



# Exploring the Scope and Dimensions of Vaccine Hesitancy and Resistance to Enhance COVID-19 Vaccination in Black Communities

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## Abstract

**Background** The long history of distrust that characterizes the relationship between the Black/African-American population and the US Medical community makes COVID-19 vaccine hesitancy of great concern. A needs assessment of the Black/African-American community assessed willingness and explored the perceptions of community members regarding COVID-19 vaccination.

**Methods** The study used a mixed-methods approach. Respondents ( $n = 183$ ) were surveyed with a web-based questionnaire. They were asked whether there would get vaccinated for COVID-19 barring any access or cost-related challenges. Perceptions of community members regarding vaccination were explored through one-on-one interviews ( $n = 30$ ) and eight focus groups ( $n = 49$ ), with participants drawn from across various demographic characteristics. Survey responses were summarized using frequencies and proportions. A thematic analysis was conducted on the qualitative data.

**Results** Thirty-four percent of respondents indicated “Yes” (willing to get vaccinated); 26.8% indicated “No”, while 37.1% expressed hesitancy (“Maybe” or “I don’t know”). Themes emerging from the qualitative data are grouped into three broad categories: vaccine accessibility (transportation, information, navigating healthcare system); vaccine hesitancy (with sub-categories of compliance, complacency and confidence); and vaccine “resistance” (conspiracy theories, conflicting beliefs, distrust of Government, trustworthiness of Health care).

**Conclusion** Findings demonstrate a nuanced expansion of “vaccine hesitancy” to delineate groups with varying issues and perspectives. Interventions to enhance vaccination rates in Black/African-American communities should incorporate components that assure accessibility at the minimum, but also address non-access-related issues. Priority should be given to enhancing vaccine literacy, information-sharing as efficacy and safety data emerge, and addressing specific concerns identified through community-engaged outreach efforts.

**Keywords** Black/African American · COVID-19 vaccination · Vaccine hesitancy · Vaccine resistance · Community-based

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## Background

Vaccine hesitancy is of great concern as failure to achieve herd immunity for any relevant infectious disease constitutes a public health threat. The World Health Organization Strategic Advisory Group of Experts (SAGE) Working Group on Vaccine Hesitancy defines vaccine hesitancy as “a delay in acceptance or refusal of vaccination despite availability of vaccination services” [1]. The SAGE group also emphasizes that “Vaccine hesitancy is complex and context specific, varying across time, place, and vaccines” [1]. Factors that influence vaccine hesitancy have been categorized using the SAGE framework of 3Cs: complacency, convenience, and confidence. Several studies have investigated vaccine hesitancy, with regard to childhood and adolescent vaccinations, where parental consent is required [2–5]. Vaccine hesitancy in adults especially around the influenza vaccine is ubiquitous [6, 7].

Blacks/African Americans have historically demonstrated greater vaccine hesitancy when compared with whites [8–10]. Distrust associated with historical trauma is linked to unethical medical experimentations [11, 12]. This is often cited as the primary reason for vaccine hesitancy among Blacks. However, evidence points to a variety of additional reasons including current experiences of racial discrimination and structural inequities in healthcare that contributes to less confidence in the medical community [13, 14]. There are also other factors reported that are very contextual such as access to regular care and others that are vaccine-specific, e.g., perceived risk/susceptibility [15, 16].

Specific to COVID-19, research findings demonstrate the persistence of higher vaccine hesitancy among Blacks, compared with the whites [17, 18]. There is therefore need to further understand the complexity of vaccine hesitancy among Blacks specific to COVID-19 vaccines, as well as unearth potential facilitators to enhance the rate of COVID-19 vaccination within this community. There are possibly additional layers to attitudes and beliefs regarding COVID-19 vaccines as these were newly developed and currently authorized for emergency use only. Additionally, 2020 was a year of unprecedented social unrest and awareness of structural racism regarding the Black/African American population with implications for healthcare [19–21]. Higher rates of COVID-related morbidity and mortality among Black/African Americans are associated with socioeconomic vulnerabilities [22–27]. These factors make it imperative to intensify efforts to address vaccine hesitancy in order to increase vaccination rates in this population.

The current study was conducted in Fall 2020, prior to the approval of COVID-19 vaccines for emergency use.

The work reported here is part of a larger study which objectives were to assess the level of knowledge and self-reported adherence to prescribed preventive behaviors regarding COVID-19 and obtain individual and community perspectives on the impact of COVID, the barriers to and facilitators of prevention and COVID-related health-care utilization, including testing and vaccination from members of the Black/African-American community. The findings reported are those focused on willingness to be vaccinated and perceptions regarding intentions to be vaccinated. These are useful for understanding and improving the continuing climate of vaccine hesitancy and resistance among Blacks/African Americans.

## Methods

### Data collection

A needs assessment was conducted using a mixed-methods approach. A web-based questionnaire was administered as a cross-sectional survey to a convenience sample, using a platform compatible with cellular devices. Items on the questionnaire were drafted from a review of literature and CDC recommendations regarding COVID-19 at the time. The link to the questionnaire was generated and sent out to as many people as could be reached through social and professional networks. A QR code was generated to facilitate dissemination and ease of access. Business-sized cards with the study information and link were also made available at sites where community members received resources. The questionnaire was active from August 24 to November 28, 2020. To participate, respondents had to be 18 years or older and self-identify as a person of African heritage (Black/African-American) or bi-/multi-racial with Black/African-American as one of their racial identities. The questionnaire was both computer and phone compatible and took about 5–10 min to complete. One of the items included in the questionnaire asked respondents “If a COVID-19 vaccine is readily available, easily accessible and at no cost, would you be willing to get vaccinated?” Response categories included “Yes,” “Maybe,” “No,” and “I don’t know.”

