella, 2000; Thorburn, Kue, Keon, & Lo, 2012) than are White, non-Hispanic individuals. Furthermore, members of minority populations who report discrimination are more likely to delay care or withdraw from medical settings where they experienced unfair or discriminatory treatment (Feagin, 1991; Insaf, Jurkowski, & Alomar, 2010; Van Houtven et al., 2005), and to avoid contact with social institutions in general (Leonardelli, 2003). However, discrimination does not preclude individuals from having health care needs. Consequently, if people seek care but also wish to avoid what they perceive as unfair or inferior treatment from conventional providers, they may view other avenues of care more favorably. One such substitute is complementary and alternative medicine (CAM).

A growing number of Americans report using CAM (Su, 2011), which consists of a diverse array of treatments that often exist outside of conventional medicine including mind-body medicine, biologically-based practices, manipulative and body-based practices, and energy medicine (National Center for Complementary and Alternative Medicine (NCCAM), 2010). Many of these are associated with benefits for patient health (Nguyen, Davis, Kaptchuk, & Phillips, 2011; Sasagawa, Martzen, Kelleher, & Wenner, 2008). True to its name, CAM may complement or serve as an alternative to conventional care modalities. As such, marginalized individuals may view CAM as a vehicle of medical pluralism, allowing for greater personal agency in seeking care (Kaptchuk & Eisenberg, 1998), especially if members of vulnerable populations feel their needs are not being met (Milan et al., 2008).

Although attitudes toward CAM are generally positively associated with higher educational attainment and racial/ethnic minority populations have historically had lower use of CAM (Astin, 1998; Grzywacz et al., 2007), some research shows that this may be changing (Mackenzie, Taylor, Bloom, Hufford, & Johnson, 2003). Additionally, lower socioeconomic status (SES) is related to dissatisfaction with conventional medicine (Becker & Newsom, 2003), and with difficulty accessing needed care (Blendon et al., 2002; Schoen et al., 2007), which in turn is associated with higher CAM use (Ritchie, Gohmann, & McKinney, 2005). Yet, while there is evidence linking other forms of discrimination in conventional health care with attitudes and utilization of CAM (Matthews, Hughes, Osterman, & Kodl, 2005; Shippee, Schafer, & Ferraro, 2012), there is a dearth of literature on the effect of racial/ethnic discrimination alongside its parallel associations with attitudes toward CAM modalities. Further, while there is a growing body of literature on CAM utilization, much less is known about perceptions and attitudes that underlie such use.

An added consideration in the discrimination-distrust-CAM attitudes relationship is the role of nativity (country of birth), an oft-missing component of research on discrimination and health (Krieger, 2011). Members of immigrant communities, due to their unique cultural and linguistic features, represent particular complexity in their interactions with providers (Yoo, Gee, & Takeuchi, 2009), potentially increasing the likelihood of actual or perceived discrimination or

distrust of providers (Thorburn, Kue, Keon, & Lo, 2012). Moreover, these same cultural differences may engender a greater readiness to use certain CAM modalities (Loera, Reyes-Ortiz, & Kuo, 2007). Research in this area is both limited and conflicted; some studies find that CAM use is higher among foreign-born minorities than it is for U.S.-born individuals (Braganza, Ozuah, & Sharif, 2003; Loera et al., 2007), whereas others find the opposite (Upchurch & Chyu, 2005).

Although racial/ethnic discrimination is well-documented as a factor affecting minority individuals' trust in conventional care (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003; Chen, Fryer, Phillips, Wilson, & Pathman, 2005; Thorburn, Kue, Keon, & Lo, 2012) few studies have examined whether this discrimination-trust relationship is associated with a greater receptiveness toward CAM. The present paper investigates this understudied topic among a diverse sample of publicly insured individuals—a group at special risk of discrimination and problems with access to care. Furthermore, we account for the role of nativity in shaping these associations by including it as a control variable. Examining the links between discrimination, trust in providers of conventional care, and CAM attitudes—and controlling for the role of nativity—offers an opportunity to understand disadvantaged individuals' utilization patterns, their unique experiences with health care, and the potential consequences of disenfranchisement.

Objectives

We test the following three hypotheses. First, we expect that racial/ethnic discrimination in conventional care settings will be positively associated with distrust of conventional care (Hypothesis 1). Second, we predict that individuals who report racial discrimination in conventional medical settings will have more positive views of CAM (Hypothesis 2). Finally, we test whether greater distrust in providers of conventional care is associated with more positive attitudes toward CAM (Hypothesis 3). We further expect nativity to be positively associated with both distrust and CAM attitudes, and therefore include it in our models as a control variable.

METHODS

Sample

Data consisted of survey and administrative data from a stratified random sample of non-institutionalized, publicly insured individuals in Minnesota. Consenting enrollees of Minnesota Health Care Programs (MCHP) participated in a 2008 statewide survey assessing health care disparities and barriers to access. Racial/ethnic minorities were oversampled, with the final sample representing comparable proportions of American Indian, African American, Asian, Hispanic/Latino, and White non-Hispanic groups. Only one person per household was included in the sample. For the present study, analyses are limited to adult respondents ($n = 2,194$). The original study received IRB clearance from the Minnesota Department of Human Services and the University of Minnesota; the present project also received University of Minnesota IRB approval.

