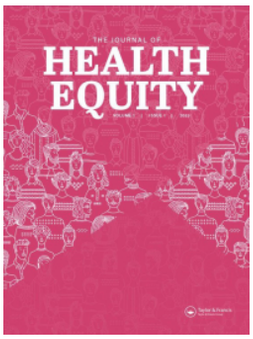

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Lessons from COVID-19: a qualitative study on the vaccination decision-making and experiences of black pregnant and postpartum women in the US

Comfort Z. Olorunsaiye[a], Hannah M. Degge[b], Dejenaba Gordon[a], Augustus Osborne[c] and Samira P. Ouedraogo[a]

[a]Department of Public Health, Arcadia University, Glenside, Pennsylvania, USA; [b]School of Health Sciences, Queens Medical Centre, University of Nottingham, Nottingham, United Kingdom; [c]Department of Biological Sciences, School of Basic Sciences, Njala University, PMB, Freetown, Sierra Leone

ABSTRACT

This study investigated the lessons learned from COVID-19 and the vaccination decision-making processes and experiences of Black pregnant and postpartum women in Greater Philadelphia. We interviewed 22 Black pregnant/postpartum women from November 2022 to May 2023, guided by the Public Health Critical Race Praxis. Inductive thematic analysis identified four key themes: the vaccination decision-making process, vaccination experiences, comparisons with other maternal vaccinations, and recommendations for protecting Black pregnant and postpartum individuals from COVID-19. The results highlight the complexity of vaccination decision making during the pandemic, revealing unequal access to information, education and prevention resources, which fueled existing mistrust in the health system among Black communities. However, we also identified opportunities to improve preventative and vaccination messaging through trusted community sources and the application of anti-racist frameworks in the organization and delivery of health services for Black women. These findings underscore the need to address structural barriers to equitable COVID-19 information and vaccine access, to increase vaccine acceptance and promote other maternal vaccinations. As COVID-19 is now managed as an endemic disease, the public health system must adapt approaches to routine vaccination and adopt policies, requiring intentional efforts to ensure equitable access to information and vaccines in Black communities.

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Introduction

The global COVID-19 pandemic has caused unprecedented disruptions to health systems and communities worldwide, with substantial burdens of morbidity and mortality. Vaccination has emerged as a critical tool in mitigating severe health complications and preventing deaths from COVID-19. Yet, despite recommendations from leading health organizations such as the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), the American College of Obstetricians and Gynecologists, and the Society for Maternal-Fetal Medicine, vaccination rates among pregnant women remain significantly lower than those of the general population (Goncu Ayhan et al., 2021; Razzaghi, 2021). This is a significant issue because pregnant women face heightened risks of severe illness and adverse outcomes from COVID-19, including preterm birth and stillbirth (Chervenak et al., 2021; Morgan et al., 2022). The physiological changes during pregnancy, including alterations in the cardiovascular, pulmonary, and immune systems, increase vulnerability to severe respiratory infections and their complications (Tan & Tan, 2013).

Background

In the United States alone, 225,656 confirmed cases of COVID-19 were reported among pregnant women in 2022, resulting in 306 deaths (Data on COVID-19 during pregnancy: Severity of maternal illness, 2024; Meghani, 2023). However, vaccination rates among pregnant individuals remain low, with only 45% of pregnant women vaccinated compared to 65% of

CONTACT Comfort Z. Olorunsaiye olorunsaiyec@arcadia.edu Department of Public Health, Arcadia University, 450 S Easton Road, Glenside, PA 19038, USA.

non-pregnant individuals (Regan et al., 2022). These disparities in vaccination uptake are influenced by several factors, including limited vaccine safety data, concerns about vaccine efficacy, operational challenges in vaccine prioritization and distribution, and social and structural barriers to access (Grünebaum et al., 2021; Januszek et al., 2021; Regan et al., 2022). Pregnant women also express concerns about the potential impact of COVID-19 vaccination on fetal development, which further contributes to vaccine hesitancy (Badell et al., 2022).

Black communities in the United States have long faced systemic racism and structural inequalities that contribute to health disparities, including lower access to quality healthcare, higher rates of chronic conditions, and poorer maternal and infant health outcomes; for example, Black women are 2–3 times as likely to die from pregnancy-related causes compared to white women (Braveman et al., 2022; CDC., 2024; Chinn et al., 2021). The COVID-19 pandemic has magnified these inequities, with Black Americans experiencing disproportionately higher rates of infection, hospitalization, and death compared to other racial and ethnic groups (King, 2022; Mosbrucker-Garza, 2024). For Black pregnant and postpartum women, these disparities are compounded by longstanding mistrust of the healthcare system due to historical and contemporary experiences of racism, discrimination, mistreatment, and neglect (Cox et al., 2023; Obasanya et al., 2023).

Racism is a root cause of the social and structural determinants of health that shape vaccination decision-making and access (Churchwell et al., 2020; Goncalves Garcia Galhardo Burnett, 2023). Black women are more likely to face barriers rooted in structural racism, such as limited healthcare access, inadequate insurance coverage, and workplace policies that hinder vaccine uptake (Balasuriya et al., 2021; Carson et al., 2024; Hussain et al., 2022). Moreover, misinformation and inconsistent communication from health authorities about vaccine safety and efficacy during pregnancy have further fueled vaccine hesitancy in this population (Marcell et al., 2022; Wong et al., 2024). The interplay of these factors has created a complex landscape in which Black pregnant and postpartum women must navigate vaccine-related decisions while balancing personal, familial, and societal pressures.

Although healthcare providers play a key role in influencing vaccine decision-making, pregnant Black women often experience dismissal or lack of support during healthcare interactions, contributing to mistrust of the health system (Harris et al., 2024; Peterson et al., 2025). Lack of trust and culturally competent care can hinder open discussions about the benefits and risks of COVID-19 vaccination (Feinberg et al., 2021; Strully et al., 2021). Studies have highlighted that Black women's COVID-19 vaccination decisions are shaped not only by individual concerns but also by broader systemic factors, such as historical medical mistreatment and abuse, and ongoing health inequities (Obasanya et al., 2023; Pressman et al., 2021). However, much of the existing literature relies on surveys or hypothetical scenarios, offering limited insight into the lived experiences and nuanced decision-making processes of Black pregnant and postpartum women in the US regarding COVID-19 vaccination.

Although existing research has explored vaccine decision-making among pregnant individuals in general (Danchin et al., 2018; Kilich et al., 2020; Paul et al., 2022; Zhang et al., 2025), there is limited evidence addressing the unique experiences and barriers faced by Black pregnant and postpartum women. This study seeks to fill this evidence gap by examining the lessons learned from COVID-19, with a focus on the decision-making and vaccination experiences of Black women in Greater Philadelphia, a region characterized by a large and diverse Black population, profound health inequities, and high maternal morbidity and mortality rates exacerbated by the pandemic (King, 2022; Mosbrucker-Garza, 2024). The findings may provide valuable insights into how Black women navigated the complex and evolving information surrounding COVID-19 vaccination, and how structural racism and systemic bias shaped their experiences. The findings may also contribute to the development of culturally appropriate and tailored interventions to improve vaccine acceptance and uptake among Black pregnant and postpartum women. By centering the voices and experiences of Black women, this research contributes to a growing body of literature that seeks to address racial disparities in maternal health and improve health outcomes for historically marginalized populations.

Methods

Study setting

This study was conducted in the Greater Philadelphia area, consisting of five counties in Pennsylvania (Philadelphia, Bucks, Delaware, Chester, and Montgomery), and the adjacent four counties in Southern New Jersey (Burlington, Camden, Gloucester, and Mercer), and New Castle County in Northern

Delaware. Philadelphia has the 6th highest population in the US and is the largest city in this region. With nearly 1-in-4 households living in poverty, Philadelphia is the poorest of the 10 largest cities in America (Cooper, 2024). The Greater Philadelphia region has a long-standing history of redlining and racial segregation, whose impacts on education, environmental exposures to toxins, access to quality education and employment opportunities, access to food and healthcare, health outcomes, criminal justice systems, etc., persist to date (Equity Report|Our America, 2024; Servon et al., 2023). In 2021, the Philadelphia-Camden-Wilmington metro (also known as Greater Philadelphia) ranked as the 13th most racially segregated metropolitan area out of the 100 largest metropolitan areas in the US (Barber et al., 2020; Equity Report|Our America, 2024). Consequently, compared to the national median household income of $74,755, the median income in Philadelphia was only $56,517. Similarly, racial/ethnic disparities are magnified and non-Hispanic white households in Philadelphia earned nearly twice as much as Black and Hispanic households in 2022 ($81,000 versus $42,600) (Mosbrucker-Garza, 2024).