A semi-structured guide was developed by the investigators working collaboratively with community partners. The questions were to gain further insight into the areas of focus in the survey and explored individual and community perceptions through one-on-one interviews ( $n = 30$ ) and eight focus groups. Participants were purposively recruited from across various demographic characteristics, by age, sex, education, and socio-economic status. Recruitment for the interview and focus group was done via phone with the help of community consultants who

were personnel on the study. All the interviews and focus groups were conducted via zoom, audio-recorded and transcribed verbatim.

## Data analysis

Survey responses were summarized using frequencies and proportions. Observations from respondents residing outside MN and WI were excluded in the data analysis, per the zip codes indicated by respondents. This was to ensure that the assessment focused on the region where program implementation was intended. The interview and focus group transcripts were coded. All excerpts coded “vaccine” were extracted. Using the search terms “vaccine” and “vaccination,” all the original transcripts were further queried to ensure that all vaccine-related data were captured. In addition, data before and after the excerpts coded for vaccine were extracted along with the excerpts to ensure that all the data were analyzed in proper context. Two investigators independently recoded these expanded excerpts. They met to review, discuss, and reconcile the codes. These codes were grouped into categories from which emerged themes that describe the perceptions of participants on COVID-19 vaccination. Data interpretation regarding vaccination was also contextualized by data on healthcare utilization in general.

## Results

### Demographics

The 183 respondents to the questionnaire were of diverse demographic characteristics. The age range was from 18 to 81, with approximately half of the respondents indicating that they were male (49.2%). Respondents are self-identified as African American (65.6%), African (22.9%), or bi-/multi-racial (12.5%). The interview and focus group participants were also of very diverse demographic backgrounds (see Table 1.)

### Quantitative data

In response to the survey item regarding willingness to take the vaccine when available, 34.4% of respondents indicated “Yes” (i.e., willing to get vaccinated); 26.8% indicated “No”; and 37.1% expressed hesitancy, indicating “Maybe” or “I don’t know” (see Fig. 1.). Vaccine accessibility:

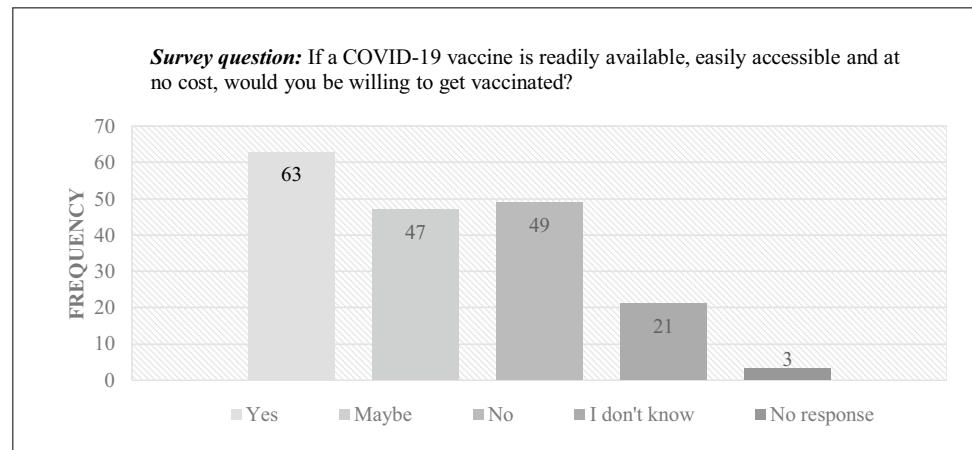
### Qualitative data

Themes emerging from the qualitative data delineated different categories of issues related to perceptions about getting vaccinated from individual as well as community

**Table 1** Demographic characteristics of study participants

		Survey [n = 183]	Interviews [n = 30]	Focus groups [n = 49]
		Frequency (percentage)		
Race/Ethnicity	African-American	120 (65.6)	29 (96.7)	32 (65.3)
	African (+ Jamaican)	40 (22.9)	1 (3.3)	12 (24.5)
	Bi/Multi-racial	23 (12.5)		4 (8.2)
Sex	Male	90 (49.2)	14 (46.7)	23 (46.9)
	Female	91 (49.7)	16 (53.3)	26 (53.1)
	No response	2 (1.1)		
Education	Middle/high school	64 (35.0)	13 (43.3)	14 (28.6)
	College (+ some credit)	100 (54.6)	15 (50.0)	31 (63.2)
	Grad studies	17 (9.3)	2 (6.7)	3 (6.1)
	No response	2 (1.1)		
Employment	Unemployed	N/A	12 (40.0)	18 (36.7)
	Employed (PT)		7 (23.3)	14 (28.6)
	Employed (FT)		8 (26.7)	8 (16.3)
	Self-employed		3 (10.0)	2 (4.1)
	Retired			6 (12.2)
Marital status	Single (never married)	N/A	18 (60.0)	36 (73.5)
	Married		4 (13.3)	9 (18.4)
	Divorced		5 (16.7)	1 (2.0)
	Widowed		3 (10.0)	3 (6.1)
Age	Mean	43.4	45.1	32.5
	Median	42.0	44.0	21.0
	Range	18–81	24–66	13–80