Data collection

Survey data were collected between July and December 2008 using a mail survey, with a telephone follow-up (and subsequent survey for those eligible) in English, Spanish, Hmong, or Somali as needed. The response rate, calculated based on eligible households, was 44.3%, which echoes those of previous studies using similar (Medicaid and low-income) populations—e.g., 38% (Weech-Maldonado et al., 2003) to 50% (Gibson, Koepsell, Diehr, & Hale, 1999). Other variables came from matched administrative data.

Dependent variables

We measured distrust in conventional medicine using a measure of *distrust of doctors who practice conventional medicine*. This was a binary item asking whether respondents “worry that doctors are not trustworthy” as a barrier to utilizing care (1 = yes). This item is similar to others used in existing studies (Astin, 1998). We tested using a second measure, also binary, to assess *distrust of conventional care*. This question asked whether participants felt that the treatment they received might make them feel worse (1 = yes). This item is consistent with studies that have measured mistrust in the medical system among racial minorities related to discrimination (LaVeist, Nickerson, & Bowie, 2000), as well as perceived (Lillie-Blanton, Brodie, Rowland, Altman, & McIntosh, 2000) and actual (Schneider, Zaslavsky, & Epstein, 2002) disparities in quality of care. In sensitivity analyses, results for each measure were similar (and are available upon request). However, because of potential ambiguity in this medicine-related measure, including its potential lack of fit with the concept of distrust and the real possibility that certain types of care could make patients feel worse by their very nature (as with chemotherapy), we included only the provider-related measure in our reported results.

CAM attitudes. This was an ordinal measure derived from two items. The first asked respondents about the importance of visiting a spiritual healer, traditional healer, or shaman to keep from getting sick. The second asked about the importance of visiting an alternative or complementary health care provider such as an acupuncturist or herbalist. The coding for both original items ranged from 1 (not important) to 3 (very important). Our measure was a sum of these two items, originally ranging from 2 to 6, which we then recoded to a range of 1-5 for analyses, with 1 indicating no importance for visiting CAM providers and 5 indicating high importance. This approach is consistent with other research on CAM combining modalities to reflect general CAM use and preferences (Mackenzie et al., 2003). Further, it is similar to other studies using individual items, rather than scales or factor analyses, to measure attitudes towards CAM among patients (Herron & Glasser, 2003; Wilkinson et al., 2002) and providers (Koh, Teo, & Ng, 2003).

Independent variables

Racial/ethnic discrimination. Our key independent variable was a measure of self-reported discrimination. Specifically, the original item asked individuals how often they believed their race, ethnicity, or nationality led to health care providers to treat them unfairly, with responses, “Never,” “Sometimes,” “Usually,” and “Always.” For brevity and clarity in the present analysis, we used a recoded, binary form of this measure, such that 0 represented “Never” and 1 represented all other categories. Similar measures of self-reported discrimination in health care settings have been shown to be significant predictors of health disparities (Krieger & Sidney, 1996), including single-item measures (Hausmann, Jeong, Bost, & Ibrahim, 2008; Lauderdale, Wen, Jacobs, & Kandula, 2006) *Nativity* referred to a binary item pertaining to whether the individual was born in the U.S. (1 = native born).

Covariates. Full models included the following covariates: age; education (1-8; with 4 representing a high school degree); self-rated health (1-5, with 1 representing “poor” and 5 representing “excellent”); and dummy/indicator variables for gender (1 = female); being married/in a marriage-like relationship (versus single/divorced/widowed); employment (1 = working part-/full-time); metropolitan area residence (versus rural/other areas); disability status (using administrative records; 1=disabled); and racial/ethnic identification, which included Hispanic/Latino, American Indian, Black, and Asian self-identification (those reporting multiple races were re-categorized using the “whole assignment, smallest group” method following Office

of Management and Budget guidelines, (Office of Management and Budget (OMB), 2010) with which they were assigned to whichever single racial/ethnic category is the smaller group. Missing data for race/ethnicity were assigned codes from administrative records).

Analyses

Regression and predicted probabilities. We used StataSE 11 (StataCorp LP, 2009) for all analyses. We first conducted descriptive analyses (Table 1). To test Hypothesis 1, we performed a series of logistic regressions of distrust of doctors on discrimination, nativity, and other covariates (Table 2). To test Hypothesis 2, we regressed CAM attitudes on racial discrimination and covariates (Table 3). Since CAM attitudes is an ordinal variable, we used ordinal logistic regression for these models, which captures the odds of experiencing a higher level/rank of an outcome as compared to a lower level. The nested models in Table 3 display the incremental addition of controls for comparison: first, discrimination (Model 1); then racial/ethnicity groups (Model 2); then nativity status (Model 3); and finally distrust in doctors as a potential mediator of the link from discrimination and racial/ethnic and nativity status to CAM attitudes, to test Hypothesis 3 (Model 4). Models including distrust of conventional *care* (rather than doctors) demonstrated similar effects, and so are not presented here. We used post-estimation predicted probabilities, which were based on the adjusted estimates produced by the regression model (Long & Freese, 2005), to display findings for CAM attitudes in an interpretable format (see Figure 1). These adjusted probabilities can be read as the *percent chance* of reporting a given level of attitudes toward CAM (e.g., .20 for level 5 equals a 20 percent chance of reporting very high importance for CAM). Because they result from an ordinal logit model, these probabilities are cumulative (i.e., the probabilities for levels of CAM attitudes add to 1.0, or 100%).

Weighting and strata. The data were obtained through a stratified sampling design. Therefore, we employed person-level frequency weights in our descriptive analyses and sampling weights (incorporating race/ethnicity-based sampling strata) in our regression models in order to account for this design.