There are also marked inequities in maternal morbidity and mortality in Greater Philadelphia; whereas, from 2013 to 2018, 73% of pregnancy-related deaths were attributed to Black women, this population group accounted for only 43% of live births during the same period (Maternal Mortality Report Finds Non-Hispanic Black Women Represent 73% of Pregnancy-Related Deaths in Philadelphia (Maternal Mortality Report), 2024). Equally, there are striking racial inequities in the burden and impact of COVID-19 in Greater Philadelphia. In the early pandemic period, Black people were nearly three times as likely as white people to have confirmed infection and had 1.5 times the mortality rate of white individuals (Barber et al., 2020). Among pregnant people who were giving birth in two Philadelphia hospitals, higher seropositivity rates, suggesting COVID-19 exposure or infection, were observed in Hispanic (19%) and Black (14%) patients, than white patients (2.7%) (Burris et al., 2022). Key factors associated with the racial/ethnic disparities in seropositivity included neighborhood deprivation and crowding. It is worth noting that these factors are direct consequences of the lingering impacts of racial segregation and redlining in the region, and result from structural racism affecting healthcare access and pre-existing chronic diseases, food access, environmental exposure to toxins, criminal justice policies, and access to education and employment opportunities, etc. (Barber et al., 2020). Racial biases in these systems reinforce and intersect with other factors, including those responsible for the disproportionate burdens of COVID-19 infection and mortality, and maternal and infant morbidity and mortality.

Theoretical framework

Against this background, this qualitative study was designed using a critical lens due to the overarching structures, systems, and policies that underlie and uphold racial/ethnic inequalities, and impact the burden of COVID-19 and maternal and infant morbidity and mortality among Black people (Jones, 2000, 2002). Specifically, we used the Public Health Critical Race Praxis (PHCRP) as an organizing and analytic framework for the study (Ford & Airhihenbuwa, 2010b, 2010a). The PHCRP builds on the core principles of Critical Race Theory and has been applied in public health research and practice to examine and address the intersections of race, racism, and public health policies and practices on population health outcomes (Ford & Airhihenbuwa, 2010a). Race is a socially constructed classification system that has been used historically to categorize people in hierarchies and uphold the discrimination and marginalization of population groups on the basis of physical features such as skin color (Bailey et al., 2017; Jones, 2002). Structural racism includes the different ways in which societies maintain and promote racial discrimination through intersections of policies and systems e.g., housing, education, employment, income, opportunity, access to credit, health care, and criminal justice enforcement, which, together, reinforce oppression via the distribution of resources and power (Bailey et al., 2017; Dean & Thorpe, 2022; Jones, 2002).

The PHCRP centers race consciousness, i.e., the recognition that society is racialized, which affects how society works, including access to healthcare resources and health outcomes among people that are racialized. The framework, which has four focus areas, enables researchers to counter the traditional ways in which knowledge is produced, via an iterative and overlapping but non-linear process. We developed key research questions to guide data collection along the four focus areas of the PHCRP (Ford & Airhihenbuwa, 2010b, 2010a) as follows: (1) Contemporary Patterns of Racial Relations - how does racism operate today and how does it influence pregnancy, COVID-19, maternal health, vaccinations, and life?; (2) Knowledge Production—how has knowledge around maternal health and COVID-19 vaccination been formed? (3) Conceptualization and Measurement - how can we

better understand the intersecting complexities of racism/race, gender, social factors, and reproductive/maternal health, as they apply to COVID-19 vaccination decision making?; and (4) Action—how can we disrupt these inequities? PHCRP was used in this study as a framework to explicate the structures of racism in relation to maternal health and vaccinations, and our knowledge about inequities in COVID-19 vaccination coverage among Black pregnant and postpartum women. The framework guided the research efforts from the development of the research approach and interview guide to data collection, analysis, and interpretation for informing action, by centering the voices of Black pregnant and postpartum women in all aspects of the study. Consistent with the PHCRP (Ford & Airhihenbuwa, 2010a), we centered the knowledge co-creation process on the lived experiences of Black pregnant and postpartum women, who daily navigate several intersecting dimensions of structural racism in different facets of their lives.

Participant eligibility

Participants were purposively recruited using several strategies to ensure a wide reach to people who would potentially meet the study inclusion criteria. Because the focus of the study was on Black women, we recruited self-identified Black women that were pregnant between 2020 and 2023, to participate in a study about COVID-19 vaccination experiences. Other eligibility criteria included living in Greater Philadelphia, being between the ages of 18 and 49 years, and having received at least one dose of COVID-19 vaccination. Potential participants who met the inclusion criteria, interested in participating in the study, reached out to the study team via email, telephone, text message, or filling out a screening form, after which each person's eligibility was verified via phone or video call.

Community outreach and engagement

The initial stage of outreach involved leveraging the professional networks of the research team by contacting local organizations serving women and pre-school children. To ensure information about the study reached the population of interest, we engaged with business owners, predominantly Black Churches, local libraries, and childcare centers, and with permission, we posted flyers in windows and bulletin boards and distributed flyers to business patrons. We also used Facebook and Instagram advertisements to reach more women who could potentially meet the study's eligibility criteria. We also seized opportunities to connect with potential participants at community events, e.g., baby showers, which facilitated meaningful interactions with pregnant and parenting people and provided platforms for sharing study details with additional community-based organizations. This strategy proved effective in facilitating one-on-one interactions with attendees, which not only allowed us to discuss the study and answer questions but to also gain referrals to other potential participants.

Consistent with the Public Health Critical Race Praxis, we prioritized centering community participants throughout the research process. This included co-developing and soliciting feedback on the interview guide from community members with lived experiences of the phenomenon under study; confirming study findings with participants to check accurate interpretations; inviting participants to co-author and deliver presentations; and ensuring ongoing communication and engagement. By empowering participants to actively participate in the research agenda, we aimed to create a sense of ownership and partnership in the study and continue to foster a collaborative ethos grounded in mutual respect and co-creation of knowledge.

Data collection

We conducted in-depth interviews from November 2022 to May 2023 using a semi-structured interview guide that was developed by the study team for data collection. The interview guide, informed by research questions revolving around the four focus areas of the PHCRP described above, was co-developed by the researchers and three community members with the lived experience of key study concepts. The interview guide covered background information, pregnancy history, maternity care, experiences of COVID-19 infection and illness, perceptions and decision-making about COVID-19 vaccination, and the vaccination experience. All interviews were conducted by the first author and two other authors (DG and SPO), all self-identified Black women. The interviewers did not personally know any of the study participants. Based on participants' preferences, two interviews were conducted in person—one at a community event and the second on the first author's campus. The other 20 interviews were conducted virtually on Zoom using a password-protected meeting room, accessible to each respective participant and interviewer only. Interviews lasted 45–60 minutes. Participants were asked for permission to audio record their interviews. Virtual

interview participants were informed that they could turn off their cameras before beginning the interview recording. By the 20th interview, we had reached data saturation, i.e., we did not identify any new information (Francis et al., 2010). Data saturation is a concept used in qualitative studies to assess when it is appropriate to stop data collection due to the non-identification of new information or themes (Francis et al., 2010; Saunders et al., 2018). Specifically, during data collection, we reviewed interview audio files on an ongoing basis and noted key information identified from each interview, while also comparing new interviews with themes already identified, as well as assessing if all research questions had been answered adequately (Saunders et al., 2018). Thus, we stopped data collection after 22 interviews.