**Fig. 1** Willingness to take COVID-19 vaccine when available. Survey question: If a COVID-19 vaccine is readily available, easily accessible and at no cost, would you be willing to get vaccinated?



perspectives. These themes are grouped under the following categories:

- Vaccine accessibility
  - Transportation
  - Availability/accessibility of relevant information
  - Navigating the Healthcare system
- Vaccine hesitancy (delayed acceptance or refusal):
  - i. Vaccine compliance
    - High-risk perception
    - Influence of peer-pressure
    - Sense of communal health and safety
    - Anticipation of policy mandate [e.g., for travel]
    - Fear fatigue [tired of living in fear of infection]
  - ii. Vaccine complacency
    - Low-risk perception
    - Continued effectiveness of preventive behaviors
    - Preference for alternative preventive treatments
  - iii. Vaccine confidence
    - Fears/concerns
    - Vaccine literacy
    - Perceived efficacy and safety per timeframe of vaccine development); and
    - Demonstrated efficacy in others
- Vaccine “resistance” (actively against vaccine):
  - i. Conspiracy theories,
  - ii. Conflicting beliefs (e.g., religious)

- iii. Distrust of Government (perception of political agenda)
- iv. Perceived trustworthiness of healthcare

#### Vaccine accessibility

The themes under this category are with reference to perceived challenges when one is eligible for and willing to utilize a healthcare service. The references from participants are drawn from challenges with testing and receiving health care in general but also applicable to vaccination.

**Transportation** In the general discussions about access to healthcare services, many participants acknowledged transportation as a barrier and cited examples from COVID-19 testing. However, one of the interview participants expressed confidence that transportation to vaccination sites would not be a barrier for community members who would want to take the vaccine. Rather, they pointed to a lack of willingness for other reasons as a greater barrier.

*Yeah, there's issues of transportation. -----Transportation is one of the biggest things, for sure.* [Interview participant #16]

*“I think there will be transportation access if people wanna go do it. Honestly, I don't think a lot of people, if there was a vaccine, would just be willing to go in and get a vaccine.”* [Interview participant #02]

**Availability/ Accessibility of Relevant Information** During the interviews and focus groups, participants also pointed out that getting relevant information about COVID-19 was particularly problematic for those without Internet access. This lack of access also meant that some questions and concerns may not be addressed, resulting in missed opportunities to get vaccinated. Here is an example drawn from

information about testing, but also applicable to vaccination—for example, people without insurance may have the notion that they need to pay out-of-pocket for these services.

*I know people can get tested. I'm not really sure how much the testing is. I'm not sure if it's free. I'm not sure if you have to pay. [Interview participant #15]*

*Oh, yeah. That's where the confusion lies, and whether or not they can get a free test if they don't have insurance. That's all connected to that. I don't think that the—I don't feel personally that the local hospitals have done enough to get out clear, concise information as to how people of low income or no health insurance can access the testing. [Interview participant #13]*

**Navigating the Healthcare System** Implicit in discussions about accessing healthcare services were perceptions of the healthcare system as a complex entity to navigate, especially during the COVID-19 pandemic when many processes in healthcare service delivery moved to online versus in-person. Registration for appointments was evidently a barrier when vaccines became available and required Internet access and email confirmation. Some of the elderly and persons without access and/or efficacy to navigate the Internet needed help to sign up in order to be scheduled for the vaccination clinics. Others did not have email addresses.

### Vaccine hesitancy

Themes under this category are those associated with uncertainty about getting vaccinated that are unrelated to access but have potential to increase or decrease willingness.

**Vaccine Compliance** In discussions, participants talked about various reasons why they and/or community members might take the vaccine; and cited the following as factors that would make it more likely for themselves and others to get vaccinated: perception of high risk, influence of peer-pressure, sense of communal safety, anticipation of policy mandate/policy-driven pressure (e.g. for travel), and fear fatigue (tired of living in fear of infection, worrying about loved ones).

**High-Risk Perception** There were perceptions that community members getting the vaccine would depend on their individual perception of risk of getting the virus. Those at higher risk were expected to take the vaccine considering the potential for severity of infection and possible fatality.

*As far as impact on a personal level, I don't think that the majority of people here in --, outside of the elderly population and the population who are most*

*at risk to die from a disease, I don't think that the majority of people in -- and other places like this would be likely to take a vaccine [Participant #24]*

**Influence of Peer Pressure** Willingness, particularly among the younger participants (college-aged) was associated with “others” taking the vaccine.

*I agree with what everybody said about the—people discouraged from taking it. Me, myself, I know I'm very discouraged from taking it until I see other people do it. [FGD2 discussant]*

**Sense of Communal Safety** In other discussions, participants anticipated people taking the vaccine out of a sense of responsibility for the protection of the community, especially the more vulnerable community members like the elderly and those with underlying health conditions.

