



Attitudes Toward Influenza, Pertussis, and COVID-19 Vaccines Among Economically Underserved Black Women/Birthing People: A Mixed-Methods Approach

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Abstract

Vaccination during pregnancy is critical to the health of birthing persons and infants. Yet, persistent racial disparities in vaccination threaten health outcomes in the U.S. (Lu et al., 2015). Vaccination coverage remains low among non-Hispanic Blacks and other racial minorities – a situation magnified by the COVID-19 pandemic (Freimuth, Jamison, An, Hancock, & Quinn, 2017; Stokes et al., 2020). Consequently, understanding vaccine attitudes for systemically disadvantaged groups is paramount to promoting public health. Illuminating barriers to vaccine uptake creates space for new strategies to reduce hesitancy.

To investigate Black women's/birthing people attitudes toward influenza and pertussis vaccination during pregnancy, we conducted four focus groups and one interview between September-November 2019. Our sample included eighteen pregnant/recently pregnant Black women/birthing people from Baltimore, MD. Additionally, with the genesis of the COVID-19 pandemic, we returned to the same community between December 2020-March 2021. We conducted surveys with forty-two Black women/birthing people to examine the group's attitudes towards COVID-19 vaccinations, as well.

Attitudes towards influenza and pertussis immunizations ranged from favorable to rejection. Yet, participants generally affirmed more favorable sentiments towards pertussis vaccines. Willingness to vaccinate was strongly connected to bolstering health. Even among those willing to vaccinate, participants voiced skepticism about vaccine safety. Barriers to vaccination included possible side effects; limited reliable information; and distrust. Finally, most participants planned to decline COVID-19 vaccines for themselves and their children.

For future communication strategies aimed at enhancing vaccine uptake, ensuring messages are delivered from trusted sources in local communities is critical (Fu, Haimowitz, & Thompson, 2019). Other possible methods include digital/social media campaigns and open conversations about hesitancy. Additionally, acknowledging decision-making processes of Black women/birthing people; listening to their opinions, and respecting their medical agency are essential.

Keywords

vaccine hesitancy; attitudes; racial differences; mistrust; pregnancy

Cover Page Footnote

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ABSTRACT

Vaccination during pregnancy is critical to the health of birthing persons and infants. Yet, persistent racial disparities in vaccination threaten health outcomes in the U.S. (Lu et al., 2015). Vaccination coverage remains low among non-Hispanic Blacks and other racial minorities – a situation magnified by the COVID-19 pandemic (Freimuth, Jamison, An, Hancock, & Quinn, 2017; Stokes et al., 2020). Consequently, understanding vaccine attitudes for systemically disadvantaged groups is paramount to promoting public health. Illuminating barriers to vaccine uptake creates space for new strategies to reduce hesitancy.

To investigate Black women's/birthing people attitudes toward influenza and pertussis vaccination during pregnancy, we conducted four focus groups and one interview between September-November 2019. Our sample included eighteen pregnant/recently pregnant Black women/birthing people from Baltimore, MD. Additionally, with the genesis of the COVID-19 pandemic, we returned to the same community between December 2020-March 2021. We conducted surveys with forty-two Black women/birthing people to examine the group's attitudes towards COVID-19 vaccinations, as well.

Attitudes towards influenza and pertussis immunizations ranged from favorable to rejection. Yet, participants generally affirmed more favorable sentiments towards pertussis vaccines. Willingness to vaccinate was strongly connected to bolstering health. Even among those willing to vaccinate, participants voiced skepticism about vaccine safety. Barriers to vaccination

included possible side effects; limited reliable information; and distrust. Finally, most participants planned to decline COVID-19 vaccines for themselves and their children.

For future communication strategies aimed at enhancing vaccine uptake, ensuring messages are delivered from trusted sources in local communities is critical (Fu, Haimowitz, & Thompson, 2019). Other possible methods include digital/social media campaigns and open conversations about hesitancy. Additionally, acknowledging decision-making processes of Black women/birthing people; listening to their opinions, and respecting their medical agency are essential.