Missing data. We used multiple imputation for missing data (Royston, 2005), although findings were robust to alternate strategies of handling missing data (e.g., listwise deletion).

RESULTS

Descriptive statistics

Table 1 displays descriptive statistics, overall and separated by nativity. It presents two key dependent variables: attitudes toward CAM and distrust of doctors. Notably, differences in the dependent variables by nativity status are all significant ($p < .001$), confirming our expectation that nativity is a key consideration—at least at the bivariate level. Table 1 also lists all key control variables, again showing several significant differences by nativity.

Table 1: Participant Demographics among Minnesota Health Care Program Enrollees

Dependent Variables	Range	Mean (SD)	Native Status	Non-Native Status
Attitudes toward CAM	1-5	2.206 (1.331)	1.828 (1.132)	4.357*** (1.142)
Distrust of doctors	0/1	0.277 (0.447)	0.194 (0.396)	0.365*** (0.482)
Independent Variables	Range	Mean (SD)	Native Status	Non-Native Status
Race/ethnicity				
Hispanic	0/1	0.165	0.132	0.201***
American Indian	0/1	0.144	0.275	0.005***
Black	0/1	0.278	0.211	0.349***
Asian	0/1	0.227	0.037	0.428***
Racial/ethnic discrimination	0/1	0.289 (0.454)	0.273 (0.446)	0.309 (0.462)
Female	0/1	0.668	0.689	0.654
Age	18-89	42.843 (17.857)	41.256 (16.880)	44.373*** (18.648)
Education	1-8	3.683 (1.816)	4.459 (1.410)	2.853*** (1.843)
Marital status (1=married)	0/1	0.425	0.318	0.545***
Employed (1=full or part-time)	0/1	0.306	0.325	0.289
Area of residence (1=urban, 4=rural)	1-4	1.838 (1.268)	2.266 (1.382)	1.386*** (0.947)
Self-rated health (1=Poor, 5=Excellent)	1-5	3.180 (1.111)	3.039 (1.059)	3.323*** (1.140)
Disability status (admin. data)	0/1	0.232 (0.454)	0.273 (0.446)	0.309 (0.462)
Native status	0/1	0.515		

Data not imputed. N range = 1,947 – 2,194.

*** p<0.001, ** p<0.01, * p<0.05

Distrust of conventional medicine

Table 2 presents logistic regression findings for the association between racial/ethnic discrimination and distrust of doctors practicing conventional medicine. Enrollees reporting discrimination in conventional care had nearly 3 times the odds of distrusting doctors ($p < .001$) compared to those who did not report discrimination. Disability was also positively associated with distrust of doctors ($OR = 1.81, p < .05$). In sensitivity analyses, when racial discrimination and nativity were excluded, all racial groups had a significant, positive association with distrust in doctors as compared to White. With nativity included, the relationship remained significant for only American Indian and Asian individuals (for Black individuals, $p = 0.051$). Adding discrimination fully mediated the effect of race/ethnicity. Finally, while nativity was not significant in final models, it did significantly predict distrust in doctors when race/ethnicity was not included.

Table 2: Logistic Models Predicting Distrust of Doctors Practicing Conventional Medicine

	Distrust in doctors	
Discrimination	2.912***	(1.908 - 4.443)
Female	1.383	(0.898 - 2.130)
Age	0.989	(0.977 - 1.002)
Education	1.009	(0.887 - 1.148)
Married	0.998	(0.651 - 1.530)
Employed	1.077	(0.691 - 1.678)
Metro area resident	0.957	(0.593 - 1.543)
Self-rated health	0.855	(0.703 - 1.041)
Disabled	1.805*	(1.141 - 2.855)
Hispanic/Latino	1.396	(0.672 - 2.898)
Native American	1.140	(0.671 - 1.936)
Black	1.195	(0.744 - 1.920)
Asian	1.945	(0.865 - 4.373)
Nativity (U.S. born)	0.777	(0.487 - 1.241)
Constant	0.324	(0.084 - 1.256)
Observations	2,194 [†]	

Note: Odds ratios shown, with confidence intervals in parentheses.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

[†] Observations shown reflect models using multiple imputation for missing data.

