

ATTITUDES ABOUT COVID-19 TESTING AMONG BLACK ADULTS IN THE UNITED STATES

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Purpose: Black Americans are disproportionately affected by coronavirus disease 2019 (COVID-19) hospitalizations and deaths. Decreasing health disparities requires widespread uptake of COVID-19 testing, but attitudes about COVID-19 testing among Black Americans have not been studied. We aimed to characterize knowledge, attitudes, and beliefs about COVID-19 testing among Black parents.

Methods: Semi-structured interviews were conducted and analyzed using a phenomenology approach with 26 self-identified Black parents after telemedicine visits with a children's health center. Interviews were recorded and transcribed; 65% were double coded with a resultant free-marginal inter-rater kappa score of 86.8%.

Results: Most participants were women, spent time inside the homes of friends or family members, and almost half knew someone diagnosed with COVID-19. Three central themes emerged regarding COVID-19 testing decision making, including: 1) perceived COVID-19 disease susceptibility; 2) barriers to testing, with subthemes including trust in test accuracy and safety, perceived stigma of a positive test result, and impact of racism on self-efficacy; and 3) cues to action.

Conclusions: When considering these themes as constructs of the Health Belief Model, we are better able to understand Black Americans' views of COVID-19 testing and motivations for accessing testing. Culturally responsive educational campaigns delivered by trusted community members should aim to improve understanding about disease transmission and types of tests available. Importantly, framing testing as a means to ensure safety may improve self-efficacy to obtain testing. Lastly, the health community should learn from these conversations with

INTRODUCTION

Black-majority communities have been disproportionately affected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections, hospitalizations, and deaths.^{1,2} As of August 2021, more than 614,000 Americans have died as a result of SARS-CoV-2 and its associated illness coronavirus disease 2019 (COVID-19), and Black Americans (BAs) had nearly three times the hospitalization rate and double the death rate due to COVID-19 as compared with White Americans (WAs).^{3,4} The disproportionate COVID-19 burden may be largely due to the effects of structural racism on the social determinants of health, including dif-

ferential access to health insurance, economic opportunities, and quality housing.⁵⁻⁹ These factors have caused BAs to be more likely to be diagnosed with medical comorbidities such as diabetes and heart disease that put them at increased risk for severe COVID-19 infection, which is compounded by the fact that they are also more likely to be uninsured and to report not having a primary care doctor when compared with WAs.⁹ Black Americans are more likely than WAs to hold jobs considered to be "essential," increasing BAs' risk for workplace SARS-CoV-2 exposures and limiting their ability to physically distance.^{9,10} Similarly, BAs are more likely to live in urban areas, and multi-family dwellings when com-

Black Americans so that disease prevention and mitigation strategies prioritize health equity. *Ethn Dis.* 2021;31(4):519-526; doi:10.18865/ed.31.4.519

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pared with WAs, complicating some BAs' ability to adhere to physical distancing guidelines.⁹ Furthermore, as of August 2021, a smaller proportion of BAs had received at least one dose of a COVID-19 vaccine compared with WAs (38% vs 49%),¹¹ which is likely due to the nuanced effects of structural racism on vaccine availability in Black-majority neighborhoods, as well as the influence of a collective experience of race-based health care mistreatment and bias on trust in the

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vaccine development process and the medical establishment as a whole.^{12,13}

Despite the availability of highly effective COVID-19 vaccines, widespread testing for SARS-CoV-2 (hereafter referred to as COVID-19 testing) remains necessary to end the pandemic and prevent future surges. Testing is recommended for both vaccinated and unvaccinated individuals by the Centers for Disease Control and Prevention (CDC) in varying circumstances.¹⁴ National vaccination

rates are below estimates for attaining herd immunity and children aged <12 years are yet ineligible for vaccination, further slowing the process.¹⁵

COVID-19 variants also present a need for continued testing, as recent reports suggest that the B.1.617.2 variant (Delta variant) is now the predominant strain responsible for cases in the United States and abroad.¹⁶ There is concern that the variant could disproportionately affect Black-majority communities because of lower vaccine acceptance rates.¹⁷ Further, the CDC has classified the Delta variant as a variant of concern (VOC), noting that the mutating virus could become less susceptible to the vaccine-induced immune response with ongoing community transmission.^{18,19} Early data demonstrate that breakthrough infections can occur in fully vaccinated individuals who are subsequently at risk for transmitting the disease to others.^{20,21} Timely testing with rapid results turnaround allows for identification and isolation of infected individuals, contact tracing, genetic sequencing to monitor for mutations, and enables more targeted vaccination programs.²²