*I think, at this point, we take what we can get to help contain it, 'cause it's still here, and they're trying to get rid of it [FGD1 discussant]*

**Policy Mandate/Policy-Driven Pressure** There were perceptions that community members who would otherwise not be willing to get vaccinated might take the vaccine in response to anticipated policy mandates that may put restrictions on things like continuing employment and travel.

*. . . I think, like I said, you have people who really think, okay, if we don't get the vaccine, then we are not gonna be able to fly. You know what I mean? They're gonna put all type of health restrictions [participant #11]*

**Fear Fatigue** Another source of motivation mentioned was people simply being tired of continuously living in fear of getting infected by the virus. Participants talked about people wanting to get back to some normalcy and therefore being willing to get vaccinated as a way of facilitating that goal.

*We get a vaccine, so I don't have to wake up every day worried if one of my loved ones is gonna die from the COVID [Participant #23]*

*[Question: Will community members take the vaccine?] Yes, If they wanna be safe. Yes [Participant #21]*

**Vaccine complacency** Conversely, there were reasons offered for why community members might not consider getting vaccinated a necessity. These included individual risk perception, perceived effectiveness of preventive behaviors, preference for alternative measures, and perceived trustworthiness of the healthcare system and medical research community.

**Low-Risk Perception** Perception of low risk was expected to be influenced by decrease in infection rates, having been previously infected with COVID-19, and being in the low-risk categories per age and health status.

**Perceived (Continuing) Effectiveness of Preventive Behaviors** One of the participants offered the perspective that people may be less motivated to be vaccinated if at the time they had not been infected, by reason of adhering to the prescribed preventive behaviors. Another participant expressed ambivalence, anticipating that their willingness would depend on what they learned about the vaccine in terms of risks and benefits, but also the infection rates at the time the vaccines became available.

*A lot of people are talking about if they were to get a vaccine, they're not gonna get the shot because they made it this far without COVID . . .* [Interview participant #2]

*For me, I don't know. I'd do a little bit of research. Personally, I'd do a little bit of research around the potential risk of taking it. If the numbers in [the state] aren't going crazy, I wouldn't feel any need to go running there and be first in line.* [Interview participant #24]

**Preference for Alternative Preventive Measures** Another participant described alternative means they had employed that they believed to be protective from the virus and in their perspective negated the need for vaccination. Some of the other participants were also in favor of naturally occurring substances such as herbal remedies versus use of an engineered vaccine.

*I feel like home remedies do a lot more justice than stuff comin' off the shelves because we have so much out there. Everyone is always sayin', "Use this. Use that. Do this. Do that. It's better." It may have worked for them, but it may not work for everybody. That's where I'm at with this vaccine as well.* [FGD #5]

**Vaccine confidence** Related to the vaccine itself, there were responses and discussion related to people's perceptions of vaccine efficacy and safety. Confidence in the vaccine was anticipated to be associated with willingness to get vaccinated. Sub-themes that emerged regarding confidence in the vaccine included *fears and concerns, vaccine literacy, perceived efficacy, and safety per timeframe of vaccine development and demonstrated efficacy in others.*

**Vaccine-Related Fears and Concerns** A common disposition among participants was that of caution in their consideration of the vaccination. Fears and concerns were commonly around getting COVID from the vaccine. There was an

assumption that the vaccine mechanism would be the use of an attenuated virus similar to the vaccines with which they were familiar. Many participants referenced the flu vaccine and the potential for experiencing illness following vaccination and susceptibility to infection regardless.

*When people hear vaccine, they hear basically you have to give me—you have to give it to me for me not to get it. That's the same as with the flu. [#20]*

*Honestly, I don't think a lot of people if there was a vaccine, would just be willing to go in and get a vaccine, especially if it's (like) the flu vaccine. Because a lot of people go in and get the flu shot, and then guess what, a lot of people get the flu after they get the shot. Nobody's gonna wanna go in and get a COVID shot 'cause they gonna think they're gonna get COVID. You know what I mean?* [Interview participant #02]

**Vaccine Literacy** Those who had some understanding of vaccine immunology and/or an awareness of the different mechanisms being used at the time for vaccine development, were hopeful that people would be more willing to get vaccinated if they had more knowledge about the vaccine. They recommended addressing the knowledge gap around the anticipated vaccines through community education, leveraging the social media use prevalent in the community. Increase in vaccine knowledge—an understanding of the science, mechanism of action, risk versus benefits, expected effect, etc. in their perspective—would increase vaccine confidence and consequently willingness to get vaccinated.

*I know I wanna educate the Black community on the possible vaccination, and what the coronavirus is about, and how we can help it, and how the possible vaccinations are helpful for all of us. I think once we can all feel like we're being cared for, then we can be more on board ----- I believe that the biggest way to make sure everybody is educated on the vaccine simply is social media. I think social media is the easiest way to reach out to people in the Black community.* [FGD#1]

**Perceived Efficacy and Safety** In discussions, participants commonly expressed skepticism about the vaccine mainly on the grounds of the projected time frame. Many participants expressed concerns that the development may not adhere to the usual strict protocols, and that the time for testing was too short to determine safety, especially on the long term.