Table 3: Nested Ordinal Logistic Regression Predicting Attitudes toward CAM

	Model 1	Model 2	Model 3	Model 4
Discrimination	2.090*** (1.502 - 2.908)	1.591* (1.109 - 2.282)	1.607* (1.118 - 2.312)	1.365 (0.927 - 2.010)
Female	0.934 (0.671 - 1.299)	0.950 (0.679 - 1.329)	0.963 (0.688 - 1.347)	0.933 (0.665 - 1.308)
Age	1.002 (0.993 - 1.012)	1.004 (0.994 - 1.014)	1.003 (0.993 - 1.013)	1.004 (0.994 - 1.014)
Education	0.977 (0.889 - 1.074)	1.054 (0.955 - 1.162)	1.066 (0.966 - 1.175)	1.068 (0.966 - 1.181)
Married	1.414* (1.051 - 1.902)	1.401* (1.038 - 1.891)	1.355* (1.000 - 1.835)	1.338 (0.986 - 1.816)
Employed	0.827 (0.600 - 1.139)	0.882 (0.634 - 1.227)	0.871 (0.626 - 1.214)	0.851 (0.605 - 1.199)
Metro Area Resident	1.238 (0.889 - 1.723)	1.018 (0.706 - 1.467)	0.979 (0.679 - 1.413)	0.973 (0.676 - 1.401)
Self-rated health	1.018 (0.886 - 1.169)	1.013 (0.877 - 1.169)	0.995 (0.860 - 1.152)	1.020 (0.878 - 1.185)
Disabled	1.203 (0.818 - 1.771)	1.361 (0.914 - 2.028)	1.394 (0.934 - 2.080)	1.304 (0.876 - 1.943)
Hispanic/Latino		1.108 (0.603 - 2.037)	0.875 (0.440 - 1.741)	0.863 (0.428 - 1.739)
Native American		2.410*** (1.507 - 3.855)	2.408*** (1.506 - 3.851)	2.418*** (1.496 - 3.907)
Black		1.825*** (1.283 - 2.597)	1.590* (1.089 - 2.322)	1.572* (1.061 - 2.329)
Asian		5.483*** (3.191 - 9.422)	3.903*** (2.101 - 7.248)	3.626*** (1.855 - 7.089)
Nativity (U.S.-born)			0.638* (0.422 - 0.964)	0.650 (0.421 - 1.005)
Distrust in doctors				2.356*** (1.592 - 3.487)
Cut-point 1	1.934 (0.738 - 5.066)	3.398* (1.265 - 9.126)	2.061 (0.689 - 6.163)	2.543 (0.833 - 7.768)
Cut-point 2	5.211*** (1.960 - 13.855)	9.678*** (3.547 - 26.407)	5.900** (1.958 - 17.783)	7.463*** (2.437 - 22.856)
Cut-point 3	18.715*** (7.082 - 49.461)	36.883*** (13.468 - 101.007)	22.576*** (7.576 - 67.276)	29.189*** (9.623 - 88.538)
Cut-point 4	34.860*** (12.782 - 95.074)	69.678*** (24.845 - 195.412)	42.637*** (14.061 - 129.293)	55.538*** (18.167 - 169.780)
Observations	2194 [†]	2,194	2,194	2,194

Note: Odds ratios shown, with confidence intervals in parentheses.

*** p<0.001, ** p<0.01, * p<0.05

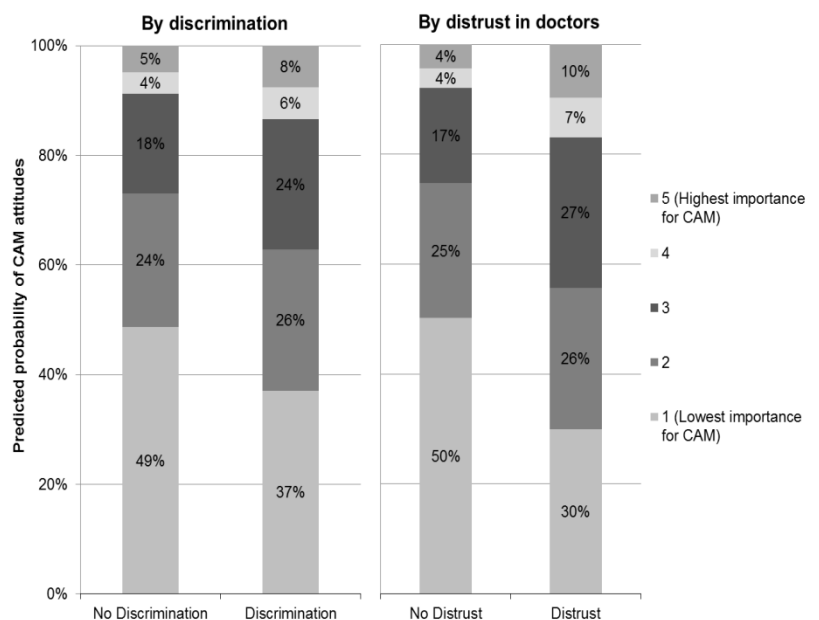
[†]Observations shown reflect models using multiple imputation for missing data.

CAM attitudes

Findings from ordinal logistic regression models of attitudes toward CAM on racial/ethnic discrimination, nativity, and covariates are shown in Table 3. When controlling for demographics (other than race/ethnicity and nativity, Model 1), enrollees reporting discrimination had 2.1 times the odds of more favorable attitudes toward CAM, compared to those not reporting it ($p < .001$). Controlling for race/ethnicity in Model 2, the effect of discrimination diminished only slightly and results remained significant ($OR = 1.59$, $p < .05$). In Model 3, enrollees born in the U.S. had 36% lower odds of reporting favorable attitudes toward CAM than non-native respondents ($OR = 0.64$, $p < .05$), but the effect of discrimination remained significant. Finally, in Model 4, distrust of doctors partially mediated the relationships between a) discrimination and attitudes towards CAM and b) nativity and CAM attitudes; both coefficients became non-significant, while distrust had a significant association with CAM attitudes ($OR = 2.36$, $p < 0.001$). To test for partial mediation, we followed Baron and Kenny's (Baron R. M., Kenny D. A., 1986) steps to test for mediation: first regressing distrust toward doctors (mediator) on racial/ethnic discrimination, then regressing attitudes toward CAM on discrimination; and finally regressing attitudes toward CAM on both discrimination and distrust. The test, combined with regression analyses, indicated a partial mediation of distrust in doctors on the relationship between discrimination and CAM attitudes. In Models 2-4, all racial/ethnic minority groups except for Hispanic/Latino individuals had higher odds of more positive CAM attitudes as compared to White, non-Hispanic individuals.

