



Published in final edited form as:

Behav Med. 2019 ; 45(2): 102–117. doi:10.1080/08964289.2019.1585327.

Medical mistrust, racism, and delays in preventive health screening among African-American men

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Abstract

The contribution of medical mistrust to healthcare utilization delays has gained increased public health attention. However, few studies examine these associations among African-American men, who delay preventive healthcare more often and report higher levels of medical mistrust than non-Hispanic White men. Additionally, studies rarely account for other factors reportedly working in tandem with medical mistrust to increase African-American men's preventive health screening delays (i.e., everyday racism and perceived racism in healthcare). We examined associations between medical mistrust, perceived racism in healthcare, everyday racism, and preventive health screening delays. Analyses were conducted using cross-sectional data from 610 African-American men age 20 and older recruited primarily from barbershops in four U.S. regions (2003–2009). Independent variables were medical mistrust (MM), everyday racism (ER), and perceived racism in healthcare (PRH). Dependent variables were self-reported routine check-up, blood pressure screening, and cholesterol screening delays. Using multiple logistic regression and tests for mediation, we calculated odds ratios and 95% confidence intervals to assess associations between the independent and dependent variables. After final adjustment, African-American men with higher MM were significantly more likely to delay blood pressure screenings. Men with more frequent ER exposure were significantly more likely to delay routine check-ups and blood pressure screenings. Higher levels of PRH were associated with a significant increased likelihood of delaying cholesterol screening. MM did not mediate associations between ER and screening delays. Increasing preventive health screening among African-American men requires addressing medical mistrust and racism in and outside healthcare institutions.

Keywords

medical mistrust; racism; preventive health screening delays; African-American men

Introduction

Despite growing efforts to eliminate racial and ethnic health inequities, African-American men's life expectancy at birth is the shortest of all other men and women in our nation.^{1,2} Clearly, shortened life-expectancy among African-American men is a consequence of interconnected biological, economic, and socio-structural factors.²⁻⁶ Such factors include high morbidity and mortality from diseases amenable to early treatment and intervention (e.g., cardiovascular disease, cancer, and diabetes), diminished access to opportunities for upward social mobility, and well-documented experiences of structural racism (e.g., increased likelihood of police killings and death).^{1,2,7-11} Coincident with these factors are data affirming African-American men's more limited receipt of timely preventive health screenings and medical treatment.^{2,12-14} Not surprisingly, African-American men also have poorer blood pressure control and are less likely to know their cholesterol levels than non-Hispanic white men.^{1,2,7,15-17} Timely receipt of preventive health screenings could increase knowledge of these chronic disease risk indicators, improve early detection, and ultimately reduce numerous preventable deaths and morbidity among African-American men.

Men are generally less likely than women to use preventive health services, such as blood pressure and cholesterol screenings as well as routine check-ups.¹⁸⁻²¹ However, these utilization patterns are even more pronounced among African-American men who delay health services for a variety of distinctive, psychosocial reasons. For instance, existing studies of African-American men's broad health services use attribute delays and underutilization to fatalism,²² socioeconomic barriers,^{22,23} limited health knowledge or awareness,¹² sparse social networks,¹² masculinity beliefs,^{12,20,23-26} medical mistrust,^{20,24,27} and perceived racism.^{12,28} We focus in this study on two of these factors: medical mistrust, or *the lack of trust in or suspicion of medical organizations*²⁹ and racism, *a system of dominance, power, and privilege based on racial group designations*.³⁰ Our focus on medical mistrust and racism is warranted because extant research suggests that even after accounting for socioeconomic, healthcare access, and attitudinal influences, these factors work in tandem to significantly impact African-American men's health services use.^{20,31,32} Further, despite speculations about the combined influence of medical mistrust and racism on African-American men's preventive health screening use, few studies collectively account for these factors.³³ Quantitative studies of preventive health screening use in non-clinical populations of African-American men are also particularly scarce. Such studies are essential to the development of culturally-relevant, clinical, and community-based interventions designed to reduce barriers to African-American men's preventive health screening uptake. Our study addresses these critical evidentiary gaps.

Mistrust of healthcare organizations and professionals is reportedly higher among African-Americans³⁴⁻³⁶ and associated with negative health-related outcomes such as decreased care satisfaction, treatment adherence, and utilization of health services.^{20,27,29,37-43} In a

frequently cited study, Hammond and others found associations between higher medical mistrust and decreased odds of routine health examination receipt among African-American men.²⁴ Similarly, higher medical mistrust in African-American men has been associated with delays in routine check-ups, blood pressure screenings, and cholesterol screenings.²⁰ Medical mistrust appears especially salient in African-American men's decision-making about health services use when screening or treatments are more invasive (e.g., prostate cancer, HIV/AIDS).^{44–47}

Medical mistrust among African Americans is often attributed to the Tuskegee Study of Untreated Syphilis in the Negro Male and even deeper legacies of racism.^{35,48–51} Racism disproportionately impacts African Americans^{52–54} and operates at interpersonal and institutional/structural levels,^{9,55,56} with the latter manifesting as “differential access to goods, services, and resources, by ‘race’” codified in societal structures, process, and values.⁵⁵ Previous studies suggest that racism and ethnic discrimination are associated with healthcare utilization.^{20,24,54,57} For example, studies document associations between racial and ethnic discrimination and decreased adherence to medications^{58,59} and medical advice,³³ treatment/prescription receipt delays,²⁸ healthcare seeking delays and non-receipt,^{33,60–63} and preventive service utilization.^{62,64,65}