*I remember when they announced that there was a vaccine coming, at least as soon as November 1st or something, a lot of my peers that are Black or African American were all very skeptical. They were like,*

*"No, I don't wanna take that." Even my family members, some of them were like, "I don't really trust that. Doesn't sound ethical. It sounds rushed. [FGD #1 participant]*

*Literally, it's been six months, so six months, a vaccine. Research is thorough. This thing hasn't been through any real trials yet. [Interview participant #11]*

One of the participants, while skeptical of the research process, expressed confidence in the institutional oversight of the development. They believed that the vaccine would be given a go ahead for use only when the US Food and Drug Administration (FDA) was sufficiently satisfied that it had met all regulatory standards.

*I keep thinking we're all gonna get this vaccine, and then we're gonna turn into zombies because there's some side effect that's gonna kill everybody. I think you just gotta wait for the FDA. The FDA has protocols, and they have measures in place where they have to do stringent testing, and they have to test for side effects and residuals before they come up with a vaccine [Interview participant #9]*

**Demonstrated Efficacy in Others** Some of the participants who expressed caution or ambivalence towards getting vaccinated also commonly mentioned that people (themselves inclusive) would be more willing to be vaccinated when they see that the vaccination afforded protection. Many participants said they (and other community members) would likely wait for others to get vaccinated and observe the efficacy.

*I've heard that people are gonna wait until other people get the vaccine and see what happens. I feel like I would also agree with that, since this is a new thing and people are experimenting. Scientists are experimenting every single day and you really don't know if you can take anybody's word [FGD participant #2]*

### Vaccine resistance

There were perspectives from several participants who were actively against getting vaccines. This activism was underpinned by a variety of factors including *distrust of the government, deep-rooted beliefs, and conspiracy theories/myths.*

**Distrust of Government** There were participants who expressed vehemence at the very notion of taking the vaccine, citing vaccination efforts (including COVID-19) as political agenda and often referencing historical medical experimentations like the Tuskegee study. One of the participants expressed their belief that the vaccine was already available and was being used as a political ploy by the administration at the time.

*. . . and there's a lot of government funding that goes into that and hidden agendas behind everything [FGD participant #2]*

*I'm sorry, but it's just not going to be for me until I see it working' for the world. Right now, it's just a political game. I'm not about to accept that. [FGD5 participant]* *However, when it comes to politics and government, people—you don't trust your government. You know what I'm saying'? You really don't trust 'em when they're talking about a vaccine, but these are the same people who injected our people with syphilis. It's like, oh well, they made it up for whatever agenda there is out there, I guess . . . [Interview participant #11]*

*People who are conscious and know the history of our researchers, they'll be a little more apprehensive about taking it. I truly believe that they already had it. I think they had it when this thing came out. Just selective about who they give it to ----- [Interview participant #10]*

**Deep-Rooted Beliefs** Participants anticipated resistance from persons who had beliefs that were in conflict with vaccination. An example was religious beliefs. Others had personal beliefs about vaccines in general and stated unequivocally that they would not be getting vaccinated.

*Some people don't wanna take the vaccine because they think it's something to do against their religion [FGD2 participant]*

*I'm 62 years old, and I've never taken a flu shot. I'm just not cool with them sticking' me with a known virus, and then hoping' that I can build up an immunity to it. That's just me. [Interview participant #9]*

**Conspiracy Theories/Myths** Some participants expressed beliefs about the corona virus and/or the vaccines that underscored their unyielding resolve to not get vaccinated. One proposed theory associated with the virus disputed the existence of the virus as a biological entity, rather positing that it was some form of radiation associated with the 5G network.

*I think people are getting it from news and social media. Depending on what news you watch, some people believe in conspiracies. Some people thought it was 5G and stuff like that. Then other people actually believe it's real. [FGD2 participant]*

*. . . that is what's killin' the Blacks. That what's killin' the Latino You don't see that they putting it in the White people area. They always puttin' it in the Black and the Latinos' area. Low-class environment. A lot of people on welfare and things like that, so they putting up these towers, the 5G towers and it should—that's radiation virus we getting. [Interview participant #5].*



Another virus-related theory by one participant was that Black people were targeted for elimination by the virus and therefore will not be getting the vaccine but would be given the virus itself in lieu.

*If it is a vaccine, they ain't giving it to us. Why would they give you a vaccine when they tryin' to knock the population down? Do that make sense? Okay. Yeah, but my thought is that I don't think they would give it to you. I don't think they would give you the cure. I think they would probably give it to you before they kill you. That's my opinion. You would be given COVID before you're given a cure. [Interview participant #27]*

Some other participants expressed their belief that the vaccine would be used to target Black people as experimental subjects.

*Yeah. I know that some people might be a little bit skeptical of taking the vaccine because we already know that some of the countries that created the vaccines automatically wanted to test it on African countries and we saw that as racism in the medical field, so we wouldn't wanna have to—even though we know it's wrong, they still do it, but we don't wanna—since we do have the choice here, we don't wanna partake in being the first people to try out the vaccine because they could try it on someone else, but just not us. [FGD2 participant]*

**Perceived “Trustworthiness” of Healthcare System and Medical Research Community** There were several references to historical events in medical history that intentionally put Black people in harm’s way. Some participants believed that the vaccines may be another episode of the historical saga, and therefore reported that they were unlikely to get vaccinated.