Data analysis

Interview audio records were transcribed verbatim. Two of the study authors (CZO and SPO) listened to the audio recordings and compared them to the transcripts to confirm the accuracy and, thereafter, removed all identifying information from the transcripts. We used an inductive approach to thematic analysis to code the data. Two authors (CZO and SPO) initially coded two transcripts independently and then developed a codebook. The codebook was clarified and modified after resolving inconsistencies between the two coders. The modified codebook and remaining transcripts were then shared with the rest of the authors for coding. We used Braun and Clarke's Six-Step Approach to guide the qualitative data analysis (Braun & Clarke, 2006). In Step 1, we read the transcripts several times to immerse ourselves in the data. In Step 2, we used open coding to generate initial codes by identifying and labeling relevant texts from the data. Next, in Step 3, we searched for themes by combining and collating codes and data into possible themes based on patterns. In Step 4, two of the study authors (CZO and HMD) reviewed the potential themes to ensure they matched the data that composed each theme; and in Step 5, these two authors defined and named each theme; which they shared with the rest of the study team for input and feedback to help finalize the themes. In Step 6, all authors contributed to writing up the results (Braun & Clarke, 2006). The findings were interpreted in the context of the research questions, the PHCRP as the theoretical framework (43), and supporting information from the extant literature. To protect participants' identities, we used pseudonyms in illustrative quotes.

Trustworthiness

To ensure the quality and rigor of the study (Nowell et al., 2017), the research objectives were clarified to the research team, including those involved in direct interactions with participants to verify their eligibility and conduct interviews, and those involved in coding and analysis of the deidentified data. Interviews were conducted by CZO, SPO, and DG; CZO reviewed the research design and data collection approaches, including the semi-structured interview guide with DG and SPO before commencing data collection. Further, throughout the research process, the team engaged in reflexivity and discussion about of their positionality, individually and as a team of Black women, to ensure that participants' narratives were consistently reviewed alongside the research questions (Olmos-Vega et al., 2022). Moreover, the interview guide was developed in conjunction with community members with lived experience of the study phenomena; all three interviewers engaged in rigorous, in-depth training to ensure a shared and uniform understanding of the research questions, objectives, and use of the study protocol in data collection. The researchers also made efforts to center each participant's unique knowledge and perspectives about the research questions, through the critical lens of the PHCRP (Ford & Airhihenbuwa, 2010a). For example, during interviewing, the team met frequently to review the audio recordings and assess how participants' narratives aligned with the different phases of the PHCRP. Additionally, to establish the credibility and inferential adequacy of the findings (Linoln & Guba, 1985), we compared the codes and themes with the audio recordings and also sought feedback from research participants on the findings to ensure appropriate interpretation. We created a newsletter, summarizing the study's key findings and invited participants to provide their feedback via multiple avenues, based on preference, including email, phone, or a virtual group discussion. Participants' feedback was incorporated into the finalization and interpretation of the findings.

Ethical considerations

The study protocol and all related data collection and consent tools were reviewed and approved by the Institutional Review Board (IRB) of Arcadia University (Ref: 22-08-02). All potential participants meeting the study inclusion criteria and interested in participating were screened by three of the authors (CZO, DG, SPO) to verify their eligibility and interest. Before interviewing, eligible and interested participants

provided written informed consent (for in-person interviews) or verbal informed consent (for virtual interviews), recorded separately from the interview recording. As part of informed consent, participants were again informed of the purpose of the study and reminded that their participation was completely voluntary and that they could decline to answer any question they felt uncomfortable discussing or end the interview at any time. All audio recordings were deidentified, and pseudonyms were used in illustrative quotes. The study data are accessible only to the research team. At the end of the interviews, participants were provided with information on helpful resources, should they need them, including the sexual assault, maternal and child health, and COVID-19 helplines. After interviewing, each participant received a $25 gift card as compensation for their time.

Results

Socio-demographic characteristics of participants

Participants' mean age was 33.5 (standard deviation: 6.2) years. Most women reported one pregnancy since the pandemic, with a total of 28 pregnancies and 22 live births, two abortions, and two miscarriages among all respondents; two were currently pregnant at the time of interviewing. Seventeen respondents had completed college or graduate school, and 17 participants were employed. Seventeen participants identified as Christians, three as Muslims, one as Spiritual, and one as Jewish. Six respondents had Medicaid coverage during pregnancy; eight participants reported receiving public assistance, including the Supplemental Nutrition Assistance Program (SNAP), Women, Infants, and Children (WIC), and housing assistance. Fourteen respondents were married and 20 were US citizens.

Themes identified

We identified four main themes, related to the four focus areas of the PHCRP, i.e., contemporary patterns of racial relations, knowledge production, conceptualization and measurement, and action. Specifically, the identified themes elucidate contemporary expressions of structural racism and race relations in the context of Black maternal health and COVID-19 vaccination, as well as how knowledge around these issues have been and continue to be produced, factors affecting COVID-19 vaccination across multiple dimensions of marginalization, and actions that can be taken to promote COVID-19 preventative care and wellbeing in this population. The themes include the vaccination decision-making process; vaccination experiences; comparison of COVID-19 vaccination with other maternal vaccination experiences; and recommendations for protecting Black pregnant and postpartum persons from the devastation of COVID-19. Below we describe each theme and provide illustrative quotes from participants.

Theme 1: Vaccination decision-making process

Participants described their vaccination decision-making process, including preferences underlying the decision to accept the COVID-19 vaccine and boosters, and the timing of vaccination. Relevant sub-themes include the motivations for the decision to vaccinate, relationships between religious/spiritual beliefs and vaccination decision making, and participants' thoughts about vaccinating their babies and other eligible children. Across this theme and sub-themes, participants' narratives highlighted how intersections of structural racism, pre-existing health conditions, and mistrust of the health system impacted their decision-making process. For example, Tia intentionally delayed vaccination, likely due to lack of trust in the available information, to learn more about the experiences of earlier vaccine acceptors, while also hoping she would not suffer any adverse effects.

> I guess I just felt like it was time. Like I had seen a lot. I don't feel like I was a part of the first round [vaccination]. I waited intentionally and just kind of listened to what people were saying about their experiences, some bad, some good. If I had to choose between possibly getting sick and taking this vaccine, I could only hope. I would rather take the vaccine, and I was only hoping that it would actually work and that there wasn't going to be any sort of side effect. (Tia)

Additionally, family members supported some participants' decision to accept the COVID-19 vaccine. According to Rachel:

> Basically, after I did my research when the news was first telling us to get the vaccine, I wasn't sure that I felt it was safe. And then, you know, I had my family members chime in, and then they kind of urged me to go do research for myself, and because I trust my family members, I did so, and after my own research, that's when I felt safe. (Rachel)

Motivations for the decision to vaccinate

Destiny described joint decision-making with her husband to get the vaccine as soon as it was available, and they were eligible to be vaccinated. For Susan, her decision to get the vaccine was motivated by a sense of obligation to her children.

> I guess I made my decision after being informed by the news. As soon as it [vaccine] was advertised that it was going to be available, I knew that my family and I were going to get it.… You know my husband was on board. We were on the same page, so we both kind of supported each other, it [was] something we wanted to do for our household. So, we were like, yeah, we're doing it as soon as it's available, as soon as we can get it. (Destiny)

> I wasn't eager to get the vaccine like I said… [but] my husband had gotten COVID early on. I was concerned about lingering COVID with him, and all those kinds of symptoms. My children needed one healthy parent. I was kind of obligated to be the healthy parent. (Susan)

For some participants, the motivation to receive the vaccine was based on their relationships with, and caregiving duties for, older and more vulnerable family members and the desire to protect such people, and themselves. This sub-theme is well aligned with the values of family and community cohesion, and the burden of caregiving due to the disproportionate toll of chronic health conditions, which are common in Black and other racialized communities.

> I guess my thought is that getting the vaccinations and the booster is, in my mind, the best thing I could do for myself at this point when the vaccine was available… I want to say, like February or March of 2022, and because I was hoping to take care of my parents, I was able to get it as early as April of 2022. (Diana)

> … I have a grandma that I frequently visit, and I didn't want to get COVID and give it to her. So, my relationships with other people, I guess, is one of my motivations [for vaccination]. (Susan)

For Malika, the decision to vaccinate was based on her personal vulnerability and the need for self-preservation.