Keywords: vaccine hesitancy; attitudes; racial differences; mistrust; pregnancy

INTRODUCTION

Vaccination during pregnancy is critical to the health of the birthing person, fetus, and infant. Vaccines protect the birthing person, and transfer pregnancy-related antibodies to the fetus, providing antibodies to infants too young to be vaccinated (Grohskopf et al., 2018). The Advisory Committee on Immunization Practices (ACIP) comprises medical and public health experts who provide advice and guidance to the Centers for Disease Control and Prevention [CDC] on the control of vaccine-preventable diseases. ACIP recommends pregnant people receive the Tdap vaccine between 27- and 36-weeks' gestation, regardless of prior immunization history (2013). In addition, ACIP recommends the influenza vaccine during any trimester of pregnancy and recommends pregnant people receive a COVID-19 vaccine (Dooling et al., 2021). However, according to the CDC, only 54% of pregnant people report receiving an influenza vaccine and 55% report receiving the Tdap vaccine with rates lowest among Blacks (Centers for Disease Control and Prevention, 2019). The CDC also recommends COVID-19 vaccines for people who are pregnant or recently pregnant (Centers for Disease Control and Prevention, 2021b).

Persistent racial disparities in vaccination continue to threaten health outcomes in the US (Lu et al., 2015). Vaccination coverage has been historically low among non-Hispanic Blacks and other racial minorities (Freimuth et al., 2017), a situation magnified by COVID-19 (Stokes et al., 2020). Factors leading to racial differences in vaccine coverage include attitudes towards vaccination, likelihood that providers recommend vaccines, and varying quality of care (Lu et al., 2015). Previous studies assessed factors contributing to vaccine hesitancy (Rosso et al., 2019; Wilson, Paterson, Jarrett, & Larson, 2015); however, there is little focus on vaccine hesitancy during pregnancy and attitudes among low-income Black women/birthing people. The objectives of this study were twofold: 1) to capture birthing people's/women's opinions on vaccines during pregnancy, and 2) to evaluate attitudes of pregnant Black people towards a potential COVID-19 vaccine to inform future public health interventions.

METHODS

Focus Groups, Very Small Focus Groups (VSFG), and Interview

Study Design. Our original design planned for 4-5 in-person focus groups, consisting of 6-8 participants each. Due to recruitment and participant challenges, we conducted 2 very small

focus groups (VSFGs) and 1 key informant interview, in addition to our 2 focus groups that met our initial goals for a number of participants (6-8 participants). We received approval from the University of Maryland Baltimore (UMB) Institutional Review Board (IRB).

Participants and Recruitment. We worked closely with B'more for Healthy Babies Upton/Druid Heights (BHB U/DH) to recruit participants. BHB U/DH is a Baltimore City initiative in which partners, including the University of Maryland Baltimore School of Social Work, endeavor to reduce infant mortality in two West Baltimore neighborhoods where members of our study team have established, collaborative, relationships. A community advisory board meets monthly to guide programming. This program is part of a larger citywide initiative to improve birth outcomes throughout Baltimore City.

Interested participants were recruited via convenience and snowball sampling, print advertisements, local community organizations, and recommendations from other participants. Eligible participants were 18 years of age and over; either currently pregnant or pregnant within the last three years; and resided in the BHB U/DH or Mondawmin neighborhoods, where BHB U/DH operates.

Prior to each discussion, we obtained informed consent from each participant. A moderator led the focus groups, VSFGs, and interview while the co-moderator took notes. The moderator was a postdoctoral researcher in qualitative methods and patient-centered outcomes research at UMB. Each conversation was recorded and transcribed by the co-moderator; identifying information was redacted from transcripts. Transcripts were analyzed using NVIVO 12 Qualitative Data Analysis Software. To ensure reliability of results, two coders developed the coding schema. Differences were negotiated and all results agreed upon. The coders conducted shared training, coding, and debriefing sessions, to help ensure consistency of study findings.