Figure 1 presents predicted probabilities for the associations of discrimination and CAM attitudes (using adjusted probabilities based on Table 3, Model 3), and of distrust in doctors and CAM attitudes (adjusted using the regression shown in Table 3, Model 4). Those reporting discrimination had a 37% chance of reporting the lowest importance for CAM, versus 48.8% for those not reporting discrimination (difference significant at $p < .05$). However, those reporting discrimination had a significantly *higher* probability of reporting all higher levels of importance for CAM. Similarly, those reporting distrust of doctors had a significantly lower chance of reporting the lowest importance for CAM use, compared to those not reporting distrust (29.9% versus 50.2%, $p < .05$) and a significantly higher chance of reporting high importance for CAM use (9.7% versus 4.4%, $p < .05$).

Figure 1. Predicted Probability of CAM Attitudes, by Discrimination and Distrust in Doctors



Note: Probabilities shown represent the adjusted probabilities of CAM attitudes, using estimates from multivariate ordinal logistic regressions as shown in Table 3, Model 3 (by discrimination) and Table 3, Model 4 (by distrust).

DISCUSSION

The objective of this analysis was to test whether racial/ethnic discrimination in medical settings is associated with distrust of conventional medicine, whether the two are associated with more positive attitudes toward CAM, and to examine nativity's role in these relationships. The rationale for this inquiry stemmed from the fact that the conventional medical care setting is an arena where members of minority populations have been historically disadvantaged (Williams, 1999), and because they may withdraw from settings where they experience discrimination (Feagin, 1991; Insaf et al., 2010; Thorburn, Kue, Keon, & Lo, 2012). If minority individuals feel discriminated against in medical settings, will they hold more positive views toward CAM? And, what role does nativity status have, as it may relate to both distrust in conventional medicine and readiness to use CAM?

Discrimination was associated with distrust of doctors practicing conventional medicine (supporting Hypothesis 1), and was associated with positive views of CAM (supporting Hypothesis 2). Also, distrust of doctors was a partial mediator of the relationship between racial discrimination and CAM attitudes (supporting Hypothesis 3). These findings outline what is likely a key mechanism underlying patient shifts toward replacing or supplementing conventional care with CAM.

As anticipated, nativity status was significantly associated with both distrust and attitudes toward CAM at the bivariate level. This finding deviates from previous studies, which show non-native status being negatively correlated (Upchurch & Chyu, 2005) or having no relationship (Mehta, Phillips, Davis, & McCarthy, 2007) with attitudes toward CAM. However, the nativity-distrust relationship did not remain when controlling for other variables. While it became non-significant, the strength of the effect of nativity on attitudes toward CAM was essentially unchanged when distrust was added to the model, while the effect for discrimination was reduced in both size and significance. In sensitivity analyses, we found that nativity was statistically mediated by controlling for race/ethnicity. This finding is relevant for our sample because a number of Asian and Black enrollees of Minnesota Health Care Programs are foreign-born (largely Hmong and Somali immigrant communities, respectively). These patterns provide one potential reason why others have not found a consistent relationship between nativity and CAM use. Of course, prior studies also have been fairly limited in terms of sample population and prevalence of CAM therapies studied (e.g., Kim, Han, Kim, & Duong, 2002), and CAM modalities differ between studies; shaman/healer, or herbal use measured here and elsewhere (Kuo, Hawley, Weiss, Balkrishnan, & Volk, 2004), do not represent the full range of CAM modalities.

Above and beyond the impact of discrimination and nativity on attitudes toward CAM, race maintained an independent, significant impact on respondents' interest in CAM. Specifically, being Native American, Black, or Asian was associated with significantly higher odds of more positive attitudes toward CAM in our multivariate analyses, even after controlling for all other predictors. This may be an indication that race represents cultural identity and preferences toward particular types of care, especially among Asians, for whom the effect of race was especially strong. For Black and Native American individuals, a prolonged history of discrimination in conventional care may result in more positive attitudes toward CAM (Shippee et al., 2012).

Findings regarding the association between discrimination and attitudes toward CAM are novel. A growing body of descriptive literature has noted the dissimilarity between minority and White non-Hispanic Americans in the usage of CAM. The literature suggests that CAM is

largely a middle-class phenomenon underutilized by minority Americans (Astin, 1998; Grzywacz et al., 2005). However, just as certain attributes of individuals' worldviews (such as spirituality or openness to new things) predispose some to utilize CAM (Hildreth & Elman, 2007), the social force of discrimination may exert a strong influence among minority individuals' attitudes toward CAM (Bazargan et al., 2005). Although studies have found that many racial/ethnic minorities distrust and feel distanced from their physicians (Doescher et al., 2000; Thorburn, Kue, Keon, & Lo, 2012), limited research has demonstrated associations between racial/ethnic discrimination in conventional medicine and attitudes toward CAM. The present findings suggest that minority individuals who experience discrimination may look beyond the medical establishment to include additional therapies in managing health needs. Also, it is important to remember that while CAM represents non-conventional medicine in the U.S., it may have deep cultural roots in other parts of the world (e.g., Asia, Africa). Thus, CAM may represent a part of cultural identity. Yet, since nativity was not significantly associated with CAM attitudes in multivariate models, it is possible that it is only a somewhat effective proxy for cultural belief-systems.

As stated above, distrust in doctors practicing conventional medicine was associated with positive views of CAM (supporting Hypothesis 3). This relationship partially mediated the associations of a) racial/ethnic discrimination and b) nativity with CAM attitudes. This is consistent with research demonstrating that CAM users supplement conventional medicine when they do not feel their needs are being completely met (Milan et al., 2008; Sirois & Gick, 2002), but also indicates that such patterns may also hold true for those who are unhappy with care for other reasons, including discrimination.