Several studies have identified disparities in COVID-19 testing.²³⁻²⁷ The majority of states do not report racial and ethnic data for testing, but studies examining COVID-19 test distribution in select cities have found fewer tests completed in neighborhoods with higher proportions of racial and ethnic minorities and lower average household incomes.^{24,25} During the pandemic's first wave in New York City, more tests were available in White-majority neighborhoods.²⁵ Non-White-majority neighborhoods,

by comparison, had fewer tests completed and higher test positivity rates; these neighborhoods also had higher COVID-19-related mortality rates.²⁵ Some studies have identified differences in COVID-19 test positivity rates between Black and White Americans, despite similar testing prevalence.^{26,27} In one study, Black patients were almost twice as likely to test positive (219 per 1,000) compared with White patients (113 per 1,000).²⁷

Although no studies have characterized attitudes and beliefs about COVID-19 testing among BAs, COVID-19 vaccination acceptance studies suggest BAs may be wary of undertaking some COVID-19 preventive measures.²⁸⁻³⁰ In a June 2021 survey, 15% of BAs reported that they would prefer to "wait and see" how others tolerate COVID-19 vaccination before accepting vaccination themselves, compared with only 9% of WAs.³¹ Reasons for vaccine hesitancy among BAs included mistrust of reported vaccine efficacy, safety concerns, fear of COVID-19 infection, and concern about missing work.^{29,30,32} In a study of COVID-19 beliefs, more BAs reported believing in COVID-19 conspiracy theories, mistrusting the medical community, and lower intention to accept COVID-19 preventive measures than WAs.²⁸

The Health Belief Model has been used to explain some of the variation in acceptance of COVID-19 preventive measures including masking, hand hygiene, and physical distancing.³³ The model may also be useful for explaining COVID-19 testing decision making. According to the model, likelihood of adopting a health behavior to prevent disease

(ie, COVID-19 testing) is predicated on a combination of an individual's perceived degree of personal susceptibility to disease, perceived severity of disease, perceived benefit of taking measures to prevent disease, perceived barriers to undertaking protective measures, and cues to action encouraging or discouraging the adoption of preventive measures.^{34,35}

Improved understanding of COVID-19 testing decision making among BAs requires characterizing the range of attitudes and beliefs about testing. This information is vital for promoting COVID-19 testing to help end the persistent disparity in COVID-19 morbidity and mortality by race. In this qualitative study, semi-structured interviews were conducted using a phenomenology approach to identify attitudes and beliefs about COVID-19 testing among Black parents and their children.

METHODS

The institutional review board (IRB) at Children's National Hospital determined the study protocol exempt from IRB review. Semi-structured interviews were conducted with 31 parents recruited from a children's health center in Washington, DC after virtual well and sick visits in July 2020. Parents were eligible to participate if they were aged ≥ 18 years and self-identified as Black or African American. Verbal informed consent was obtained from all parents participating in the study. Participants received a \$25 gift card incentive after completing the interview.

The semi-structured interview

Table 1. Sociodemographic characteristics of participants, N=26

Characteristic	n (%) or mean \pm SD
Age, in years	34.5 \pm 9.8
Female	24 (92%)
History of COVID-19	10 (39%)
Knew someone who had COVID-19	15 (58%)
Knew someone who died from COVID-19	8 (31%)
In last 2 weeks, went:	
To grocery or convenience store	25 (96%)
Inside family member's or friend's house	21 (81%)
Dining indoors at a restaurant	6 (23%)
To beauty salon/barber	5 (19%)
To church	1 (4%)

guide was developed using a phenomenology approach and pilot tested to assess questions for clarity and internal consistency.³⁶ All interviews were conducted via video conferencing, audio-recorded, and transcribed. Interviews were conducted until thematic saturation was reached. An initial code book was developed using Health Belief Model constructs (perceived COVID-19 disease susceptibility, perceived disease severity, perceived COVID-19 testing benefits, perceived testing barriers, and cues to action) as initial codes/themes, then refined using an iterative process.³⁴ Data organization, coding, and analysis were conducted using QDA Miner version 5 (Provalis Research, Montreal) software. Double data coding was performed on 65% of the transcripts with a resultant free-marginal interrater kappa score of 86.8%. Discrepancies between coders were resolved by a third coder.

RESULTS

Participant Characteristics

From 31 total interviews, five were excluded due to low-quality

recording precluding transcription. The analysis thus included 26 interviews. Interviewees were predominantly female (92%). More than one third had been diagnosed with COVID-19 (39%), more than one half knew someone who had been diagnosed with COVID-19 (58%), and nearly one third knew someone who had died due to COVID-19-related complications (31%) (Table 1).