*I think you have—okay, so you have the people who just believe that nothing could go wrong, and you live this good life, and you stay on this good path. They're the ones who are gonna get manipulated. Then you have a portion of the community that's like, “No, we know.” We know. We don't wanna be experimented on. [Interview participant #11]*

*It's The Immortal Life of Henrietta Lacks, which you probably have heard of. That, to me, is another issue for people in our community. The trust of the medical institutions, and whether or not we're being experimented on. ----- The trust issue, and not wanting to end up like Henrietta or Tuskegee airmen\* is some part of it for the Black community. At least, those of us who can remember that. There are probably gen-*

*erations—obviously, generations now, who have no frame of reference for that. I do, at my age. I know that the medical stuff has always been an issue for Black folks, and the whole trust thing. Just putting that two cents out there [FGD3 participant]*

\*NOTE: The Tuskegee airmen were not the population affected by the infamous syphilis study referenced in this quote.

In addition, participants also expressed distrust of the medical community based on contemporary experiences of less than satisfactory healthcare. Participants reported that they and family/community members continued to experience racial discrimination in the healthcare system, which further perpetuated distrust.

*I still question myself sometimes. I've gone to the hospitals. I've struggled with blood pressure stuff. Sometimes then they can't even figure out help for me----- Then I'm like, “How come now this time there's this?” I keep questioning myself. I'm like, “How do I even now know if this is the real vaccine? Are they giving me something real?” You keep watching stuff. I think it just makes people get that worry, concern . . . [Interview participant #26]*

*I think that distrust the Black community generally has with the healthcare/government plays a big part in whether they go for tests or take the vaccine. I think that's something [they] need to work on [FGD2 participant]*

## Recommendations

In addition to recommendations sought from the participants, the investigators also spoke with other community members in other forums. Recommendations useful for ensuring uptake of the vaccine by community members are as listed below.

- Timely provision of information in multiple formats to reach different demographics—*digital, hardcopy, social media posts.*
  - Use of community spaces as vaccination sites. In the Black community, these include Churches and community centers like the YMCA.
  - Engagement of community members as outreach coordinators and navigators.
- Endorsement of vaccine efficacy and safety by scientists, clinicians, community leaders, and peers



- Eliciting testimonials from trusted professionals (scientists, providers)—outlining the benefits versus the risks
  - Enlisting the help of healthcare providers from the community as trusted frontline advocates for vaccinations
- Targeted efforts at community education (open forums, one-on-one outreach, multiple media)
- Black healthcare professionals and scientists as educators and resource persons
  - Trained Black community members (‘community consultants’) as educators and resource persons
  - Use of empirical data—highlighting the science (development, testing etc.) and benefits
  - Continuing (bi-directional) community engagement with experts (Q & A)
  - Continuous dissemination of emerging information from ongoing trials and other research as data becomes available