Racism manifesting in everyday practices or transactions (e.g., being followed around in stores, treated suspiciously, or stopped and frisked) and within the healthcare system is more commonly reported by African-American men than their female counterparts.^{52,60,61,66–69} Efforts designed to capture these more subtle or implicit forms of ‘everyday racism’ (ER) have emerged over the past few decades.^{30,70–77} ER is associated with a range of health status and utilization outcomes.^{73,77–81} Evidence further indicates that ER is a powerful correlate of medical mistrust in African-American men and may heighten their perceptions of racism in healthcare settings.³¹ Theory suggests ER accumulates and transfers into healthcare interactions as “scripts” that reinforce expectations of racially discriminatory clinical encounters.^{32,82,83} In other words, preventive health screening delays among African-American men may be linked to experiences of ER that get carried over into healthcare interactions.^{32,82,83}

Perceived racism in healthcare (PRH)—or the perception that individuals are treated differently because of race by healthcare professionals—has also gained recent interest as a unique determinant of health service utilization and medical trust, especially among African Americans who are more likely to anticipate PRH.^{2,31,36,57,68,69,84–87} Indeed, several studies suggest there is an independent negative association between PRH and healthcare utilization above and beyond that produced by other forms of racism.^{28,61,64,68,88} This finding, in accordance with theory about the carry-over effects of ER into healthcare encounters,⁸³ suggests that preventive health screening delays in African-American men might also occur because they elicit expectations of unfair treatment by healthcare professionals on the basis of race.^{31,32} Despite the contribution of these studies to our understanding of how PRH impacts health services utilization, few studies assess African-American men's ER *and* PRH.^{28,33,60,61} Among studies accounting for both ER and PRH, only ER emerged as a significant predictor of healthcare utilization among racial and ethnic minorities.^{33,60,61}

Failure to detect a significant, independent association for PRH in some studies might result from the absence of measures assessing medical mistrust – a key correlate of both PRH and ER.^{36,82,89} Studies investigating the relationship between racism and health services utilization also largely focus on women^{62,65,90–92} or non-generalizable/regional populations.^{28,33,60–62,64,68} Other existing studies are limited by single-item, inconsistent, or unidimensional measurement of racism.^{54,77,89,93,94} For example, a recent systematic review and meta-analysis exploring the association between racism and health services utilization found significant associations between racism and some health services outcomes (e.g., delaying healthcare and treatment non-adherence) but not others (e.g., receipt of medical examinations).⁸⁹ Yet, 33 of the 83 papers included in the analysis (40%) measured racism using a single item, which may not sufficiently capture the complex nature of racism. Indeed, it is important to use measures that capture racism in its myriad forms to accurately account for the impact of this psychobiological stressor on African-American men's healthcare use. Building on and extending this body of work, we explore associations between medical mistrust, ER, PRH, and delays in three types of screenings generally linked to chronic disease prevention and control: routine check-ups, blood pressure screenings, and cholesterol screenings.

We rely on both Major and O'Brien's model of stigma-induced identity threat⁹⁵ and psychological reactance theories to frame our current investigation.⁹⁶ Major and O'Brien's model posits that stigma-induced identity threat, which can be experienced through mechanisms of racism and discrimination, may motivate individuals' attempts to reduce threats and engage in coping strategies.⁹⁵ Psychological reactance theory posits that individuals will respond to uncontrollable external events by engaging in behaviors that help restore their sense of autonomy and self-control.⁹⁶ In this context, we posit African-American men's preventive health screening delays may be a result of disengagement strategies used to avoid stigma-induced threats by ER. Consistent with these collective perspectives, we also suggest that African-American men's experiences of ER and concomitant PRH may lead to psychological reactance, which in this case manifests as higher medical mistrust and preventive health screening delays.^{20,26,32,83} We specifically aimed to assess whether medical mistrust is uniquely associated with preventive health screening delays after accounting for ER and PRH. We assess these associations in a community-based sample of African-American men.

Methods

Study Population

We analyzed data from the African-American Men's Health and Social Life study (n=610). Data for this cross-sectional study were collected in three waves from 2003–2009. Most participants (81%) were recruited from barbershops in Michigan, Georgia, California, and North Carolina. The remainder of participants (19%) were recruited from two academic institutions and events—a community college in Southeastern Michigan and a historically Black university (HBU) in central North Carolina. Participants recruited from the academic event attended a 2003 conference for African-American male law enforcement professionals in Florida.

Recruitment Procedures

We recruited participants via fliers, direct contact, and word-of-mouth. We focused recruitment efforts in barbershops because previous studies have successfully recruited diverse samples of African-American men from these spaces.^{97,98} Study staff recruited participants from “high volume” barbershops, which served at least 30 customers per day and had a wait time of 30–60 minutes. We focused on “high volume” barbershops so that participants could complete the surveys while waiting. Study staff contacted barbershop owners in person or via telephone, followed up with detailed information about the survey (e.g., a copy of the survey and consent forms), and solicited feedback from barbershop owners and barbers to incorporate into the final survey version. Barbers or receptionists invited individuals to participate. Men were eligible if they were 18 years of age or older and self-identified as African-American. We limited analyses to men age 20 and older to match the lower age limits and a more explicit focus on increasing screening among younger adults described in the most recent U.S. Preventive Services Task Force (USPSTF) screening guidelines.⁹⁹ We also made this choice in light of African-American men’s shorter lifespan, disproportionate chronic disease burden, and markedly earlier disease onset.^{2,7,100}

Of the men approached, about 90% verbally consented to participate. Most participants completed the survey while waiting for their haircut. Individuals who declined to participate most commonly cited time constraints as their reason. Participants received a \$25 gift certificate redeemable for a free haircut. We used similar procedures to recruit participants in high congregation areas of academic settings (e.g., student unions and cafeterias). In academic settings, 86% of men approached completed the survey; these participants received a \$25.00 gift card. The Institutional Review Board approved all study procedures.