Three central themes emerged regarding COVID-19 testing decision making, including: 1) perceived COVID-19 disease susceptibility; 2) barriers to testing, with subthemes including trust in test accuracy and safety, perceived stigma of a positive test result, and impact of racism on self-efficacy; and 3) cues to action.

Perceived Disease Susceptibility

Interviewees based their desire for COVID-19 testing primarily on their perceived risk for infection (Table 2). Nearly half of interviewees (42%) stated that they would want to be tested if they were symptomatic, with one interviewee stating that testing would be acceptable for severe symp-

Table 2. Question: Under what personal circumstances would you want to get the coronavirus test?

Response	n (%) of respondents ^a	Representative quotes
If I have high risk contacts/exposures	13 (50%)	"If I went to a grocery store and I see someone tested positive or multiple people, I would go back and get tested again."
If I show symptoms	11 (42%)	"I know if I feel any symptoms or if I feel like I've come in contact with someone who may have the virus, then I will definitely want to get tested."
For my own safety	3 (12%)	"To make sure myself and my family are safe and pretty much [...] Like I had a friend who actually caught the virus and pretty much put their whole family at risk without knowing. So, I just want to make sure that myself and my family is safe."
For the safety of my family	4 (15%)	"I do take into consideration on what [my child's] pediatrician may say and what my primary care doctor says."
If my doctor recommends a test	2 (8%)	"So I don't think [testing is] a comfortable thing with me. At this point I don't feel it's necessary because I'm following all the guidelines."
If I have to get a test to return to work	1 (4%)	"I would get it if I have to get it because I have to go back to work."

a. Does not sum to 100% due to open-ended nature of questions.

toms. Half of the interviewees (50%) stated that they would want to be tested if they had a known exposure.

Interviewees' opinions were divided as to whether they would want to be tested if they were asymptomatic. Those who supported testing asymptomatic individuals often alluded to the importance of mass testing for relaxing societal restrictions on public gatherings: "If everything is going to open back up – [if] school, work, and daycares is going to open back up so it's regular schedule – everyone, before you can attend, you should get tested."

Barriers to Testing: Trust in Test Accuracy and Safety

Uncertainty about test result accuracy was a recurrent theme. Interviewees expressed concerns about both false negative and false positive results: "Nobody is testing positive, which is alarming to me too, because where are all of these results of all these people testing positive and people passing away from COVID-19?" Some described potential causes for inaccurate results including faulty test kits,

or poor sample collection technique leading to inadequate or contaminated specimens: "There was something that I read [...] that there were tests that were sent off to be tested and it came back that the tests were compromised with the actual virus so they couldn't even determine whether or not those people were successfully tested or not."

Multiple interviewees expressed concerns about testing safety. Nearly 20% worried that testing might infect individuals with SARS-CoV-2: "If I go to the doctor to get this test, then some people in the African American community think that they will be given the coronavirus." Several shared conspiracy theories they had heard: "We have some friends that think it's a scandal or some friends that think it's just another way to trace the number of people in the community, or another way to catch a virus." Approximately a fifth of interviewees were concerned that the government had a role in causing the pandemic: "I felt like the coronavirus came from the government. And I feel like they had a reason for putting it out when they put it out."

Barriers to Testing: Perceived Stigma of Positive Test Results

Some interviewees were concerned about the possibility of differential treatment based on a positive test result: "I'm talking about counting it against [my child] like, 'Oh, this person is this. Get out of here.' That stigma, like, 'Oh my God, you're just a walking death' type of thing." As a result, some interviewees expressed a strong desire for confidentiality: "I don't want to report [a positive test result] period, but if I didn't have a choice, report it anonymously." For some, the need for privacy extended to a desire to conceal whether a test was performed, decreasing enthusiasm for accessing mass testing sites: "And if someone is positive, then I can conveniently and privately talk to my doctor and do the necessary steps to get myself quarantined and taken care of by myself, instead of like, 'Dang, I saw you at the tent the other day.'" As a result, there was interest in using self-testing kits in the privacy of their homes; however, some interviewees were concerned about their ability to obtain an adequate sample: "To me,

with the home tests at this point [...] the only concern would possibly be contaminating or not getting enough of the specimen to actually be tested at home. [...] I think that going forward a YouTube video or something explaining [home testing would be] the best way. I think it's possible to get people trained to do it."