Each session included 10 questions on vaccine attitudes and barriers; influences shaping vaccine-related opinions; and best strategies for receiving information about vaccines (Table 1). We inquired about the sources from which participants best receive new information regarding vaccinations. That is, we sought participants' perspectives on the best dissemination strategies for new information and intervention campaigns for vaccines. The questions were developed based on published literature and consultation with experts in the fields of pediatrics and vaccinology. Additionally, BHB U/DH perinatal community health workers – Black women/birthing people with experience and history in these communities – provided feedback on the materials. These community health workers, also known as resource parents, work directly with women/birthing people and their families and are responsible for disseminating health information and providing perinatal education and support services.

Each participant received a \$25 gift card, a light meal during the focus group, VSFG, or interview, and bus tokens to cover transportation costs.

Table 1. Focus group questions to assess vaccine attitudes during pregnancy

| |
|--|
| 1. With your recent pregnancy, how did you feel about getting a vaccine? |
| 2. What attitudes do you have about getting a vaccine during pregnancy? Where do you think these attitudes may have come from? |
| 3. How important is it to vaccinate yourself or your child to prevent things like influenza? |

| |
|--|
| 4. Do you remember what your doctor told you about the influenza shot or other vaccines during your pregnancy? |
| 5. Who or what influences your decision to receive a vaccine, during pregnancy or otherwise? |
| 6. Has anything about vaccines ever caused your opinion to change? |
| 7. If you want to know more about vaccines, where would you go? |
| 8. If you were in charge of getting information out to your community, how would you do it? |
| 9. What factors (or things) do you think help women choose whether or not to be vaccinated during pregnancy? |
| 10. What do you think is the biggest challenge to getting a vaccine? |

Data Collection. We collected data using mixed qualitative methods, including in-person focus groups, VSFGs, and a semi-structured informant interview. Additionally, we employed a data saturation approach to data collection. We continued to gather data until codes found in earlier data replicated themselves in new data (Hennink, Kaiser, & Marconi, 2017).

COVID-19 Survey

We returned to the same community amidst the COVID-19 pandemic to evaluate attitudes towards a potential COVID-19 vaccine. Because of the inability to have in-person meetings, we distributed a 15-question survey via SurveyMonkey, from December 2020 to March 2021, to pregnant or recently pregnant women/birthing people in Baltimore, MD. A majority of these participants also lived in the U/DH and Mondawmin neighborhoods. The survey consisted of multiple-choice questions about willingness to vaccinate themselves and their children against COVID-19; if they believed a COVID-19 vaccine would help protect them from getting sick or infected; and trusted sources for COVID-19 information (Table 2). A Likert scale was used for questions 10-14 as participants chose whether they agreed, strongly agreed, disagreed, strongly disagreed, or remained neutral. Responses were grouped into agree, disagree, neutral (Figure 1). B'more distributed the survey during citywide virtual meetings, Facebook live events (reaching 150+ participants), and emails to women/birthing people who had participated in BHB's moms' clubs or past vaccine focus groups. In addition, BHB staff shared the survey with community partners in West Baltimore. Each participant received a \$5 Amazon gift card upon completion of the survey to their email.

Table 2. Focus group questions to assess vaccine attitudes during pregnancy

| |
|---|
| 1. What is your age? |
| 2. Gender: how do you identify? |
| 3. What is your race or ethnicity? |
| 4. What is your zip code? |
| 5. What is the highest level of education you have completed? |
| 6. How many children do you have? |
| 7. Are you currently pregnant or have you been pregnant in the last 3 years? |
| 8. Have you received a flu shot in the past year? |
| 9. Have your children received a flu shot in the past year? |
| 10. If a vaccine for COVID-19 becomes available and is recommended, I would get it. |

| |
|--|
| 11. If a vaccine for COVID-19 becomes available and is recommended, I would have my children get it. |
| 12. I trust the media sources to provide correct information about COVID-19. |
| 13. I trust my doctor to provide correct information about COVID-19. |
| 14. I think getting a COVID-19 vaccine would help protect me from getting sick or infected with COVID. |