> But I knew, like, with my diagnosis and the treatment that I had coming up, that I needed to get vaccinated. I knew, like being immunocompromised, that [COVID-19] was one thing that I was scared to get in addition to undergoing cancer treatment. So, I got it pretty quickly. I decided I had to get it. (Malika)

For some participants, their decision regarding vaccination was based on work requirements. Work is a known social and structural determinant of health, which also impacts individuals' livelihoods. It should also be noted that while a few participants were able to work remotely during the pandemic, most could not. Hence, vaccination was the only way they could keep their jobs and livelihoods, irrespective of their perspectives and thoughts about the safety and efficacy of the COVD-19 vaccine. For these participants, receiving the COVID-19 vaccine was not a choice but a necessity.

> So, I was very scared. Um, I said a prayer prior to getting it, so that no harm came my way. I was definitely very scared because I still was kind of on the level of not wanting to get it, but realizing that, for my employer's sake, I had no choice. I had to get it, so I was definitely scared, very scared. (Linda)

According to Ebony, the reality was to either get vaccinated to be able to go to work or be unvaccinated and stay unemployed. In her words:

> When COVID-19 came I had a job, and then they had the vaccine out and mandated [it]. I decided to leave my job to wait. That was my personal choice, and that's what I did. I waited until I was comfortable enough to get it. It's kind of like a 'you must have it [vaccination] for you to go to work type of thing' … or 'you don't get it, and you stay unemployed and at home'. (Ebony)

On a different note, Sarah's employer offered incentives for vaccination. This was one of her motivations for receiving the vaccine, which can be construed to be coercive, especially in the context of racialized population groups that experience work and income inequality.

> So, another reason why I received the vaccine was, at work … they were administering bonuses of $1,000, obviously, for those employees who receive the vaccination by … the end of October, of 2021. So, as an employee who needs more money, I opted to receive the COVID-19 vaccination, so that I could get the bonus [at] the beginning of the new year of 2022. (Sarah)

For Susan, her motivation to uptake the COVID-19 booster was because she had received the single-dose Johnson and Johnson vaccine for her primary vaccination.

> So, after I got the shot, I started hearing [of] studies and stuff on the news. They said Johnson and Johnson wasn't as effective as the other two in preventing getting the virus. So, that's what made me get a booster. (Susan)

Religious/spiritual beliefs and vaccination decision-making

Religion is an important value in Black populations. According to most participants, their religious or spiritual beliefs did not conflict with their vaccine decision-making.

> Honestly, I feel like…I mean, I don't want to say I separate spirituality and science, but I feel like God created things to work together in a way that science is possible. But I didn't have any trepidation about getting the vaccine because of my Christianity. (Jessica)

> I think that it works together with my faith, because, you know, I can believe that God will protect me, but I also have to take responsibility for the life I have on earth, and I have to do things that are conducive to that belief. So, I can believe that [God] can protect me, but I still won't go smoke a pack of cigarettes, you know what I'm saying, cos you still have to be proactive in your own health while still trusting in God to take care of the rest. You still have to do what you need to do in the natural sense, which is taking care of your health. (Rachel)

For some participants, their religious values promoted community wellbeing over personal preferences and choices, and for others, they described the decision to receive the COVID-19 vaccine as an obligation in service to their community. From the perspective of Halima, she also viewed the decision to receive the COVID-19 vaccine as an obligation, informed by her Muslim faith.

> In Islam there [are] some verses that say that you are responsible for the safety of others, and … that's why, you know, some religious leaders make announcements to the people about COVID tests and vaccines. In Islam, there is no problem of any COVID-19 vaccine. If you refuse to take it [vaccine] or a COVID-19 test and you end up [getting] the disease and if you infect someone and [they] die because of you, you [have] become guilty like if you shot him or you killed him. (Halima)

> My religion is about us, it's less about self and more about community. Um, it is focused on what you do for your community, that's the…um our belief in Jesus, and what he did, so, I think, from my faith's perspective, it kind of is more encouraging. My church in particular, they offered a lot of vaccinations and testing and was very encouraging to people to do that [vaccination], not only for themselves, but for our community. It's almost like I want to say it's your obligation. I feel personally like that's part of what we do when we think about taking care of ourselves and our community. (Diana)

A few participants described internal struggles with balancing their faith with concerns about vaccination. Ultimately, their decision to receive the vaccine was guided by faith in the fact that the wisdom for developing the vaccine was from God and the belief that God would protect them from any adverse effects of the vaccine.

> …with my spirituality, I know God is testing me with any and everything, so it was something that I actually struggled with. I was on the fence about whether to get it [COVID vaccination] or not. I was scared to get it because I was pregnant, and there weren't too many studies at the time on pregnant women, and getting vaccinated, and I was in-between. But you know, just staying firm and believing that God was protecting me through any and everything, or, you know, just getting the vaccine. (Linda)

> I mean, I always go off of "obey the laws of the land" and knowing that any true wisdom in the earth is coming from God. I believe that someone created something in the vaccine that can really help people and that it's coming from God. (Tia)

Decision-making about vaccinating eligible children

Acceptance to vaccinate eligible children: A few participants had either already vaccinated their babies or intended to do so to protect them from COVID-19.

> Before I was saying, "Oh, no, she definitely is not getting it [COVID vaccination]." But now I think yes. But, you know, going to daycare, and we're always out. I want her to be protected. (Deja)

> Yeah, I think I would. I'm open to it [vaccinating baby]. I mean, I wanted to, for all my family, so I would want it for her once she's eligible and it's available. If she's going to be exposed to it [COVID], which is most likely she will, because it's like in our population. I just don't want her to have any severe or really difficult symptoms. (Destiny)

For Ebony, her doctor recommended the vaccine, and she expected the COVID-19 vaccine to be required for school, so she got her daughter vaccinated.

> Yeah. She [baby] got her first COVID shot. Because her doctor said when … the kids are going to school, that's part of the list of shots. They gotta get the COVID [vaccine] as well. So, I just got it over with.

Hesitancy to vaccinate eligible children: Although they had received the COVID-19 vaccine themselves, many participants were unsure or had decided against vaccinating their babies. There were various reasons given for this decision, mainly due to safety concerns, which may be related to mistrust of the health information and the health system based on past and present experiences of systemic bias and structural racism in healthcare seeking.

> No. He's 2 months now, so, we'll just see…like any new health news, how it's going in the next 5, 6 years. Okay, at least by the time he's ready for school. (Sarah)

For other mothers, they believed that maternal antibodies, transmitted through breastfeeding, would be enough to protect their babies.

> But I don't know yet … I really don't know um. I hope by then I'll have done some more research, and more time has passed. But I just hope for now, my hope is that as I continue to breastfeed her, and my intention is to do it [breastfeed] as long as I can, then she can get the benefits of the vaccine through me. (Diana)

> I haven't got her [baby] vaccinated, but because I breastfed her … I felt like she was protected. My daughter is 14 months old now. So, when I take her to her appointments, they're like, oh, do you want to give her the [COVID] vaccine? And I'm like, no, I'm still hesitant because of her young age. (Malika)

Theme 2: Vaccination experiences

In alignment with Focus areas 1 and 3 of the PHCRP (Contemporary Race Relations and Conceptualization and Measurement, respectively), participants discussed their experiences interacting with various structures and systems leading up to receiving the vaccine, through the vaccination experience, to the post-vaccination experience with side effects. Related sub-themes were vaccination location, advertisement and public service announcements regarding vaccinations, appointment scheduling, and vaccination wait times. These factors highlight the intersections of multiple dimensions of marginalization that constitute structural barriers to healthcare for marginalized populations. For example, it was noted that while there was a scarcity of vaccination sites in areas inhabited by low-income and Black populations, the reverse was the case in the more affluent and predominantly white neighborhoods in Greater Philadelphia. Other sub-themes were counseling on potential side effects, the experience of side effects, and treatment by healthcare providers during vaccination appointments, all important quality of care indices which are critical for assessing the quality of healthcare for Black people and populations that experience discrimination and structural racism in healthcare seeking.

Vaccination location

Location was the most commonly cited enabling factor for vaccination. On the one hand, some participants recounted receiving their vaccination at their neighborhood pharmacy, which somewhat removed the barrier of transportation and travel logistics.

> …I would say location because I know I can just walk right across the street and get in and out, and not have to go to my doctor's office. (Deja)

Some other participants cited access to personal transportation options as an enabling factor.