Outcome Variables

We assessed preventive health screening delays with three items: “About how long has it been since you had 1) a routine check-up by a doctor or a health professional; 2) your blood pressure checked by a doctor or health professional; and 3) your blood cholesterol checked by a doctor or a health professional?” We coded participant responses as: 1 = Within the past year; 2 = Within the past two years; 3 = Within the past three years; 4 = Within the past five years; 5 = more than five years; 6 = never. Based on guidance from the USPSTF⁹⁹ and prior research,^{19,39,101} we categorized responses for each type of preventive health service as 0 = no delay (i.e., receipt of service in the past year for routine check-ups and blood pressure screenings and in the past five years for cholesterol screenings) and 1 = screening delay.

Independent and Control Variables

We assessed sociodemographic variables including age, level of education (high school or less, some college, and college/graduate or professional degree), marital status (currently married or unmarried), annual income (less than \$20,000, \$20,000 – 39,999, \$40,000 or more), and employment status (employed full or part-time vs. unemployed). To measure healthcare access, participants reported whether they had health insurance and a usual source of care. To measure overall health status, participants rated their physical health on a scale ranging from 0 (“Poor”) to 5 (“Excellent”). Participants also self-reported whether they had been diagnosed with any of the following chronic medical

conditions: hypertension, coronary heart disease, any heart condition, or asthma (yes or no). Additionally, we measured depressive symptoms because previous studies suggest a positive association between psychological distress and health services utilization.^{102–104} We assessed depressive symptomatology using a 12-item version of the Center for Epidemiologic Studies-Depression Scale (CES-D),¹⁰⁵ which measures the frequency of depressive symptomatology. Response options range from 0 (“Rarely or none of the time”) to 3 (“Most or all of the time”). We summed responses to compute a continuous score—ranging from 0–36—with higher scores reflecting more depressive symptomatology (Cronbach’s $\alpha = .79$).

We assessed ER using the 18-item Daily Life Experience (DLE) subscale of the Racism and Life Experiences Scales (RaLes).^{30,106} This continuous scale assesses the frequency with which micro-aggressions (e.g., being ignored, overlooked, or not given service) occurred because of race. A mean score was computed from responses ranging from 0 (“ever”) to 5 (“once a week or more”). Higher scores on this measure indicate more frequent everyday racism experiences (Cronbach’s $\alpha = 0.96$).

We assessed PRH using a 16-item version of the Perceptions of Racism Scale.¹⁰⁷ This scale measures perceptions of race-based disparities in treatment by healthcare professionals. Participants responded to healthcare-related questions from the original scale (e.g., “Doctors treat White men with more respect than African American men” and “Racial discrimination in a doctor’s office is common”) using a scale anchored with “strongly disagree” (1) and “strongly agree” (4). We reverse coded seven items and computed a mean score so that higher scores reflected more PRH. The internal consistency for this scale was acceptable ($\alpha = .82$).

We assessed medical mistrust using the 15-item Medical Mistrust Index (MMI).²⁹ This measure assesses respondent mistrust in healthcare organizations (e.g., “Healthcare organizations have sometimes done harmful experiments on their patients without their knowledge”). Response options ranged from 1 = strongly disagree to 4 = strongly agree. We reverse coded six items and computed a mean score (higher scores indicated greater mistrust). Internal consistency for this scale was also acceptable ($\alpha = 0.73$).

Analysis

To describe our sample, we conducted χ^2 and ANOVA analyses. Using logistic regression, we calculated unadjusted odds ratios and 95% confidence intervals to assess the association between sample characteristics and preventive health screening delays in routine check-ups, blood pressure screening, and cholesterol screening. In model 1, we used multiple logistic regression to assess the adjusted association between ER and preventive health screening delays. In model 2, we used multiple logistic regression to assess the adjusted association between PRH and preventive health screening delays. Model 3 assessed the association between medical mistrust and preventive health screening delays. In model 4, we assessed simultaneous associations between racism, medical mistrust, and preventive health screening delays. In each of the models, we adjusted for sociodemographic variables, healthcare access, health status factors, diagnosis of chronic conditions (i.e., hypertension, coronary heart disease, and any heart condition), and depressive symptoms. We evaluated the quality

of the fully adjusted models using the Hosmer Lemeshow test; results suggested good model fit as evidenced by non-significant test statistics ($p=0.06-0.70$). We also evaluated the quality of and variance explained by the models using pseudo- R^2 's (Nagelkerke), which indicate full model fit at 1 and no fit at 0. We conducted mediation analyses with the PROCESS model outlined by Hayes.¹⁰⁸ Consistent with this method, covariates were included in the mediation analyses. Bias-corrected confidence intervals with 5,000 bootstraps were used to examine indirect effects. Tests for mediation were considered non-significant if the 95% confidence intervals contained zero.

We also conducted sensitivity analysis because the optimal blood pressure screening interval among adults is unclear. However, the USPSTF recommends blood pressure screening annually for adults aged 40 or older and for individuals considered at increased risk for high blood pressure (individuals with high-normal blood pressure: 130 to 139/85 to 89 mm Hg, who are overweight or obese, or are African-American).¹⁰⁹ Based on this information, we conducted additional sensitivity analyses using the cut-point, "No blood pressure screening within the past two years." Our aim was to determine if our unadjusted and fully adjusted model results were sensitive to this cut-point difference.