Many interviewees also wanted control over whom to notify in case of a positive result. The majority (65%) would want to notify household members and close contacts, but less than a third (31%) wanted to notify their physician. Interviewees differed in their beliefs about notifying employers, schools, health departments, and unknown close contacts identified through contact tracing: *"I got concerns with you sharing my information period. I mean, that's just like protecting those that have HIV and AIDS. I mean, that's confidential, unless I'm jeopardizing someone else."*

Barriers to Testing: Impact of Racism on Self-Efficacy

Concerns were raised about the impact of systemic and individually perpetrated racism on participants' personal capacity to manage COVID-19 risk. One interviewee felt that national priority-setting disadvantaged Black people: *"I think they probably just don't care if a whole bunch of Black people get coronavirus, but those results probably won't matter. But if other nationalities are dying vastly from it, then those will probably get reported and something will possibly be done."* Barriers caused by structural racism diminished some interviewees' self-efficacy to avoid disease: *"[African Americans] are struggling with a lot of things and we don't have a lot of resources that other racial*

groups have, and that's why I'm probably more prone to getting [COVID-19]."

Perceptions of racial bias by news outlets led another interviewee to the potentially dangerous conclusion that her COVID-19 risk might be lower than reported: *"That's why when it came out saying that African Americans are more at risk of having the coronavirus than Whites and Asians, it's not surprising to me because we're always in the negative light in the media and half the time, it's not even the truth."* Among several interviewees, concerns about racial bias in health care led to a sense of futility and, for at least one, low enthusiasm for testing: *"When you have a Black patient and you have a White doctor, you have the Black patient saying they have all these symptoms and the White doctor isn't taking it very seriously and whatnot. Why should I even worry about getting this test or whatnot?"*

Despite perceptions and experiences of racism and bias in COVID-19-related care, more than half of interviewees (62%) explicitly stated that their Black race does not affect their decision to seek COVID-19 testing. Two interviewees stated that their Black race makes them more inclined to be tested: *"[...] I'll be more willing to take the test because they say that African Americans contract the virus more than others."*

Cues to Action

Most interviewees had been exposed to negative opinions about COVID-19 testing from friends and family members, primarily regarding the pain of the sampling procedure, *"I heard it hurts really bad. I heard that it's not something that you will want to take,"* and contaminated test kits,

"Some people even say that when you get tested, then you get the coronavirus [...]." Thus, many interviewees valued autonomy in testing decision making. Nonetheless, several interviewees stated that they would accept testing if it was recommended by their doctor. They also agreed that testing mandates would be acceptable for close contacts of individuals testing positive for COVID-19. Nearly three-quarters (73%) supported school testing mandates, and more than half (62%) supported employer testing mandates. Less than one quarter of interviewees explicitly stated that they did not agree with testing mandates instituted by any entity, including schools, employers, and the government: *"I don't feel we are required to do anything. We are citizens. You don't have to be forced to do anything [...]"* Nonetheless, most interviewees expressing philosophical objections stated that they would submit to testing if required. Only one described extreme measures to avoid having her son tested: *"But if they're truly saying he has to [be tested to] go to schools and daycares, I mean, I might just have to homeschool him or something."*

DISCUSSION

Interviewees' perceived disease susceptibility, barriers to testing, and cues to action elucidate some of the reasons why BAs may or may not access COVID-19 testing. When considering these themes as constructs of the Health Belief Model, we are better able to understand how BAs view COVID-19 testing and motivations for accessing testing.

Interviewees felt their risk of a

positive COVID-19 test to be highest if they were to have pathognomonic symptoms or an exposure, and agreed that testing would be acceptable in these circumstances. By contrast, the lack of universal enthusiasm for testing if asymptomatic suggests that interviewees may lack information about disease transmission risk among asymptomatic individuals or may perceive asymptomatic spread to be of lesser consequence. Since January 2021, there has been a rapid decline

Our study findings elucidate some of the reasons why Black Americans may or may not access COVID-19 testing...and can inform public health policies, tools, and interventions for combatting the pandemic.

in COVID-19 testing.³⁷ While this is likely due in part to the new availability of COVID-19 vaccines, testing numbers were already decreasing even as COVID-19 cases continued to rise,³⁷ suggesting a disconnect between COVID-19 infection risk and testing motivation. The importance of testing is only likely to increase as the Delta variant threatens communities with low immunization rates and future mutations may evade the vaccine-in-

duced immune response.¹⁷ Educational campaigns to modify understanding about asymptomatic transmission and impress the importance of testing to detect COVID-19 variants could improve support for universal testing.

Interviewees expressed concern about false negative results that may occur for a variety of reasons, including inadequate specimens, inappropriate test timing, and faulty test kits. Educational campaigns describing disease transmission as it relates to the ideal timing of testing would help health care providers and patients to work together to maximize test accuracy. Further, additional education about the types of tests available and their sensitivities and specificities would help to set reasonable expectations.