> Definitely having access to a vehicle, Because I drove to get the vaccine, and it wasn't um, it wasn't terribly far, but it wasn't, like, close, either. (Jessica)

On the other hand, for some women, transportation to vaccination sites was cited as a challenge that they had to navigate, largely due to the scarcity of vaccination locations in Black communities, and the available locations not being within walking distance.

> …transportation to the vaccination site was challenging … I had to overcome the difficulties with transportation to get to my appointment (Cindy)

Advertisements and public service announcements

Some participants cited advertisements about the COVID-19 vaccine as an enabling factor for vaccination. This was particularly important to Destiny, who felt that the advertisements in Philadelphia reduced the stigma associated with wanting to get the vaccine.

> I think there was a lot of advertisement in this area. I remember I had a family member that was living in Ohio, … they moved out here during the pandemic, and they were just really kind of [saying] there was nobody pushing the vaccine. It's almost the opposite, you know. It's like night and day. I guess that made it [vaccination] less stigmatizing. I thought that the efforts in this area to really advertise and push it made me feel comfortable that people, like the community at large in the Philadelphia area, really were one-minded and taking it seriously, and really wanted to protect its citizens. (Destiny)

Childcare arrangements

Participants with childcare responsibilities described different experiences with arranging childcare for their vaccination appointments. For some study participants, having reliable childcare enabled them to attend their vaccination appointments.

> I didn't have any issues in that area, because, um, I had my husband keep the kids while I went and got my vaccine. (Julia)

Contrarily, coordinating childcare was challenging for several participants when trying to schedule a convenient time for their vaccination appointment. Even before the COVID-19 pandemic, access to childcare was a significant structural barrier to healthcare seeking, especially in marginalized populations that lack adequate resources to pay for childcare. With the closure of daycare centers and remote schooling, the pandemic only widened the disparity hence this constituted a significant barrier to vaccination, especially in under-resourced communities.

> …just like childcare. Um, yeah, I was trying to think … yeah, it was just hard sort of coordinating, like, who would keep the kids because, obviously, I couldn't bring them. (Shayla)

Time off for vaccination appointment

Regarding attending vaccination appointments, for many women in hourly-wage jobs income losses was an important consideration. For other women, their employers had different types of incentives to support them to attend their appointments.

> I just scheduled it [vaccination appointment] whenever and put in the time as COVID-19, and for work, which was very, very, convenient… My job actually made it very easy. Within the internal system at work, they actually had, aside from PTO, … they actually have, like a COVID-19 PTO, so you get an extra day in addition to what you already have, and it's for COVID-19 reasons, whether you are getting the vaccine or getting the booster. (Sarah)

Appointment scheduling

A few study participants did not experience difficulties with scheduling their COVID-19 vaccination appointments.

> It was very easy to schedule my appointment because I didn't have to really think too hard about when I wanted to schedule my appointment. (Sarah)

However, several participants recalled experiencing challenges with appointment scheduling due to the eligibility criteria for vaccination.

> At first, it was scheduling because I was trying to do it online, and there was no availability. Everybody was trying to get vaccinated. Then, I just decided to go to the store, and they were like, oh, they can just give it to me because that's my normal pharmacy. So, they just squeezed me in. (Deja)

> I had signed up to try to get the vaccination before my [age] group was eligible. And I thought maybe I could get in a little bit early because I had an autoimmune disease. But they were just saying that I wasn't eligible, and I kept getting denied like the first 2 or 3 times [that] I tried. (Destiny)

For some women who experienced challenges with appointment scheduling, the reasons they gave for these difficulties ranged from problems with completing the online paperwork and finding locations with adequate vaccine supplies or their preferred vaccine type, in yet another dimension of structural issues affecting the vaccination experience.

> The paperwork was hard to complete. I had to find someone to help me with it. (Cindy)

> Yeah, it was [challenging] … appointment scheduling, and it was almost like you had to get an invitation, pretty much. It was very hard to get scheduled. Um, and it was very hard to find locations that had enough vaccines…you know, you just had to find out who had an extra dose. (Zia)

Vaccination wait time

Participants' experiences with vaccination wait times varied. Some women were satisfied with the amount of time they waited because they had a prescheduled appointment. Destiny was also not concerned about the additional observation time required after receiving the vaccine.

> The wait time was not long, as I had an appointment. The only time I really had to wait was to see if I was going to have one of those immediate reactions within 5–10 minutes, but not waiting to get the vaccine. (Destiny)

Some other participants narrated having to stand in line for long periods due to the number of people receiving the vaccination as a result of limited availability. Limited availability of vaccination sites in under-resourced neighborhoods was noted as a contributor to long vaccination wait times.

> It was a long wait time, and it was like limited spots and opportunities. So, um, it was kind of like a community drive, basically. So, you had to get an email. It was at a specific location, and I was informed about it from my church, so it was like a long line of people. You just had to stand in line and, um, they kind of just called you up. It was a long process because, like I said, it was a long line. (Zia)

In Deja's narration of her vaccination appointment, being told about the additional observation time after vaccination made her feel worried about potential adverse effects and was an important consideration in the context of mistrust of the health system due to historical and contemporary experiences of medical mistreatment and abuse of Black people.

> They told me to wait 10–15 minutes before I could leave, and that scared me. I was like, "Why are you telling me to wait for 10 minutes? Something bad is gonna happen to me?" But then they told me that after I got the vaccination. So, it made me even more scared than I already was. (Deja)

Counseling on potential side effects

Many participants had their questions answered and received information on the potential side effects they could experience and how to report said side effects. Some participants recalled being told by the

vaccinator, whereas others said they received the written information in the vaccine information sheet they were given at their appointment.

> Every time I went, the pharmacy team was very supportive with the information. But they asked if I had any questions before I got the vaccine, which was good. After [getting] my vaccine [I was] always given a pamphlet or a piece of paper or two, explaining the benefits of the vaccine, and then where to call, if [I am] experiencing any side effects. (Rachel)

> I remember the information about possible side effects probably was in the [information] sheet that I filled out. (Destiny)

Contrarily, a few participants said they were not informed about the potential side effects they may experience or how to report their side effects, indicative of the poor quality of healthcare commonly experienced by racialized populations.

> I just remember them [side effects] maybe because my husband had gotten the fact sheet, or I did research on my own. I was kind of aware, generally, of what probably could happen. Yeah, I didn't get a [information] sheet. I think it was probably because I was reading my husband's packet when he got it that I knew which side effects I may experience. (Shayla)

Experience of side effects

Several women in this study reported experiencing post-vaccination side effects of varying severity and duration. Some of the side effects were described as mild.

> So just a little pain in the injection site for some time. But besides that, [there were] no other symptoms. (Linda)

Other participants reported experiencing severe side effects with the second dose of the primary vaccination series.

> Oh, uh, the first one [vaccine dose] was fine, the second one was horrible. I felt like I had flu-like symptoms, like body aches, chills, fever, and I could hardly get out of bed. I had a child to take care of and I could hardly take care of them. So, I mean it was severe but it only lasted maybe about three days. (Whitney)

> I had a really bad migraine and body aches for the second dose. I don't know if I had it for the booster as well, but I know the second round, like part 2 of 2, was bad. (Tasha)

Despite the experience of side effects, none of the women in this study reported their side effects. For many, the decision to not report their side effects was borne out of the perception that the side effects were not severe enough to warrant reporting. For others, it is not farfetched to assume that lack of trust in the health system and limited health literacy to navigate the complexities of the health system may have contributed to the failure to report their side effects.

> And … even though I did have side effects like lethargy, it wasn't severe enough for me to report it to anybody. (Zara)

Treatment by health care providers

Some participants narrated that their vaccination appointments went very smoothly, and the vaccination staff answered their questions satisfactorily. For most women in the study, they were treated respectfully at their vaccination appointments.

> They were nice … They were welcoming. They had a whole setup, so you walk in, and sign your name, or whatever, probably like a waiver or something. And then they have nursing students asking you questions about allergies. You get the vaccine. They had you wait 15 minutes, but if you had allergies or whatever, you had to wait 30 min, and then they came over and told you like, "Hey, your time's up, have a good day." (Malika)

However, other participants reported experiencing racist and discriminatory treatment during their appointment. Tia narrated experiencing racist treatment, whereby the vaccinator made statements about her [Tia's] skin being tough. This finding is indicative of the contemporary expression of racial relations (Focus 1 of PHCRP), rooted in structural racism, with no scientific basis.