Data were missing for less than 5% of variables except for the following: usual source of care (5.7%), income (7.9%), health insurance status (10.3%), PRH (7.4%), blood pressure screening delays (6.2%), and cholesterol screening delays (8.9%). Additional analyses suggested that values for these variables were missing at random; therefore, we used multiple imputation to create five complete datasets.¹¹⁰ We assessed odds ratios and 95% confidence intervals from the complete datasets independently and collectively. Because there were no significantly notable differences between the observed values in the imputed/complete datasets and the original dataset, we present results using the original dataset in this paper. We conducted all analyses using Statistical Package for Social Sciences (SPSS for Windows, Release 25).¹¹¹

Results

Participant Characteristics

Table 1 displays participant characteristics stratified by recruitment site type. Study participants' ages ranged from 20–79 ($M=33.20$, $SD=10.8$). Most men in the study were unmarried, employed (part or full-time), insured, and resided in the southern region of the U.S. Income and education levels were evenly distributed across the study population. Most men rated their health status as either 'very good' (40%) or excellent (28%). A number of men reported having hypertension (20%) and a smaller percentage reported having coronary heart disease (2%), or any other heart condition (4%). More men were recruited from barbershops. More of these barbershop participants were also older, less formally educated beyond high school, residing in the West, employed, married, in higher income categories, and diagnosed with hypertension. Barbershop participants also reported less depressive symptomatology and lower levels of medical mistrust. A lower percentage of barbershop participants reported routine check-up (38%) and blood pressure screening delays (29%).

Unadjusted Associations Between Participant Characteristics, Study Variables, and Preventive Health Screening Delays

Table 2 displays unadjusted associations between participant demographics, control variables, and preventive health screening delays. When compared to men ages 20–39, older men had a lower odds of delaying routine check-up, blood pressure, and cholesterol screenings. Men with a college, graduate, or professional degree had lower odds than men in the ‘high school or less’ category of delaying blood pressure and cholesterol screenings. Men with ‘some college’ also had lower odds than men in the ‘high school or less’ education category of delaying cholesterol screenings. Employed men had lower odds than unemployed men of delaying blood pressure and cholesterol screening. Across all screening types, men earning \$40,000 or more in annual income had lower odds of reporting delays than those in the lowest income category. Similarly, men in the ‘\$20,000–29,000’ income group had lower odds than those in the lowest income category of reporting cholesterol screening delays. Men residing in the South and Midwest had higher odds of delaying routine check-ups than men in the West. Men diagnosed with hypertension had a lower odds of delaying blood pressure and cholesterol screening than those without these conditions. Men who reported being unmarried, uninsured, not having a usual source of care, and more depressive symptoms had higher odds of delaying all preventive health screening types.

More frequent experiences of ER were associated with higher odds of delaying all three preventive health screenings. Higher PRH was associated with higher odds of delaying routine check-ups. Higher medical mistrust was associated with higher odds of delaying routine checkups and blood pressure screenings only. These unadjusted associations between medical mistrust, racism, and preventive health screening delays are presented in Table 3.

Adjusted Multivariate Associations Between Medical Mistrust, Racism, and Preventive Health Screening Delays

Models adjusting for participant characteristics and control variables are displayed in Table 4. When associations between ER and preventive health screening delays were analyzed alone (*Model 1*), men with more frequent ER experiences had higher odds of delaying routine check-ups (OR: 1.56, 95% CI [1.25, 1.96]) and blood pressure screenings (OR: 1.52, 95% CI [1.20, 1.93]). Analyses of associations between PRH alone (*Model 2*), revealed that men with higher PRH had a significantly higher odds of delaying cholesterol screenings (OR: 3.25, 95% CI [1.53, 6.90]). When medical mistrust was entered alone (*Model 3*), men with higher medical mistrust also had a higher odds of delaying routine check-ups (OR: 2.87, 95% CI [1.45, 5.71]) and blood pressure screenings (OR: 2.82, 95% CI [1.31, 6.05]). Finally, when racism and medical mistrust variables were entered together (*Model 4*), results indicate significant associations between more frequent ER and delays in routine check-ups (OR: 1.42, 95% CI [1.11, 1.82]) and blood pressure screenings (OR: 1.42, 95% CI [1.10, 1.82]). In this full model, PRH was only associated with delays in cholesterol screenings (OR: 3.44, 95% CI [1.44, 8.23]). Similarly, medical mistrust was only associated with delays in blood pressure screening (OR: 2.79, 95% CI [1.15, 6.81]). Based on Nagelkerke R-square, our fully adjusted models accounted for 42% percentage of the variance in routine check-up, 36% of the variance in blood pressure screening, and 32% of the variance in cholesterol screening delays.

Mediation Analyses

We assessed whether medical mistrust mediated the association between ER and routine check-up delays. We also assessed whether medical mistrust mediated the associations between ER and blood pressure screening delays. The indirect effect of ER on routine check-up through medical mistrust was non-significant (95% CI [-.00, .07]). Medical mistrust also did not mediate the association between ER and blood pressure screening delays (95% CI [-.00, .08]).

Sensitivity Analyses

The sensitivity analyses changing the indicator of blood pressure delays to “No blood pressure screening in the past 2 years” revealed relatively similar results. Using this more conservative indicator, 17% of the sample delayed blood pressure screening. The percentages of participants recruited from barbershops and academic institutions reporting blood pressure screening delays did not differ. There were slight differences in the unadjusted models. Men with ‘some college’ and a “graduate or professional degree” had lower odds than men in the ‘high school or less’ education category of not having a blood pressure screening in the past 2 years. All of the other unadjusted associations were similar to those detected in models using ‘No blood pressure screening in the past year’ as an indicator of blood pressure screening delays. The adjusted models yielded fairly similar results with a couple of exceptions. The association between ER and blood pressure screening delays was no longer significant when included in the model alone (OR: 1.19, 95% CI [0.91–1.55] or with PRH and medical mistrust (OR: 1.12, 95% [CI 0.85–1.48]).