Interviewees' apprehension that testing could cause COVID-19 reflects pervasive misinformation about disease transmission and testing tools. Since some individuals inevitably develop symptoms and/or become positive a short time after initial negative testing, it is understandable that some will inaccurately assign disease causality to the test itself. This concern likely also reflects deep-seated mistrust of the medical establishment as a result of institutionalized racism and a history of medical experimentation, which is supported by interviewees' statements about race-based inequities in access to testing, quality of COVID-19-related medical care, and circulating conspiracy theories. Importantly, some interviewees' frustrations with the medical system negatively impacted their self-efficacy to obtain testing, as they perceived that a positive test would not be met with an appropriate medical response.

Continual efforts to examine and rectify structural barriers to COVID-19 care by neighborhood composition and standardization of COVID-19 treatment protocols are necessary to improve health equity.⁷ Further, implementation of implicit bias training requirements for health care providers could help them to provide better care to individuals from various backgrounds.^{7,38} Culturally responsive education delivered by trusted community members could also help dispel myths and misinformation about COVID-19 testing among BAs.³⁹

Desire for confidentiality among interviewees was largely driven by concerns about stigma and isolation following a positive test result. However, many were willing to forgo some confidentiality to improve safety for themselves and their close contacts, suggesting that framing testing as a means to ensure safety may be an important cue to action. In addition, increasing access to self-testing kits for individuals to use in the privacy of their homes may increase acceptance of testing. Since physicians were frequently cited as individuals who influence testing decision making, health care providers should be prepared to provide guidance on COVID-19 prevention. Finally, since testing mandates were generally acceptable among interviewees for work, school, and daycare attendance, medical associations should consider strategies to advocate for thoughtfully designed testing mandates that do not unnecessarily burden or disadvantage communities of color.

Collectively, our study findings help to elucidate some of the reasons why BAs may or may not access COVID-19 testing, and policymakers

and health professionals should aim to use these findings to inform public health policies, tools, and interventions for combatting the pandemic. Health departments and policymakers should consider the potential for tailored messaging around COVID-19 testing and updating existing COVID-19 testing programs using a health equity lens. Similarly, health care professionals should acknowledge the unique concerns of BAs and employ this information to provide culturally informed care and recommendations to BAs seeking COVID-19 testing and treatment. Finally, we anticipate that the findings from this study could be used to develop and evaluate targeted health educational campaigns and tailored interventions that promote equity in prevention and mitigation strategies that could be applied to the COVID-19 pandemic as well as to other existing and future public health threats.

Study Limitations

As with all studies, the current one is affected by study limitations. Because we only interviewed BAs, we are unable to compare their responses with those of other racial backgrounds. In addition, the interviewer-interviewee dynamic may have affected interviewee responses, although care was taken to assure rigor and trustworthiness of the data. Pre-recruitment, this involved developing a semi-structured interview guide and training study team members through mock interviews with feedback. Post-interview, standard self-reflective processes such as investigator bracketing and triangulation were used to enhance analytic credibility.⁴⁰

CONCLUSIONS AND IMPLICATIONS FOR FUTURE DIRECTIONS

To our knowledge, this is the first study of attitudes about COVID-19 testing among BAs, suggesting that variation in perceived disease susceptibility, barriers to testing, and cues to action may help to explain testing behaviors. Further research is needed to develop culturally informed interventions to increase testing acceptability among BAs, especially with regard to education about COVID-19 transmission, testing, and prevention. Our findings on BAs' concerns about COVID-19 testing may inform future studies about COVID-19 vaccine hesitancy, which are vital to increasing vaccine acceptance and ending the pandemic. As the COVID-19 vaccination program expands and matures, it is imperative that the public health community learn from these conversations with BAs about COVID-19 testing so that disease prevention and mitigation strategies prioritize health equity.

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CONFLICT OF INTEREST

Dr. Schaffer DeRoo serves as a consultant for the Pfizer Pediatric Pneumococcal PEGASUS (Pneumococcal Expert Group of Advisors for Scientific Understanding and Insight) – US project. The remaining authors have no conflicts to disclose.

AUTHOR CONTRIBUTIONS

Research concept and design: DeRoo, Torres, Jiggetts, Fu; Acquisition of data: Tor-

res, Ben-Maimon, Jiggetts; Data analysis and interpretation: DeRoo, Torres, Ben-Maimon, Fu; Manuscript draft: DeRoo, Torres, Fu; Statistical expertise: DeRoo, Fu; Acquisition of funding: Fu; Administrative: DeRoo, Torres, Ben-Maimon, Jiggetts; Supervision: DeRoo, Fu

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