> The pharmacist was an Asian woman, so I felt a little more comfortable. However, she made this statement…and she was, like, straining to get it [needle] into my arm and I could feel it. It was tense, and it was like…putting a nail through something that's hard, like it wouldn't go through. And she commented on it, and she said something like, "Oh, you know your skin is like, tough" or something like that and it brought me back to what I've heard about people in health care often thinking that Black people…our skin is different, and so that was like a huge red flag to me. (Tia)

Theme 3: Comparing COVID-19 vaccination experience with other maternal vaccinations

Participants described similarities and differences between COVID-19 vaccination and other maternal vaccinations, including getting appointments, side effects, and the convenience of not having to go to or wait in a doctor's office. This theme further

highlights the complex roles of health policies and systems that made COVID-19 vaccinations, on the one hand, easier to access for a few participants and, on the other hand, more difficult to access for the majority of women in the study, in comparison to other maternal vaccinations. These are important considerations for the organization and delivery of health services for marginalized populations and in under-resourced communities. There were mixed reactions to the appointment scheduling experiences. For several participants, getting the COVID-19 vaccine was more difficult than other maternal vaccinations. Some of these difficulties, as discussed earlier, may be related to limited availability of testing and vaccination sites in segregated neighborhoods predominantly inhabited by Black people and other people of color. Moreover, the complex COVID-19 appointment scheduling process, via a website as opposed to calling a doctor's office to schedule a routine appointment, may have contributed to the difficulties experienced by racialized communities that may have limited access to technology resources and literacy.

> It was way more difficult to get a vaccine appointment for COVID-19 than it was for a flu shot. I mean, you can walk into any CVS, Rite-Aid, or Walgreens, and get a flu shot. I would say the COVID-19 vaccine, in comparison, was way more difficult to get. (Jessica)

However, for a few women, getting the COVID-19 vaccine was less difficult than other maternal vaccines. This finding may be related to bypassing anticipated experiences of systemic bias and quality issues that are common when Black individuals and people of color seek healthcare services in medical facilities. In Susan's words:

> Without the doctor's appointment and waiting in a waiting room, it [COVID-19 vaccination] was just an easy experience. (Susan)

Participants also compared their experiences with side effects from the COVID-19 vaccination and other maternal vaccinations.

> I would say the COVID-19 vaccine that, um, the symptoms [side effects] were pretty severe. Um, like with the flu vaccine, it's like minor soreness, but with the COVID-19 vaccine, I felt very, very sick. (Zia)

Theme 4: Lessons and recommendations for protecting black people from COVID-19

The fourth theme aligns with Focus 4 of the PHCRP, i.e., action to disrupt systemic barriers to access, and inequities in COVID-19 vaccination for Black pregnant and postpartum women and children. Women in this study also reflected on lessons from the COVID-19 experiences in their families and communities. They proffered recommendations for supporting Black people during periods of public health crises, such as the COVID-19 pandemic.

Some participants also reflected on the dearth of information about their unique circumstances as pregnant and breastfeeding individuals and felt that if their questions were answered satisfactorily, they would have been more readily open to vaccination.

> I would say if someone was just there to answer all my questions and ease my worry that would have made it less challenging. I would have been more willing to get it just if I felt more comfortable as far as research on my situation, as far as breastfeeding and pregnancy. That would have made it less challenging, and I would have been more willing and open altogether. (Linda)

Notable among participants' reflections was the point that there is a critical need for Black people to continue to research the information on COVID-19 and the vaccine, given the disproportionate burden of pre-existing conditions and other intersecting predisposing factors among Black people, to enable informed decision-making. This and the following findings highlight the complexities of centering the lived experiences of racialized people, in this case, Black pregnant and postpartum women, in knowledge production and the identification of culturally congruent ways of addressing the different dimensions of structural racism that impact equitable access to COVID-19 information and resources for preventative healthcare and wellbeing. These findings are especially important in the context of pervasive structural racism and systemic bias, which underlie access, delivery, and the quality of health services for Black and racialized people. It is also worth noting that despite the increase in availability of COVID-19 and vaccination information, participants still felt the need to continue to do their own research before accepting recommendations from policy makers and healthcare providers.

> I think that as a community we should continue to research everything that is recommended to us. And since specifically for [the] COVID-19 vaccine, the research has proven to be true and helping with the virus, I think it would be beneficial to our community by just making sure we stay healthy, especially with so many pre-existing conditions that we, as a community, have. I think that we don't need COVID-19 without a vaccine on top of everything that we are already dealing with as a community. (Zara)

The accessibility, with vaccination sites not being within walking distance from several communities, was yet another area where policy makers can make important changes to ensure equitable distribution of healthcare resources in stable times and in times of crises.

> A lot of [our] communities did not have places [vaccination sites] that they [could] just go to. Maybe they have to be able to walk. Well, how many places were available for people to walk to? You know what I'm saying, so those are things I think that can help with the gap in our community. (Diana)

Other lessons from the women's reflections focused on the role of influential Black people and public figures, championing COVID-19 vaccination in Black communities, as a source of hope and to build trust in the vaccine. For example, the vaccination of the Bidens (current US President and First Lady at the time of this study) did not carry the same weight for Tia as that of the Obamas (former US President and First Lady), despite both being influential public figures who openly advocated for COVID-19 vaccination. This highlights the crucial roles that trusted persons can play in racialized communities. Notably, Tia qualified such roles as those of strength and comfort, among others:

> I feel like there hasn't been a really strong comforter for the Black community that could really make us feel like we're okay, and we're safe, and we're cared about just as much as everyone else. For me personally, it helps, like, I know when I saw that Barack and Michelle [Obama] got it [COVID-19 vaccine], that made me feel more comfortable. But when Joe and Jill [Biden] got it, I was like, okay, but when Barack and Michelle [Obama] got it, just with them, being Black just because of who they are as people, and just being honest and hopeful, and all of that I felt like, you know, maybe it was okay to try. (Tia)

Another participant discussed the influence of the Black Doctors Consortium, founded by Dr. Ala Stanford, as another valuable lesson.

> I think what the Black Doctors Consortium did was really, really, great because it just showed Black people being for the vaccine and being like, 'okay, we should do this', so I would say, in our community, Black people typically are a little hesitant to do it [vaccination]. However, they will if people that they know and love, trust and believe in it [COVID-19 vaccination]. (Tasha)

Key recommendations the women made included disseminating information about vaccination through the Church in Black communities, in light of the generational divide between older and younger people.

> The Black Church is like a staple in our communities. So, if the information is there, if they hear some of the pastors or some of the people that they look up to in the community talking positively about the vaccine, getting vaccinated, that could prompt, say an older person who may not be as trusting [of] vaccines. Given the history of racist practices in our community, that could make them be a little more trusting of this vaccine so that they can get it and protect themselves and their families. (Jessica)

Participants also noted the need for informed and trusted people to address the community's questions and concerns by providing credible sources of information and research via discussion forums. Julia noted a dire need for engagement with Black people as a way of bridging the information gap contributing to low vaccination rates.

> I would say honestly, through things like what you [study team] are doing here, you know, like doing some research studies. And if someone would just take the time out to maybe hold… something like this, like a Zoom meeting where every possible question we have can get answered, backed up with research that we can maybe look into ourselves…. Just if somebody would just take that time out to fully educate us on everything about the vaccine. How it affects people with different health situations. I think more people would be much more open to it if they could just have, maybe, some health professionals who are willing to take the time out to make us comfortable, answer all our questions. If they can't hold a meeting, [they can] just put out some information on the vaccine, and have, like a Q&A [Question and Answer] session, where all different questions are put out there, and answers are given with reputable sources. (Julia)

On a related note, the women also recommended the need to normalize COVID-19 vaccination and to provide information about the benefits of the vaccination to Black communities through trusted Black people that they can identify with.