Discussion

Our study is also among only a few empirical investigations of African-American men’s preventive health screening use.^{20,27,112} Using data drawn from a socioeconomically and geographically diverse sample of African-American men, we examined the joint contribution of medical mistrust and experiences of racism to three types of preventive health screening delays. Our study supports prior research in detecting that higher mistrust of medical organizations, when examined alone, is associated with delays in African-American men’s routine health visits and blood pressure screening.²⁰ However, we also found these associations were substantially attenuated after accounting for African-American men’s experiences of ER and PRH. Our observed, statistically significant associations held even after controlling for socioeconomic factors, health insurance status, and usual source of care. This finding supports previous research suggesting that factors outside healthcare, such as ER, are most predictive of African-American men’s services utilization.^{33,60,61}

Interestingly, medical mistrust was associated with delays in the least invasive type of preventive health screening: blood pressure. PRH was most pronouncedly associated with delayed cholesterol screening, which involves the collection of blood. These findings suggest that invasive screenings may bring with them heightened concerns about being treated differently by healthcare systems or actors on the basis of race such that African-American men delay seeking these services. Data documenting disproportionately high

likelihood of being racially profiled and succumbing to other more acutely fatal forms of racism (e.g., police-related killings) among African-American men^{8,11} infer that their perceptions of differential treatment are rooted in unfortunate historical and present-day realities.

Incidentally, we also found that African-American men with more frequent ER exposure also had higher odds of delaying blood pressure screening and routine healthcare visits. This finding corroborates Major and O'Brien's model⁹⁵ and psychological reactance theory⁹⁶ as it suggests frequent ER experiences may lead African-American men to avoid healthcare institutions partly because of stigma-induced identity threat. Like Klassen et al.,¹¹³ our findings further infer that accumulated negative lived experiences also become prisms for viewing and making preventive health choices. In other words, it is probable that frequent ER experiences accumulate, induce expectations of unfair treatment, and exact 'wear-and-tear' on African-American men's trust in medical organizations.^{31,32} Trust is theoretically history-based, cumulative, and 'thickens and thins' as individuals transact with individuals and systems.¹¹⁴ Accordingly, it seems prescient to view African-American men's medical mistrust not simply as an attitudinal barrier but rather as one catalyzed by proximal, lived experiences. In our study, medical mistrust did not mediate the association between ER experiences and preventive screening delays (e.g., routine check-ups and blood pressure screening). It is plausible that medical mistrust interacts with ER and other demographic factors to impact screening delays in more complex ways. Future studies should assess this possibility. Despite our mediation results, we contend, as previous researchers have,^{20,31,32} that the preventive health screening delays observed in our study be viewed as potential carry-over effects of African-American men's 'interactional social histories.'

Of note, our findings somewhat diverge from a systematic review and meta-analysis conducted by Ben and colleagues.⁸⁹ The authors found that racism was associated with negative health services experiences (e.g., lower levels of healthcare-related trust), but the associations between racism and health care use outcomes were mixed and largely non-significant.⁸⁹ However, this review did not disentangle how myriad forms of racism (e.g., ER and PRH) may be associated with health services use, focus on the three preventive health services addressed in this study, or focus on African-American men. Future research is needed to further explore how mistrust, ER, and PRH may collectively influence health services use among populations that are disproportionately likely to experience these psychosocial stressors (e.g., African-American men).

Even in the face of a 'wicked problem' like ER, medical mistrust may be modifiable. In fact, research affirms that African-American men report lower medical mistrust when they also report having a more recent, patient-centered physician interaction.³¹ Patient-centered interactions are characterized by mutuality as well as supportive and responsive communication and are associated with higher patient trust in other populations.¹¹⁵⁻¹¹⁷ Yet, fewer African-American patients report having these kinds of physician interactions compared to White patients.¹¹⁸ For African-American men, who are disproportionately exposed to daily, racialized slights against their humanity, a little patient-centeredness could go a long way in restoring their medical organization trust, as well as improving timely detection and screening.

Introducing provider interventions across the medical education continuum focused on increasing awareness of racism's myriad manifestations and addressing implicit bias are critical to bridging African-American men's trust gaps. Such interventions may be more trust-restorative if they connect-the-dots squarely between documented implicit preferences among providers for White patients and those with light skin color and their detrimental impacts on clinical decision-making.¹¹⁹⁻¹²¹ Similarly, interventions should illuminate the more pernicious role of structural racism in policies, practices, and procedures impacting medically vulnerable and underserved populations.^{9,10,122} Each of these suggestions are in line with the more recent case made for increasing healthcare professionals' advocacy and active roles in dismantling structural forms of racism, inside and outside of the healthcare system.¹⁰

Lastly, it is notable that African-American men who were uninsured and lacked a usual source of care also had higher odds of delaying these timely preventive health screenings. The data for the current study were collected before the introduction of the Affordable Care Act (ACA) and the introduction of Medicaid expansion. Such policy interventions resulted in a significant uptick in health insurance procurement among men and African Americans.¹²³⁻¹²⁵ Hence, it would be worth replicating these analyses in the post-ACA context to determine if our findings hold in the face of more diminished insurance-related barriers. Similarly, it is worth highlighting that lower income, fewer years of education, and unemployment all contributed significantly to African-American men's preventive health screening delays. African-American men face considerable challenges to upward social and economic mobility¹²⁶⁻¹²⁸ that, if addressed, could make a demonstrable difference in reducing preventive health screening delays.