Data Analysis

Focus Groups, VSGs, and Interview. Data was coded using NVIVO 12 Qualitative Data Analysis Software. NVIVO was used for thematic categorization and visualization of data, as well as display of references to specific categories/subthemes. Data analysis first involved the development of a coding frame, wherein categories were defined, and coders agreed upon exclusion/inclusion criteria. Additionally, categories and subthemes were refined and redefined during data analysis. Within the data and categories, subthemes were identified. Concepts and subthemes were compared and categorized according to commonality, using an inductive approach to identify patterns within the data that explain the data.

Directed content analysis was applied to analyze the data. Through this method, we immersed ourselves in the raw data in search of analytic codes and categories derived from the data, as well as existing theories in accordance with common methods (Berg, 2012). During the initial open coding phase, transcripts were analyzed by line and assigned to a single category. The second phase of coding, axial, included intensive coding around each category and subtheme. Additionally, themes were categorized iteratively.

COVID-19 Survey. Data from the online COVID-19 survey was analyzed using the SurveyMonkey platform. After responses were collected, the filter function was applied to certain relevant questions. Survey data was exported and converted into a bar chart showing the percentages of participants that agree, disagree, or were neutral on specific questions.

RESULTS

Focus Groups, VSGs, and Interview

A total of 32 prospective participants were screened and eligible for the study. All participants provided informed consent and 32 were scheduled. A total of 18 participated in focus groups (2), VSGs (2), or interview (1). The remainder of the participants were scheduled but did not show up for the discussion, likely reflecting the time constraints of women/birthing people in this demographic in these communities.

We identified five major categories during the analysis and coding of the data (Table 3). The first category, “Range of Attitudes – Willingness to Vaccinate” captures the broad continuum of participants’ sentiments towards vaccinations during pregnancy, and/or for children. Responses ranged from aversion to advocative acceptance. Regardless of willingness to immunize, participants articulated “Concerns about Risks, Barriers and Challenges to Vaccination,” our second category. Content in the second category centered on participants’ anxieties surrounding vaccine side effects, adverse reactions, and pain associated with infants and children being vaccinated. Thirdly, mistrust of institutions, clinicians, and vaccines was mentioned independently. The fourth category included pregnancy-specific attitudes towards vaccinations. Data in this category captures participants’ divergent perspectives on Tdap and influenza vaccine,

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with a higher percentage more amenable to pertussis. In the fifth category, participants identified family and community members as trustworthy sources for health-related information. One focus group suggested the idea of a vaccine podcast where individuals could hear from different community experts and consume information by actively listening to discussions. Participants also mentioned social media and health care providers as preferred methods to receive new information about vaccines.

Table 3. Themes, categories, and sample responses of women/birthing people’s attitudes towards vaccines during pregnancy

| Categories & Themes | | |
|---|---------------------------|--|
| Category | Subthemes (If Applicable) | Sample Responses |
| Category 1: Willingness to Vaccinate | Willing | “If those vaccines gonna help my kids, then I’m going for it.” |
| | Hesitant | “Yeah, that’s why I get them because they say it helps the baby. If I weren’t pregnant, I wouldn’t.” |
| | Confused/Ambivalent | “The new ones coming out...I’m not too sure how I feel about those new shots. Because I feel like they haven’t been out long enough to be proven good or bad.” |
| | Unwilling | “I’m not getting the flu shot. I’m not getting anything that’s gonna make me sick.” |
| Category 2: Concerns About Risks | N/A | I just don’t want to be part of it because I don’t want my next kid having disabilities.” |