Though this analysis sheds fresh light on discrimination's relationship with attitudes toward different health care choices, several limitations must be kept in mind. First, our measures of CAM modalities do not allow us to examine the effects of discrimination on attitudes toward separate forms of CAM. It could be argued that CAM represents such a broad assortment of systems that findings may differ across domains. For the purposes of this study, however, the assessed CAM modalities represented useful measures for types of CAM typically lying outside of conventional medicine. And, while studies have examined provider attitudes toward CAM (Koh et al., 2003), it is useful to have more detailed information on patient attitudes toward CAM, especially among vulnerable populations, such as the publicly insured. Second, despite incorporating sampling weights to improve representativeness to the publicly insured population in Minnesota, these data are not nationally representative. However, they address the concerns of vulnerable populations who may otherwise be omitted from the CAM literature, including both foreign-born and native minorities and the publicly insured. Thus, these findings are still of interest to those working with at-risk and/or non-native populations. Moreover, this sample population is especially relevant at a time when public insurance eligibility will be expanding based on new legislation. Third, our measures of discrimination and distrust are limited to one-item each. While they provide statistically meaningful results in our analyses, they may not represent the full effect of life-long and multi-dimensional discrimination or distrust experienced by members of our study population. Yet, our item is very similar to other self-reported (Krieger & Sidney, 1996) and single-item (Hausmann et al., 2008; Lauderdale et al., 2006) measures of discrimination in the literature. As such measures are common in health services research, this is an area that would benefit from further development and we urge researchers to focus attention on more robust scales of distrust as related to health care. Finally, our analyses are limited in their causal interpretations because of the correlational nature of the

design. It is our hope that future research will explore longitudinal relationships between discrimination and the use of conventional medicine and CAM.

In conclusion, findings indicate that complex and significant relationships exist between racial/ethnic discrimination, distrust in conventional medicine, and attitudes toward CAM. These findings help to bridge some of the current gaps in the literature about these complex relationships and are novel for multiple reasons. First, while similar studies have focused on CAM attitudes among children (Braganza et al., 2003) and Mexican-Americans (Loera et al., 2007), our study is unique for its racial/ethnic diversity and inclusion of relatively large samples of Somali and Hmong respondents and for its focus on attitudes toward CAM among low-income, publicly-insured adults. Additionally, our study controls for and examines discrimination in conventional care, while many other studies on attitudes toward CAM do not. Furthermore, our analysis controlled how nativity operated in each of these relationships, which was both novel and informative, considering its limited significance in multivariate relationships. The findings here are highly pertinent in considering how to address the health care needs, concerns, and utilization patterns of vulnerable populations, and should be treated as a call for future research and policy attention.

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CONFLICT OF INTEREST

There are no conflicts of interest for any of the authors on this study.

REFERENCES

- Astin, J. A. (1998). Why patients use alternative medicine. *JAMA*, 279(19), 1548-1553.
- Baron R. M., Kenny D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Bazargan, M., Norris, K., Bazargan-Hejazi, S., Akhanjee, L., Calderon, J. L., Safvati, S. D., & Baker, R. S. (2005). Alternative healthcare use in the under-served population. *Ethnicity & Disease*, 15(4), 531-539.
- Becker, G., & Newsom, E. (2003). Socioeconomic status and dissatisfaction with health care among chronically ill African Americans. *American Journal of Public Health*, 93(5), 742-748.
- Betancourt, J. R., Green, A. R., Carrillo, J. E., & Ananeh-Firempong, O., 2nd. (2003). Defining cultural competence: A practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports (Washington, D.C.: 1974)*, 118(4), 293-302.
- Blendon, R. J., Schoen, C., DesRoches, C. M., Osborn, R., Scoles, K. L., & Zapert, K. (2002). Inequities in health care: A five-country survey. *Health Affairs (Project Hope)*, 21(3), 182-191.