> I think by letting them know that it's just another vaccination, like, we've all been vaccinating. It's normal in our society at this point to be vaccinated for something. Just keep it convenient. I think that if it isn't, it gets difficult to receive. If it becomes one of those [routine] vaccinations where you have to make a doctor's appointment and sit in the waiting room all day, it might discourage people from access, especially if you don't have insurance. (Susan)

> I think people just kind of talking about it [COVID-19 vaccine] and the positive things that are associated with it. I feel like a lot of times we stress so much the negative side effects or the potential barriers or issues that we could have versus the positive side of getting vaccinated. So, I think the more we talk about

> vaccinations in a positive light and understanding that it is there to help us and the benefits of it, I think more people will be more receptive to getting it. But it has to be from our people, like Black people telling Black people because we don't trust other people. (Tasha)

Discussion

This study highlights the COVID-19 vaccination decision-making process and the vaccination experiences of Black pregnant and postpartum women. The findings also provide insights into other maternal vaccination experiences compared with the COVID-19 vaccine. The PHCRP was used to contextualize the role of racism at the intersections of policy at the structural and systemic levels, and the intrapersonal- and interpersonal levels of women's decision-making and vaccination experiences (Ford & Airhihenbuwa, 2010b, 2010a). The focus in PHCRP for our discussion was on Focus Area 2 (Knowledge Production) and Focus Area 4 (Action to disrupt systemic barriers to access, and inequities in COVID-19 vaccination for Black pregnant and postpartum women). As observed during the pandemic, this understanding is critical for disrupting the barriers that structural racism continues to pose in the highly segregated setting of Greater Philadelphia, thereby contributing to persistent health inequities in the burden of COVID-19 and vaccine distribution, which inadvertently affect maternal and infant morbidity and mortality. Public health efforts to produce outcomes that reduce health disparities will continue to be unsuccessful if they ignore the underlying power and political differentials that produce and maintain structural racism and racial inequities (Barber et al., 2020; Huffstetler et al., 2022).

The participants in this study were all self-identified Black women who had received the COVID-19 vaccine either while pregnant or breastfeeding. In the US and the United Kingdom, pregnant women of color, from the most deprived socioeconomic backgrounds were less likely to receive the vaccine compared to their white counterparts (Blakeway et al., 2022). Low socioeconomic status has been linked to low uptake of COVID-19 vaccination among Afro-Caribbean populations (Bhattacharya et al., 2022; Rich et al., 2022). One of the inclusion criteria for the current study was having received at least one dose of the COVID-19 vaccine during the preconception, prenatal, or postpartum period. While this criterion likely resulted in a sample of mostly college-educated and employed Black women who would normally have taken the vaccination, this was consistent with our aim of filling the knowledge gaps in the decision-making process of Black pregnant and postpartum women, vaccinated against COVID-19. Moreover, about 23% of the sample had less than a college education, suggesting that low socioeconomic status alone does not completely explain the complex processes that Black people must navigate to make sense of COVID-19 and vaccination information for their unique needs. In these and many other ways, we extend the knowledge about COVID-19 vaccination decision-making in line with the knowledge production focus of PHCRP.

A key part of the vaccination decision-making process was carrying out personal research by either listening to what people were saying and/or reading up about the vaccine online. The ability to carry out personal research and use the information for health decision-making exemplifies health literacy; likely because several of the respondents were college-educated. Nonetheless, this also supports the argument that inadequate knowledge about the COVID-19 vaccine, and especially how the vaccine affects pregnant and breastfeeding people and their children, was likely a key driver of hesitancy for many pregnant or postpartum individuals (Simmons et al., 2022). It is important to add that safety concerns were cited as a reason why pregnant women are hesitant to receive the COVID-19 vaccine (Blakeway et al., 2022). Considering the mistrust stemming from historical unethical medical and research practices and contemporary experiences of healthcare mistreatment and discrimination against Black people in the US, the need for adequate information sharing through trusted sources in addressing COVID-19 vaccine hesitancy cannot be overstated. Again, in line with PHCRP's action focus area, in charting the path forward in COVID-19 vaccine hesitancy, ongoing efforts to change medical education and the delivery of health services in medical institutions to alleviate the consequences of the long history of medical distrust and structural racism (Frisco et al., 2022), will require earning trust, demystifying the technicalities surrounding research methods, and fair access to pharmaceutical products and everyday medical interventions when required (Savoia et al., 2024).

Family support and an obligation for the protection and safety of the family also played a key role in vaccine uptake. The decision to vaccinate or not to vaccinate children when eligible is also related to this factor. This highlights the place of family and community-mindedness of Black people. These family dynamics may have played a role in vaccine willingness, as women may be eager to receive the vaccine to increase family support (Sznajder et al., 2022). Closely related to this were the religious and spiritual

obligations that encouraged the uptake of the COVID-19 vaccine. It is important to note that religion is an integral part of Black culture. Hence, community and religion could be leveraged as essential factors in improving vaccination uptake among Black and racialized people.

Employment played an important motivating role in vaccine uptake. For some participants getting vaccinated was due to work requirements. During the pandemic, employer mandates of universal employee vaccination as a way to keep their workplaces safe and reduce their financial losses, raises important legal and ethical issues (Rothstein, 2022). On the one hand, some employers provided monetary incentives to vaccinated employees. Employers supporting employees to get vaccinated may help encourage vaccine uptake. However, payments of monetary incentives in the context of racialized populations, where there is distrust of authorities and health professionals, could also be coercive and, most likely, backfire. Cryder et al. (2010) argue that monetary incentives could signal that the vaccine is extra risky, a concern that has been observed when paying people to participate in research (Cryder et al., 2010). In the case of the COVID-19 vaccine, which has generated much controversy due to safety concerns, great caution will be required to evaluate the utility of this strategy broadly. On the other hand, it should be noted that many Black and racialized people work in essential services; hence, during the pandemic they did not have the luxury of remote work that was an option for a large portion of the US population. Therefore, vaccination mandates by employers may have deprived such essential service workers of agency in vaccination decision-making; this perspective was also expressed by several study participants. This is of particular importance considering the general legacy of racism, prevailing discrimination and unequal opportunities that Black persons experience. As highlighted in our study, trusted messengers include faith leaders, and recognized professionals from racially-congruent population groups. Public health agencies and healthcare systems have a valuable opportunity to establish genuine, enduring, and mutually beneficial partnerships with trusted messengers and key community interest holders, in fostering trust with the community to earn credibility (Balasuriya et al., 2021).

The vaccination experience, as narrated by respondents, provides insights into the structural enablers and barriers in the process of health services delivery. An enabling factor that contributed to vaccine uptake was the location of vaccination sites in pharmacies. The accessibility of pharmacies to communities makes them a popular location for health-related visits and the first point of contact with a health care professional for many Americans (Pammal et al., 2022). The use of community pharmacies in the distribution of vaccines has been reported to increase availability in convenient and familiar locations since the 2009 H1N1 mass vaccination, as most communities are within a five-mile radius of a community pharmacy (*COVID-19 Vaccination Federal Retail Pharmacy Partnership Program | CDC*, 2023). The distribution of vaccines through community pharmacies should continue to be finetuned due to the potential to reduce structural barriers for persons who are racialized in accessing vital preventative health services (COVID-19 Vaccination Federal Retail Pharmacy Partnership Program|CDC, 2023; Pammal et al., 2022). Advertisements and public service announcements about the COVID-19 vaccine were noted as an enabling factor. Vaccination decision-making is not static, but highly responsive to current information and sentiments around the COVID-19 vaccine, the state of the epidemic, and the perceived risks of contracting the disease (Loomba et al., 2021). Similar to our findings, researchers have found that most respondents would take the vaccine to protect family, friends, and at-risk groups because of positive messaging on the COVID-19 vaccine. Strategic health communication channels, which are widely used and highly trusted, can contribute to more effective promotions of vaccination and the reduction of misinformation about the COVID-19 vaccine (Gehrau et al., 2021; Loomba et al., 2021). Hence, identifying appropriate communication channels tailored towards Black people's needs and preferences will help mitigate the difficulty of accessing credible and reliable information. Additionally, acknowledging and understanding the challenges Black individuals encounter in accessing adequate healthcare during "peacetime," along with the daily experiences of discrimination and structural racism affecting their well-being, is crucial in crafting effective communication strategies and comprehensive responses for future emergencies (Savoia et al., 2024). Other enabling factors noted in our study, as will be expected for women with children, were favorable childcare arrangements and time off for vaccination appointments. This is particularly important in reducing the disparities for postpartum and parenting people. Thus, in increasing access to vaccinations, short-term public health efforts to reduce structural barriers to healthcare must include the provision of paid time off work and childcare plans (Williams et al., 2022), which are especially important for underserved populations with low-income and very limited childcare options.