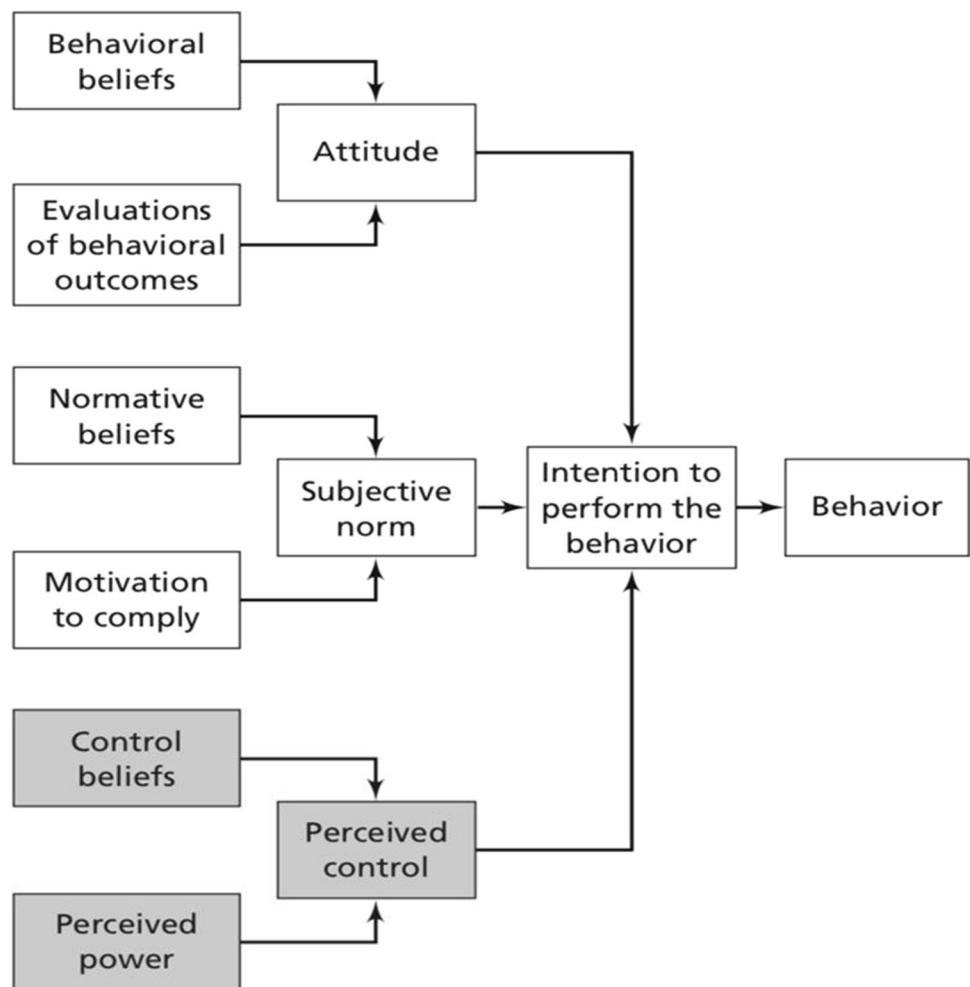
## Discussion

Since the findings presented are from data collected prior to approval of any COVID-19 vaccine, the discussion focuses on intent. The Theory of Reasoned Action and Planned Behavior (see Fig. 2.) aptly underpins this perspective and will therefore be used to guide the discussion.

### Attitudes Towards Behavior (getting vaccinated)

This “refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in quest” [28]. The survey data reflects a continuum from acceptance to resistance to getting vaccinated, with 37% of respondents demonstrating ambivalence by indicating an uncertainty. Findings from the interviews and focus groups reveal a variety of reasons, some of which are directly associated with the vaccine and others that are not. Based on the findings from the qualitative data, several factors are likely to inform value-based judgement on potential outcomes of

**Fig. 2** Theory of reasoned action and planned behavior conceptual model [28]



COVID-19 vaccination and consequently shape attitudes towards being vaccinated (*behavioral beliefs and evaluation of behavioral outcomes*). These factors put people in a continuum where they can move towards intending to get vaccinated or not, based on their appraisal of the benefit(s) thereof per time (see Fig. 2).

Those who expressed a willingness to get vaccinated believed it would be protective particularly for individuals at high risk, and/or for the community. Participants who were hesitant and even resistant expressed certainty that the elderly and those with underlying conditions would likely get vaccinated due to their high risk profile. Vaccine hesitancy has been previously associated with perceived risk of disease [29, 30]. This is also congruent with recent research showing that propensity to get vaccinated is associated with perceived risk of COVID infection [31]. Those who expressed some reluctance to getting vaccinated firmly expressed the belief that it would be detrimental to both individual and population health. Hesitancy was often expressed alongside fears and concerns especially regarding vaccine safety. Recent data also suggests that perception of COVID vaccine safety may be a stronger predictor of vaccination intent than perceived risk of the disease [32].

The attitude of complacency is likely fueled by the notion that other preventive measures were already adequate, especially if at the time vaccines became available, one had not been infected and if in addition, infection rates were going down. Another factor is the perception of low risk of infection and/or severity of outcome if infected. Persons who do not perceive a need to receive a vaccine often do not make an effort to get vaccinated even when an opportunity presents [33].

Attitudes towards being vaccinated are also likely influenced by the anticipated outcomes of being vaccinated or not, which based on these findings include the notions that vaccination will enhance community health and facilitate a return to normalcy (i.e., end the fear fatigue). The communal versus individualized perspective is characteristic of Black/African American cultures where benefit to the collective is commonly prioritized over the advancement of the individual; the underpinning cultural belief being that the good of the collective translates to the good for each one [34]. Vaccination efforts targeting Black communities should consider leveraging this culturally responsive approach as it aligns with the values of these communities.

### Subjective Norms

This “refers to the perceived social pressure to perform or not to perform the behavior” [28]. Evident in the findings is the role of societal pressure on behavioral intentions. *Normative beliefs* commonly expressed included

the Black/African American’s collective distrust of both the medical community and the Government. For some, the historical events of unethical medical experimentation in the Black population [35–37], informed beliefs of conspiracy theories of political agenda and anticipation of experimentation on the Black population with COVID vaccination. Distrust of the health system and its negative impact on healthcare utilization by the Black population is well documented [38–40]. The healthcare system and medical research community need to build “trustworthiness” with the Black population and other communities of color, as public trust is a known factor in building vaccine confidence [41, 42]. One strategy would be to have adequate racial representation so that communities of color can have a sense of ownership and belonging in the health industry. The recommendation to engage Black health professionals and scientists in health risk communication and health promotion aligns with literature that demonstrates that provider-patient racial concordance is often associated with increased patient trust and improved patient communication [43, 44]. By inference, racial concordance in public health education around COVID, is likely to be more effective in changing normative beliefs and consequently health-related behaviors if Black health experts are at the forefront of efforts targeting this priority population.

The most commonly expressed beliefs were about the safety and efficacy of the vaccine (*vaccine confidence*). Hence, the recommendation for adequate and continuing community education, to adequately communicate the risks associated with both the virus and vaccines using relevant data. Having relevant knowledge will increase vaccine confidence while also enabling community members to make informed decisions. A review of interventions to improve adult immunization showed that increasing vaccine literacy improves vaccination uptake in racial/ethnic minority populations [45]. In subsequent programming following this assessment, we observed that individuals expressing hesitancy upon having their concerns addressed went ahead to take the vaccine. Community-engaged education in forums that afford safety and comfortability to asking questions and expressing concerns should be encouraged as a way of increasing vaccine confidence.