- Boulware, L. E., Cooper, L. A., Ratner, L. E., LaVeist, T. A., & Powe, N. R. (2003). Race and trust in the health care system. *Public Health Reports, 118*(4), 358-365.
- Braganza, S., Ozuah, P. O., & Sharif, I. (2003). The use of complementary therapies in inner-city asthmatic children. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma, 40*(7), 823-827.
- Casagrande, S. S., Gary, T. L., LaVeist, T. A., Gaskin, D. J., & Cooper, L. A. (2007). Perceived discrimination and adherence to medical care in a racially integrated community. *Journal of General Internal Medicine, 22*(3), 389-395. doi: 10.1007/s11606-006-0057-4
- Chen, F. M., Fryer, G. E., Jr, Phillips, R. L., Jr, Wilson, E., & Pathman, D. E. (2005). Patients' beliefs about racism, preferences for physician race, and satisfaction with care. *Annals of Family Medicine, 3*(2), 138-143. doi: 10.1370/afm.282
- Doescher, M. P., Saver, B. G., Franks, P., & Fiscella, K. (2000). Racial and ethnic disparities in perceptions of physician style and trust. *Archives of Family Medicine, 9*(10), 1156-1163.
- Feagin, J. R. (1991). The continuing significance of race: Anti-black discrimination in public places. *American Sociological Review, 56*(1), 101-116.
- Gee, G. (2002). A multilevel analysis of the relationship between institutional and individual racial discrimination and health status. *American Journal of Public Health, 92*(4), 615-623.
- Gibson, P. J., Koepsell, T. D., Diehr, P., & Hale, C. (1999). Increasing response rates for mailed surveys of medicaid clients and other low-income populations. *American Journal of Epidemiology, 149*(11), 1057-1062.
- Grzywacz, J. G., Suerken, C. K., Neiberg, R. H., Lang, W., Bell, R. A., Quandt, S. A., & Arcury, T. A. (2007). Age, ethnicity, and use of complementary and alternative medicine in health self-management. *Journal of Health and Social Behavior, 48*(1), 84-98.
- Grzywacz, J. G., Lang, W., Suerken, C., Quandt, S. A., Bell, R. A., & Arcury, T. A. (2005). Age, race, and ethnicity in the use of complementary and alternative medicine for health self-management: Evidence from the 2002 National Health Interview Survey. *Journal of Aging and Health, 17*(5), 547-572. doi: 10.1177/0898264305279821
- Hausmann, L. R., Jeong, K., Bost, J. E., & Ibrahim, S. A. (2008). Perceived discrimination in health care and health status in a racially diverse sample. *Medical Care, 46*(9), 905-914. doi: 10.1097/MLR.0b013e3181792562
- Herron, M., & Glasser, M. (2003). Use of and attitudes toward complementary and alternative medicine among family practice patients in small rural Illinois communities. *The Journal of Rural Health : Official Journal of the American Rural Health Association and the National Rural Health Care Association, 19*(3), 279-284.
- Hildreth, K. D., & Elman, C. (2007). Alternative worldviews and the utilization of conventional and complementary medicine *Sociological Inquiry, 77*(1), 76-103.
- Insaf, T. Z., Jurkowski, J. M., & Alomar, L. (2010). Sociocultural factors influencing delay in seeking routine health care among Latinas: A community-based participatory research study. *Ethnicity & Disease, 20*, 148-154.
- Kaptchuk, T. J., & Eisenberg, D. M. (1998). The persuasive appeal of alternative medicine. *Annals of Internal Medicine, 129*(12), 1061-1065.
- Kim, M., Han, H. R., Kim, K. B., & Duong, D. N. (2002). The use of traditional and western medicine among Korean American elderly. *Journal of Community Health, 27*(2), 109-120.
- Koh, H. L., Teo, H. H., & Ng, H. L. (2003). Pharmacists' patterns of use, knowledge, and attitudes toward complementary and alternative medicine. *Journal of Alternative and*

- Complementary Medicine (New York, N.Y.)*, 9(1), 51-63. doi: 10.1089/107628003321536940
- Krieger N. Methods for the scientific study of discrimination and health: An ecosocial perspective: Presented at National Institutes of Health Conference on the Science of Research on Discrimination and Health; February 3, 2011; Bethesda, Maryland.
- Krieger, N., & Sidney, S. (1996). Racial discrimination and blood pressure: The CARDIA study of young black and white adults. *American Journal of Public Health*, 86(10), 1370-1378.
- Kuo G., Hawley S., Weiss L.T., Balkrishnan R., & Volk R. (2004). Factors associated with herbal use among urban multiethnic primary care patients: A cross-sectional survey. *BMC Complementary and Alternative Medicine*, 4(1), 18.
- Lauderdale, D. S., Wen, M., Jacobs, E. A., & Kandula, N. R. (2006). Immigrant perceptions of discrimination in health care: The California Health Interview Survey 2003. *Medical Care*, 44(10), 914-920. doi: 10.1097/01.mlr.0000220829.87073.f7
- LaVeist, T. A., Nickerson, K. J., & Bowie, J. V. (2000). Attitudes about racism, medical mistrust, and satisfaction with care among African American and white cardiac patients. *Medical Care Research and Review: MCRR*, 57 Suppl 1, 146-161.
- Leonardelli G.J., T. Z. L. (2003). The negative impact of perceiving discrimination on collective well-being: The mediating role of perceived in-group status *European Journal of Social Psychology*, 33(4), 507-514.
- Lillie-Blanton, M., Brodie, M., Rowland, D., Altman, D., & McIntosh, M. (2000). Race, ethnicity, and the health care system: Public perceptions and experiences. *Medical Care Research and Review: MCRR*, 57 Suppl 1, 218-235.
- Loera, J. A., Reyes-Ortiz, C., & Kuo, Y. (2007). Predictors of complementary and alternative medicine use among older Mexican Americans. *Complementary Therapies in Clinical Practice*, 13(4), 224-231.
- Long J. S., Freese, J. (2005). *Regression models for categorical dependent variables using Stata*. 2nd ed. . College Station, TX: Stata Press.
- Mackenzie, E. R., Taylor, L., Bloom, B. S., Hufford, D. J., & Johnson, J. C. (2003). Ethnic minority use of complementary and alternative medicine (CAM): A national probability survey of CAM utilizers. *Alternative Therapies in Health and Medicine*, 9(4), 50-56.
- Matthews, A. K., Hughes, T. L., Osterman, G. P., & Kodl, M. M. (2005). Complementary medicine practices in a community-based sample of lesbian and heterosexual women. *Health Care for Women International*, 26, 430-447.
- Mehta, D. H., Phillips, R. S., Davis, R. B., & McCarthy, E. P. (2007). Use of complementary and alternative therapies by Asian Americans. Results from the National Health Interview Survey. *Journal of General Internal Medicine*, 22(6), 762-767. doi: 10.1007/s11606-007-0166-8
- Milan, F. B., Arnsten, J. H., Klein, R. S., Schoenbaum, E. E., Moskaleva, G., Buono, D., & Webber, M. P. (2008). Use of complementary and alternative medicine in inner-city persons with or at risk for HIV infection. *AIDS Patient Care and STDs*, 22(10), 811-816. doi: 10.1089/apc.2007.0159
- Napoles-Springer, A. M., Santoyo, J., Houston, K., Perez-Stable, E. J., & Stewart, A. L. (2005). Patients' perceptions of cultural factors affecting the quality of their medical encounters. *Health Expectations*, 8, 4-17.