Treatment by health care providers for some was also favorable. However, there were narratives of racist comments, e.g., by a health care provider about the skin texture of Black people. This highlights the long-standing and pervasive nature of systemic bias and structural racism in medical education that has created the dangerous perception of differences based on skin tone (Green et al., 2022). Nevertheless, the location for vaccination, mostly community pharmacies, may demonstrate the existence of rapport and trust, which may have contributed to the largely favorable vaccination experience of some study participants, contrary to the overwhelming evidence on deep-rooted structural racism and systemic bias and mistreatment of Black women during maternity care in other health care settings, from which higher education and economic status are not protective factors (Logan et al., 2022; Nguyen et al., 2023; Petersen, 2019; Vedam et al., 2019). Based on their training and location within communities, pharmacists are well-positioned to educate and provide evidence-based recommendations for the safe and effective use of medications to both patients and providers (Moore et al., 2021). Other studies report persons of color frequently cited fear of side effects and safety concerns as factors contributing to vaccine hesitancy (Restrepo & Krouse, 2022; Sekimitsu et al., 2022). Hence this is another indication that open communication by knowledgeable and trusted health professionals could play a significant role in addressing the historical trust issues around vaccinations and medication, especially among Black people and other populations that experience structural racism and systemic bias in the health system. Nonetheless, as vaccine access expands via pharmacies, there is a need for changing pharmacy education and continuing education, and anti-racist training for all pharmacy workers to counter attitudes and beliefs that contribute to racist practices in health care.

Strengths and limitations

This is one of a few studies focused exclusively on the decision-making process of Black pregnant and postpartum women who received the COVID-19 vaccination. Another strength of the current study is the use of a critical framework that enables the co-creation of knowledge with a population that experiences several intersecting forms of discrimination and racism resulting in disparities in the burden of COVID-19 and adverse pregnancy outcomes. Additionally, conducting the study two years into the pandemic and when the COVID-19 vaccines were widely available allowed the exploration of several dimensions of vaccination decision-making, including actual vaccine uptake for both women and their babies.

Despite these strengths, this study has limitations. First, about two-thirds of our sample comprised well-educated and employed Black women. This may be due to the recruiting strategies we employed, including community outreaches, community-based organizations, personal networks, etc., which may have introduced some sampling bias. However, the impact of a potential sampling bias was mitigated by other successful recruitment approaches via community events, such as community baby showers, which typically support individuals who may sometimes not have the economic or social resources to host individual baby showers. Had the sample consisted of a higher proportion of less educated women, our findings may have been different. Nonetheless, our results highlight important factors related to how Black pregnant and postpartum women made sense of the differing and sometimes conflicting information about the COVID-19 vaccine and its safety in pregnancy. Common to qualitative study design, our results are not generalizable to all pregnant and postpartum women in the US. Although generalizability is not an expectation of qualitative studies, we made efforts to ensure rigor and enhance the trustworthiness of the results.

Implications

This study contributes in important ways to the knowledge on COVID-19 vaccination and has implications for not only increasing vaccine acceptance and equity but also promoting maternal vaccinations, overall. As COVID-19 is treated as an endemic disease, the public health system must also switch the approach to vaccination to a routine health service, which will require ensuring equitable access to vaccines, especially among racialized communities and individuals who are underinsured or uninsured. Operational planning is a critical part of any mass vaccination program, as was observed with the COVID-19 vaccination. Appointment scheduling experiences varied, as did eligibility requirements for vaccination, and finding vaccination centers with adequate and/or preferred vaccine choices. Comparatively, participants had mixed experiences when discussing similarities and differences between COVID-19 and maternal vaccinations. On the one hand, maternal vaccinations, which have been around for relatively longer, were not as difficult

to come by as COVID-19 vaccination for some participants. There are implications for how health services are organized and delivered, with the focus being on simplifying the systems and minimizing the burden of online appointment scheduling, similar to the practice with maternal flu vaccinations. Contrarily, other participants preferred the convenience of getting COVID-19 vaccines from community pharmacies, despite difficulties with navigating appointment scheduling systems and structural bias. This preference may be borne out of the desire to avoid clinical visits and appointments, which may evoke negative experiences for some participants who anticipate discrimination and mistreatment in routine healthcare settings. This warrants further investigation.

Considering that the COVID-19 vaccination was the first of its kind in this modern era, decision makers faced serious challenges in the organization of mass vaccination programs (Zhang et al., 2022). Studies found that COVID-19 vaccine locations tended to be disproportionately clustered in more affluent zip codes with fewer marginalized populations, and farther away from zip codes and neighborhoods where people of color live (Williams et al., 2022). This was one of the reasons for the creation of the Black Doctors Consortium by Dr. Ala Stanford–to counter glaring inequalities in vaccine access in segregated Black neighborhoods in the Philadelphia area (Jaklevic, 2021). Williams et al. (2022) and Siegel et al. (2023) similarly argue that vaccine hesitancy does not seem to be the singular factor triggering the observed racial disparities in COVID-19 vaccination rates (Siegel et al., 2023; Williams et al., 2022). Therefore, it is important to ensure that the systemic biases and issues of inequitable access are addressed to mitigate the structural barriers to vaccination, that racialized people experience. Further research will be required to help identify appropriate policy considerations and strategies for countering structural racism and inequalities in the location of vaccination sites and distribution of vaccines to increase vaccination rates in deprived and segregated neighborhoods (Gianfredi et al., 2021).

Other lessons from this study include the need for ongoing community engagement with populations that are racialized. Importantly, as indicated by participants, such outreach should come from people with shared values and lived experiences—people that the community relates to and trusts. There is also an opportunity to strengthen maternal immunizations, overall, possibly by strengthening pharmacy systems as promoters of vaccinations, especially in marginalized populations that experience structural racism and bias in reproductive health care. Further, there is a crucial need for policy makers and health care providers to continue to promote accurate COVID-19 disease and vaccine information to counter rampant disinformation, using community members and resources that can help bridge the information and trust gaps between the health system and the community. Improving the quality and experience of respectful healthcare for Black people using anti-racist frameworks must also be decisively prioritized because poor quality of care fuels mistrust and lack of confidence in healthcare providers and the health system. In alignment with Focus 4 of the PHCRP (Action), the findings of this study, centering the voices of Black women in action, contributes to crucial evidence for intentionally disrupting structural racism and systemic biases that disincentivize pregnant and postpartum Black women from seeking critical COVID-19 care for themselves and their babies.

Conclusion

The COVID-19 pandemic has brought to the fore the critical place of trust and credibility in science and medicine as essential factors for engaging racialized and underserved communities in the healthcare system and avoiding delays in seeking care (76). Using the PHCRP framework, this study highlights the impact of racism and racialization on the decision-making processes and vaccination experiences of pregnant and postpartum Black women regarding the COVID-19 vaccine. This article also provides actionable recommendations for policy and systemic changes for addressing structural barriers and biases, to improve vaccination rates among pregnant and postpartum Black women. It is imperative for policy makers, healthcare providers, and public health practitioners to recognize, understand, and address the population-specific reasons for COVID-19 vaccine hesitancy while promoting equitable access to preventative health information and resources, especially in under-resourced Black communities.

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Authors' contributions

Comfort Z. Olorunsaiye: Conceptualization, Investigation, Formal analysis, Funding acquisition, Methodology, Data curation, Writing-original draft preparation, Writing-reviewing and editing. Hannah M. Degge: Data curation, Writing-original draft preparation, Writing-reviewing and editing. Dejenaba Gordon: Investigation, Conceptualization, Project administration, Data curation, Writing-original draft preparation. Augustus Osborne: Data curation, Writing-original draft preparation, Writing-reviewing and editing. Samira Ouedraogo: Investigation, Data curation, Writing-original draft preparation.

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The authors declare there are no competing interests to disclose.

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ORCID

Comfort Z. Olorunsaiye http://orcid.org/0000-0003-4725-0448
Hannah M. Degge http://orcid.org/0000-0003-3156-9964
Augustus Osborne http://orcid.org/0000-0002-0226-841X

Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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