There are several important study limitations that warrant disclosure. Our data were not drawn from a nationally representative sample. However, the study sample is similar demographically to the population of African-American men in the U.S. during the time period data were collected.^{129,130} We also relied on a cross-sectional study design which limits our capacity to make causal inferences. Because we used self-reported data, there is a possibility that participants answered questions in socially desirable ways. However, we conducted post-hoc sensitivity tests using a validated measure of social desirability¹³¹ and detected no differences in our logistic regressions. The collection of data primarily in barbershops, venues with documented recent success in reducing blood pressure in African-American men,¹³² is a study strength. This strategy of 'meeting African-American men where they are' has broader, generalizable implications for the design of future preventive health interventions. Another strength lies in our investigation of multiple forms of racism and their associations with three types of preventive health screenings.

Conclusions

This study uniquely contributes to existing research by specifying the types of preventive screening delays (e.g., in blood pressure screening) most likely to be impacted by medical mistrust. This investigation also provides more insights about whether, when, and which types of racism contributes to African-American men's preventive health screening delays. Our findings underscore two key summative points: 1) African-American men's delays

in preventive health screening uptake are associated with reasons other than the lack of health insurance or access to care; and 2) Medical mistrust alone may not be the sole or most critical deterrent of healthcare utilization and system disengagement among African-American men. Dismantling racism inside and outside of the healthcare system is a vital part of reducing preventive health screening delays and ultimately eliminating health disparities in African-American men.

Acknowledgments

Funding:

This research was supported by a Student Award Program award to the first author from the Blue Cross and Blue Shield of Michigan Foundation (Grant # 657.SAP), The Robert Wood Johnson Foundation Health & Society Scholars Program, and The University of North Carolina Cancer Research Fund. Additional research and salary support during the preparation of this manuscript was provided to the first author from the National Institutes of Drug Abuse (K01 DA032611), National Center for Minority Health and Health Disparities (Award # L60 MD010134). Support for Jennifer Richmond was provided by a grant from the Robert Wood Johnson Foundation Health Policy Research Scholars program (Grant Number 73921).

Additional contributions:

The first author wishes to thank faculty, student, and community members of the UNC Men's Health Research Lab: Yasmin Cole-Lewis, Travis Melvin, Justin Smith, Allison Mathews, Dr. Keon Gilbert, Melvin R. Muhammad, and Donald Parker for their assistance with data collection for the African-American Men's Health & Social Life Study. The first author also thanks Dr. Amani Nuru-Jeter, Keith Hermanstynne, and Adebisi Adesina for their assistance with data collection and Dr. Emil Coman for statistical consultation.

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Table 1.

Characteristics of Study Participants by Recruitment Site Type

Characteristics	Total (N = 610)		Barbershops (n = 495)		Academic Institutions/Events (n = 115)		P-Value
	% or mean ± SD	% or mean ± SD	% or mean ± SD	% or mean ± SD	% or mean ± SD	% or mean ± SD	
Age (years)	33.20 ± 10.8	34.35 ± 10.4	28.19 ± 11.2				<.001
Age							
20–29	272 (44.6)	190 (38.4)	82 (71.9)				<.001
30–39	180 (29.5)	168 (33.9)	11 (9.6)				
40	158 (25.9)	137 (27.7)	21 (18.4)				
Education							
College, graduate, or professional degree	193 (32.2)	160 (32.8)	32 (28.8)				<.001
Some College	226 (37.7)	161 (33.0)	65 (58.6)				
High School or less	181 (30.2)	167 (34.2)	14 (12.6)				
Employment Status							
Employed	501 (84.0)	413 (85.0)	82 (73.2)				0.00
Annual Income							
\$40,000	182 (32.4)	157 (34.3)	24 (23.3)				<.001
\$20,000–\$9,000	186 (33.1)	163 (35.6)	23 (22.3)				
<\$20,000	194 (34.5)	138 (30.1)	56 (54.4)				
Region							
North	15 (2.5)	4 (0.8)	11 (9.7)				<.001
Midwest	40 (6.6)	21 (4.3)	18 (15.9)				
South	449 (73.7)	365 (73.9)	83 (73.5)				
West	105 (17.2)	104 (21.1)	1 (0.9)				
Marital Status							
Unmarried	426 (71.2)	328 (67.6)	97 (86.6)				<.001
Health Insurance Status							
Uninsured	164 (30.0)	133 (30.0)	31 (29.8)				0.97
Usual Source of Care							
No Usual Source of Care	242 (42.1)	187 (40.2)	55 (50.5)				0.05
Self-Rated Health Status							

Characteristics	Total (N = 610)	Barbershops (n = 495)	Academic Institutions/Events (n = 115)	P-Value
	% or mean ± SD	% or mean ± SD	% or mean ± SD	
Excellent	166 (27.8)	134 (27.6)	32 (28.8)	0.23
Very good	241 (40.4)	188 (38.8)	52 (46.8)	
Good	153 (25.6)	130 (26.8)	23 (20.7)	
Fair or poor	37 (6.2)	33 (6.8)	4 (3.6)	
Has been diagnosed with Hypertension	118 (19.7)	104 (21.4)	14 (12.4)	0.03
Has been diagnosed with Coronary Heart Disease	12 (2.0)	10 (21.1)	2 (1.8)	0.13
Has been diagnosed with Any Heart Condition	22 (3.7)	17 (3.5)	5 (4.5)	0.12
Depressive Symptoms (CES-D Score) [*]	10.87 ± 5.9	10.60 ± 5.7	12.09 ± 6.5	0.02
Everyday Racism [†]	1.71 ± 1.2	1.68 ± 1.2	1.87 ± 1.2	0.12
Type of Preventive Screening Delay				
Routine Check-Up Delay	249 (40.8)	181 (37.7)	58 (52.3)	0.01
Blood Pressure Screening Delay	185 (31.2)	140 (28.6)	45 (40.5)	0.01
Cholesterol Screening Delay	137 (23.3)	110 (23.1)	26 (23.4)	0.94