- National Center for Complementary and Alternative Medicine (NCCAM). (2010). What is complementary and alternative medicine? Retrieved 2/13, 2011, from <http://nccam.nih.gov/health/whatisacam/>
- Nguyen, L. T., Davis, R. B., Kaptchuk, T. J., & Phillips, R. S. (2011). Use of complementary and alternative medicine and self-rated health status: Results from a national survey. *Journal of General Internal Medicine, 26*(4), 399-404. doi: 10.1007/s11606-010-1542-3
- Office of Management and Budget (OMB). (2010). Standards for the classification of federal data on race and ethnicity. Retrieved 2/13, 2011,
- Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin, 135*(4), 531-554.
- Perez, D., Sribney, W. M., & Rodriguez, M. A. (2009). Perceived discrimination and self-reported quality of care among Latinos in the United States. *Journal of General Internal Medicine, 24 Suppl 3*, 548-554. doi: 10.1007/s11606-009-1097-3
- Ritchie, C. S., Gohmann, S. F., & McKinney, W. P. (2005). Does use of CAM for specific health problems increase with reduced access to care? *Journal of Medical Systems, 29*(2), 143-153.
- Royston P. (2005). Multiple imputation of missing values: Update 2005. *The Stata Journal, 5*(2), 1-14.
- Saha, S., Komaromy, M., Koepsell, T. D., & Bindman, A. B. (1999). Patient-physician racial concordance and the perceived quality and use of health care. *Archives of Internal Medicine, 159*(9), 997-1004.
- Sasagawa, M., Martzen, M. R., Kelleher, W. J., & Wenner, C. A. (2008). Positive correlation between the use of complementary and alternative medicine and internal locus of control. *Explore, 4*(1), 38-41.
- Schneider, E. C., Zaslavsky, A. M., & Epstein, A. M. (2002). Racial disparities in the quality of care for enrollees in Medicare managed care. *JAMA : The Journal of the American Medical Association, 287*(10), 1288-1294.
- Schoen, C., Osborn, R., Doty, M. M., Bishop, M., Peugh, J., & Murukutla, N. (2007). Toward higher-performance health systems: Adults' health care experiences in seven countries, 2007. *Health Affairs (Project Hope), 26*(6), w717-34. doi: 10.1377/hlthaff.26.6.w717
- Shippee, T. P., Schafer, M. H., & Ferraro, K. F. (2012). Beyond the barriers: Racial discrimination and use of complementary and alternative medicine among black Americans. *Social Science & Medicine (1982), 74*(8), 1155-1162. doi: 10.1016/j.socscimed.2012.01.003; 10.1016/j.socscimed.2012.01.003
- Sirois, F. M., & Gick, M. L. (2002). An investigation of the health beliefs and motivations of complementary medicine clients. *Social Science & Medicine (1982), 55*(6), 1025-1037.
- StataCorp LP. (2009). *Stata SE*. College Station, TX.
- Su D., L. L. (2011). Trends in the use of complementary and alternative medicine in the United States: 2002 – 2007 *Journal of Health Care for the Poor and Underserved, 22*(1), 296-310.
- Thorburn, S., Kue, J., Keon, K. L., Lo, P. (2012). Medical mistrust and discrimination in health care: A qualitative study of Hmong women and men. *Journal of Community Health, 37*(4), 822-829.
- Upchurch, D. M., & Chyu, L. (2005). Use of complementary and alternative medicine among American women. *Women's Health Issues: Official Publication of the Jacobs Institute of Women's Health, 15*(1), 5-13. doi: 10.1016/j.whi.2004.08.010
- Van Houtven, C. H., Voils, C. I., Oddone, E. Z., Weinfurt, K. P., Friedman, J. Y., Schulman, K. A., & Bosworth, H. B. (2005). Perceived discrimination and reported delay of pharmacy

- prescriptions and medical tests. *Journal of General Internal Medicine*, 20(7), 578-583. doi: 10.1111/j.1525-1497.2005.0123.x
- Weech-Maldonado, R., Morales, L. S., Elliott, M., Spritzer, K., Marshall, G., & Hays, R. D. (2003). Race/ethnicity, language, and patients' assessments of care in Medicaid managed care. *Health Services Research*, 38(3), 789-808.
- Wilkinson, S., Gomella, L. G., Smith, J. A., Brawer, M. K., Dawson, N. A., Wajsman, Z., . . . Chodak, G. W. (2002). Attitudes and use of complementary medicine in men with prostate cancer. *The Journal of Urology*, 168(6), 2505-2509. doi: 10.1097/01.ju.0000037733.62447.50
- Williams, D. R. (1999). Race, socioeconomic status, and health: The added effects of racism and discrimination *Annals of the New York Academy of Sciences*, 896, 173-188.
- Yoo, H. C., Gee, G. C., & Takeuchi, D. (2009). Discrimination and health among Asian American immigrants: Disentangling racial from language discrimination. *Social Science & Medicine* (1982), 68(4), 726-732. doi: 10.1016/j.socscimed.2008.11.013