Motivation or lack thereof appeared to be partly dependent on the collective—as participants (particularly the younger ones) anticipated community members, including themselves, being more willing to be vaccinated if others got vaccinated. Peer influence among young adults is strongly associated with health beliefs and behaviors [46]. Engaging leaders and persons of influence from communities that may be resistant to vaccination has been endorsed as a strategy to encourage others to get the COVID vaccination [47].

## Perceived Behavioral Control

The Theory of Planned Behavior posits that “The resources and opportunities available to a person must to some extent dictate the likelihood of behavioral achievement” [28]. Accessibility-related challenges are generally outside the locus of control of the individual and often lead to inability to engage in the behavior of interest, even when there is willingness. The literature demonstrates the role of transportation [48, 49], accessibility of information [50], and efficacy in navigating the health care system [51] in facilitating healthcare utilization especially in low-income populations. Communities of color are disproportionately represented in these populations [52].

Some of the recommendations address the accessibility-related challenges identified. Having healthcare service delivery in community spaces eliminates the need for transportation and has been shown to increase healthcare utilization associated with prevention such as screenings and testing [53–56]. The use of peer navigators from priority populations who are trained to help others through the complexities of health care is another strategy that has demonstrated effectiveness in increasing uptake of healthcare services especially in racial/ethnic minority groups [57, 58]. In the program implementation following this assessment, using community outreach coordinators who served as navigators ensured ease of access to information and vaccination sites. The program also recorded almost 100% compliance in receiving a second dose of the relevant COVID vaccine, by community members willing to get vaccinated, a success largely due to efforts of the navigators.

Another factor perceived to be outside one’s control is policy. The anticipation of policies that may restrict employment or travel, demonstrating that other needs and/or priorities that people may drive their willingness to be vaccinated. For example, when international students get admission into schools in the USA, they are more often than not willing to take any vaccines and tests required because they value the education they anticipate receiving. Persons who are hesitant or unwilling to get vaccinated may capitulate if something of value to them is jeopardized by their non-compliance, especially if it is something they will have no choice in losing. While there is currently no policy mandating vaccination, restrictions associated with remaining in an employment situation/setting, participating in school activities (e.g., sports), and traveling are anticipated. However, it is worth noting that if enacted and enforced, there is likelihood for uptake of vaccination rates in the priority population.

## Limitations

- The current study was conducted prior to the approval and availability of any of the COVID-19 vaccines. Therefore, the data reflects intended individual and anticipated

community behaviors regarding vaccination. However, the findings were extremely useful in informing interventions to address accessibility and hesitancy when vaccines became available, which efforts contributed to increasing vaccination rates in the community, as many of the participants who were hesitant have since been vaccinated.

- Because of the web-based platform, we were unable to ascertain how many people received the questionnaire and therefore could not determine the response rate.
- The analysis for the vaccine-related data was done in the context of the entire needs assessment and subsequent programming. Some of the challenges associated with health care utilization (e.g. testing, seeking primary care) and relevant recommendations that were not specific to vaccination, but applicable to any healthcare service, are extrapolated and included in the report.
- The study participants were purposefully sampled. While this resulted in a broad scope of perspectives, findings may not be generalizable to the entire Black/African American population. However, the insights have proven to be beneficial in subsequent programming to facilitate COVID-19 vaccination in communities of color, suggesting broad applicability. Community partnership with healthcare systems resulted in vaccination clinics in community spaces, employment of community members as navigators and engagement of Black healthcare professionals in targeted community education, all of which enhanced vaccination rates in the Black community.
- It is important to point out that the SAGE framework of 3Cs (*convenience, complacency, confidence*), while partially reflected in the themes presented is not adequate in capturing the full scope of the dimensions and nuances of vaccine hesitancy and resistance emerging from data obtained from the study population. It is also not well-aligned with issues of systemic racism—for example, the challenges associated with accessibility cannot generally be interpreted as issues of “convenience,” but rather barriers that are in some cases insurmountable without external intervention. Hence the presentation of findings represents an internal departure from the aforementioned framework.

## Conclusion

Vaccine hesitancy is a dynamic state of behavioral intention that changes as knowledge and situational or temporal contexts change. Identifying and addressing the specific cause(s) of hesitancy for individuals and groups is key to increasing uptake of COVID-19 vaccination in communities that are less inclined to engage with the healthcare system due to persisting structural racism that continues to

perpetuate distrust. These efforts should be inclusive of scientists and health professionals from within these communities to enhance “trustworthiness” while increasing vaccine confidence.

Vaccine hesitancy and resistance in the Black community is not new. However, the COVID-19 pandemic has provided an opportunity to better understand the scope and dimensions of these attitudes and behaviors. Collaborating with communities to host vaccine clinics in community spaces and employing community members as outreach coordinators and navigators greatly eliminates accessibility-related issues.

The insights and recommendations outlined have been helpful in informing interventions that not only address COVID-19 but also have potential for optimizing health-care service utilization, which continue to be lower in communities of color compared with the general population for known reasons.

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**Availability of Data and Material** Not applicable.

**Code availability** Not applicable.

#### Declarations

Additional declarations for articles in life science journals that report the results of studies involving humans and/or animals.

**Ethics Approval** This study was reviewed and approved by the University of Minnesota Institutional Review Board.

**Consent to Participate** Informed consent was obtained from all study participants.

**Consent for Publication** Not applicable.

**Conflict of Interest** None of the authors have any conflicts of interest to report.

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