Note: CI = Confidence Interval; SD= Standard Deviation; CES-D= Center for Epidemiologic Studies Depression Scale. Respondents = 610. Missing data for the following participant characteristics: usual source of care (5.7%), income (7.7%), and health insurance status (9.4%). Analysis confirmed that data were missing at random (MAR). F-statistic for continuous variables and χ^2 statistic for categorical variables were used.

^{*} Average of 12-items on a 4-point likert scale. Higher scores indicate more depressive symptoms.

[†] Average of 18-items on a 5-point likert scale. Higher scores indicate more frequent experiences of everyday racism.

[‡] Average of 16-items on a 4-point likert scale. Higher scores indicate greater perceived racism in healthcare.

Average of 14-items on a 4-point likert scale. Higher scores indicate greater mistrust of medical organizations.

Routine check-up delay = No routine check-up in the past year; Blood pressure screening delay = No blood pressure screening in the past year; Cholesterol screening delay = No cholesterol screening in the past five years.

Table 2. Unadjusted Associations Between Participant Demographics, Control Variables, and Preventive Health Services Delays

Characteristic	Type of Preventive Health Screening Delay									
	n or mean ± SD	Routine Check-up OR	95% CI	X ² p-value	Blood Pressure Screening OR	95% CI	X ² p-value	Cholesterol Screening OR	95% CI	X ² p-value
Age				<.0001			<.0001			<.0001
20–29	272	Referent			Referent			Referent		
30–39	180	0.62	(0.42, 0.92)		0.70	(0.46, 1.06)		0.66	(0.41, 1.06)	
40	158	0.27	(0.17, 0.43)		0.22	(0.13, 0.39)		0.18	(0.09, 0.37)	
Education				0.10						0.01
College, graduate, or professional degree	193	0.67	(0.43, 1.02)		0.48	(0.29, 0.77)		0.47	(0.27, 0.80)	
Some College	226	0.98	(0.65, 1.46)		0.90	(0.58, 1.36)		0.53	(0.32, 0.88)	
High School or less	181	Referent			Referent			Referent		
Employment Status				0.15						0.01
Employed	501	0.73	(0.47, 1.12)		0.62	(0.39, 0.98)		0.49	(0.29, 0.81)	
Annual Income				<.0001						<.0001
\$40,000	182	0.41	(0.27, 0.64)		0.30	(0.18, 0.49)		0.28	(0.15, 0.50)	
\$20,000–39,000	186	0.90	(0.59, 1.35)		0.65	(0.42, 1.01)		0.53	(0.32, 0.88)	
<\$20,000	194	Referent			Referent			Referent		
Region				0.04						0.00
North	15	0.79	(0.24, 2.68)		0.24	(0.31, 1.99)		0.29	(0.36, 2.30)	
Midwest	40	2.41	(1.15, 5.08)		1.37	(0.59, 3.16)		0.00 ^d	—	
South	449	1.65	(1.04, 2.59)		1.62	(0.97, 2.69)		1.02	(0.60, 1.74)	
West	105	Referent			Referent			Referent		
Marital Status				<.0001						0.00
Unmarried	426	2.11	(1.43, 3.11)		2.62	(1.65, 4.17)		2.40	(1.38, 4.20)	
Health Insurance Status				<.0001						<.0001
Uninsured	227	2.84	(1.93, 4.18)		3.87	(2.57, 5.82)		3.24	(2.03, 5.18)	
Usual Source of Care				<.0001						<.0001
No Usual Source of Care	242	5.79	(4.00, 8.37)		5.21	(3.50, 7.78)		3.91	(2.43, 6.29)	
Self-Rated Health Status				0.19						0.56

Characteristic	Type of Preventive Health Screening Delay									
	n or mean ± SD	Routine Check-up OR	95% CI	X ² p-value	Blood Pressure Screening OR	95% CI	X ² p-value	Cholesterol Screening OR	95% CI	X ² p-value
Excellent	166	0.57	(0.27, 1.21)		0.75	(0.35, 1.62)		1.17	(0.47, 2.93)	
Very good	241	0.65	(0.32, 1.34)		0.55	(0.26, 1.18)		0.85	(0.35, 2.07)	
Good	153	0.88	(0.42, 1.86)		0.55	(0.25, 1.22)		0.80	(0.31, 2.05)	
Fair or poor	37	<i>Referent</i>			<i>Referent</i>			<i>Referent</i>		
Has been diagnosed with Hypertension	118	0.77	(0.50, 1.18)	0.22	0.50	(0.31, 0.85)	0.01	0.47	(0.25, 0.89)	0.01
Has been diagnosed with Coronary Heart Disease	12	0.72	(0.21, 2.41)	0.59	1.77	(0.56, 5.67)	0.34	1.40	(0.50, 3.92)	0.53
Has been diagnosed with Any Heart Condition	22	0.44	(0.16, 1.21)	0.09	0.97	(0.37, 2.55)	0.95	0.90	(0.19, 4.15)	0.89
Depressive Symptoms (CES-D Score)*	10.87 ± 5.9	1.08	(1.05, 1.12)	< 0001	1.13	(1.09, 1.17)	< 0001	1.05	(1.01, 1.09)	0.01

Note: CI = Confidence Interval, SD= Standard Deviation; OR= Odds Ratio; CES-D= Center for Epidemiologic Studies Depression Scale.

* Average of 12-items on a 4-point likert scale. Higher scores indicate more depressive symptoms.

Routine check-up delay = No routine check-up in the past year; Blood pressure screening delay = No blood pressure screening in the past year; Cholesterol screening delay = No cholesterol screening in the past five years.

^aNo cases of cholesterol screening delays were recorded in this region; if one case of cholesterol screening delays was detected, the OR would be 0.10 CI (.01, .79)

Unadjusted Associations Between Medical Mistrust, Racism and Preventive Health Screening Delay Type

Table 3.

Characteristic	Type of Preventive Screening Delay								
	Routine Check-up		Blood Pressure Screening		Cholesterol Screening				
	OR	95% CI	p-value	OR	95% CI	p-value			
Everyday Racism [‡]	1.51	(1.30, 1.76)	<.0001	1.73	1.46–2.04	<.0001	1.25	1.04–1.51	0.02
Perceived Racism in Healthcare [‡]	1.77	(1.17, 2.68)	0.01	1.48	0.95–2.28	0.08	1.45	0.87–2.41	0.15
Medical Mistrust	2.76	(1.70, 4.47)	<.0001	2.50	1.49–4.19	<.0001	1.45	0.81–2.60	0.22

Note. CI = Confidence Interval; SD= Standard Deviation; OR= Odds Ratio; CES-D= Center for Epidemiologic Studies Depression Scale.

[‡] Average of 18-items on a 5-point likert scale. Higher scores indicate more frequent experiences of everyday racism.

[‡] Average of 16-items on a 4-point likert scale. Higher scores indicate greater perceived racism in healthcare.

Average of 14-items on a 4-point likert scale. Higher scores indicate greater mistrust of medical organizations.

Routine check-up delay = No routine check-up in the past year; Blood pressure screening delay = No blood pressure screening in the past year; Cholesterol screening delay = No cholesterol screening in the past five years.

Multivariate Analysis of Adjusted Associations Between Medical Mistrust, Racism, and Types of Preventive Health Screening Delays

Table 4.

Characteristic	Type of Preventive Screening Delay											
	Routine Check-up			Blood Pressure Screening			Cholesterol Screening					
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value			
Model 1 ^{†,*}												
Everyday Racism	1.56	(1.25,1.96)	<.001	1.52	(1.20,1.93)	0.00	1.05	(0.80,1.37)	0.75			
Perceived Racism in Healthcare	—	—	—	—	—	—	—	—	—			
Medical Mistrust	—	—	—	—	—	—	—	—	—			
X ²	150.1		<.001	119.9		<.001	86.9		<.001			
Model 2 ^{‡,*}												
Everyday Racism [†]	—	—	—	—	—	—	—	—	—			
Perceived Racism in Healthcare [†]	1.71	(0.94,3.11)	0.08	1.48	(0.78,2.80)	0.23	3.25	(1.53,6.90)	0.00			
Medical Mistrust [†]	—	—	—	—	—	—	—	—	—			
X ²	147.4		<.001	107.7		<.001	86.8		<.001			
Model 3 ^{§,*}												
Everyday Racism [†]	—	—	—	—	—	—	—	—	—			
Perceived Racism in Healthcare [†]	—	—	—	—	—	—	—	—	—			
Medical Mistrust [†]	2.87	(1.45,5.71)	0.00	2.82	(1.31,6.05)	0.01	2.12	(0.87,5.17)	0.10			
X ²	155.1		<.001	118.3		<.001	88.4		<.001			
Model 4 ^{¶,*}												
Everyday Racism [†]	1.42	(1.11,1.82)	0.01	1.42	(1.10,1.82)	0.01	0.93	(0.70,1.24)	0.62			
Perceived Racism in Healthcare [†]	0.10	(0.48,1.97)	0.97	0.86	(0.43,1.82)	0.69	3.44	(1.44,8.23)	0.01			
Medical Mistrust [†]	2.10	(0.92,4.78)	0.08	2.79	(1.15,6.81)	0.02	1.02	(0.37,2.83)	0.97			
X ²	154.1		<.001	118.5		<.001	88.2		<.001			

Note. CI = Confidence Interval; OR= Odds Ratio;

* Models adjusted for age, recruitment site type, region, education, income, marital status, health insurance status, usual source of care, self-rated health status, chronic conditions (hypertension, coronary heart disease, and any heart disease), and depressive symptoms. Model 1 includes everyday racism only; Model 2 includes perceived racism in healthcare only; Model 3 includes medical mistrust only; Model 4 includes everyday racism, perceived racism in healthcare, and medical mistrust.

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⁷ For each 1-point increase on likert-scale

Routine check-up delay = No routine check-up in the past year; Blood pressure screening delay = No blood pressure screening in the past year; Cholesterol screening delay = No cholesterol screening in the past five years.

⁷ Hosmer-Lemeshow goodness of fit P-value = 0.06–0.62, indicating adequate model fit

⁸ Hosmer-Lemeshow goodness of fit P-value = 0.25–0.70, indicating adequate model fit

⁹ Hosmer-Lemeshow goodness of fit P-value = 0.13–0.61, indicating adequate model fit

[#] Hosmer-Lemeshow goodness of fit P-value = 0.11–0.61, indicating adequate model fit