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| Categories & Themes | | |
|--|---|---|
| Category | Subthemes (If Applicable) | Sample Responses |
| Category 2: Concerns About Risks, cont. | N/A | <p>“With some of the side effects and stuff you don’t really know what it is. So, it’s like is it worth getting it if the side effect’s worse than whatever they was trying to fix?”</p> <p>“It’s good for you, but it’s scary at the same time. The only thing that’s really scary is the side effects.”</p> |
| Category 3: Pregnancy Specific Attitudes towards Vaccines | Tdap vs. Flu | <p>“I got the whooping cough one...but any other shots, like the flu shot, I don’t really get those. I never got them when I was younger, and I just feel like why inject myself with something that’s gonna give me what I’m gonna have to fight off anyway? I just stay away from it.”</p> |
| Category 4: Mistrust (Institutions, Clinicians, Vaccines) | Fear & Pressure | <p>“I went to those doctor’s appointments...it’s a lot of trickery, you know? They don’t ask questions sometimes. They force you to do things. They try and scare you. Like I said earlier, they use the scare tactics.”</p> |
| | Agency, Information, and Misinformation | <p>“I just feel like in our community, they don’t really give us the information that we supposed to have to make an accurate decision. And a lot of time, when you forced like that you have regrets...that’s not coming from a place of power.”</p> |

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| Categories & Themes | | |
|---|---------------------------|--|
| Category | Subthemes (If Applicable) | Sample Responses |
| Category 5: Sources of Information & Decision Making | Community | “My dad raised me, and he had to take me to the doctor to get my shots. So, coming as a mother, I’m like, ‘I gotta get my shots,’ ya know? Asking him about the shot.” |
| Category 5: Sources of Information & Decision Making, cont. | Social Media | “The only way you gonna find out about something is putting stuff on social media.” “A soundtrack about vaccines that we could listen to – like what to do, and why.” |
| | Pamphlets | “Pamphlets with the info graphics and the small information – like this percent of this, does this.” |
| | Healthcare Provider | “When I go see my doctor’s, or their (children’s) doctor’s, I ask lots of questions, and they give me little booklets.” |

Category 1: Range of Attitudes - Willingness to Vaccinate. One of the largest categories in the data encompassed participants' broad range of attitudes about vaccinating pregnant individuals and children. Perspectives spanned a continuum – from willingness at one pole, to unwillingness and refusal on the opposite pole (Figure 1). The four subthemes identified within this category are listed and illustrated in Table 3.

Participants who expressed sentiments within the first subtheme, “Willing to Vaccinate,” affirmed their amenability to receiving vaccinations during pregnancy and/or for their small children. As shown in Table 3, one participant noted:

If those vaccines gonna help my kids, then I'm going for it.

In similar fashion, amongst the majority of participants who were willing to vaccinate their children, willingness was connected to the benefits, importance, and protections of immunizations; obligations; or fear and pressure from clinicians.

Further, within the second subtheme, “Hesitant,” some participants articulated hesitancy to vaccinate themselves while pregnant, or their small children. Data within this subtheme affirms participants' resistance to immunization, whether amenable or averse to vaccines. Moreover, even with participants who expressed willingness to vaccinate, sentiments of worry or hesitance were also present in the discussions.

Thirdly, the subtheme, “Confused/Ambivalent,” represents participants' direct discussions of lacking clear understandings of the purposes of certain vaccines; the effectiveness of some vaccines; and/or their intentions to vaccinate. An example from Table 3 is as follows:

The new ones coming out...I'm not too sure how I feel about those new shots. Because I feel like they haven't been out long enough to be proven good or bad.

That is, participants expressed uncertainty about immunizing themselves while pregnant, or their small children. Typically, they desired additional information, or proof of the utility of immunizations.

The final subtheme within this category “Unwilling,” encompasses outright resistance and opposition to vaccinating during pregnancy, or for small children. A small proportion of references affirmed complete vaccine aversion.

Category 2: Concerns About Risks, Barriers, and Challenges to Vaccination. Specific expressions of concern about side effects and risks, as well as assertions that illnesses are caused by vaccines were common. Participants highlighted fears of reactions, pain, and impairments that they believed were caused by the receipt of vaccines. Ultimately, as shown in the following quote, participants discussed weighing the benefits of vaccination against the potential losses caused by adverse reactions. One participant noted:

It's good for you, but it's scary at the same time. The only thing that's really scary is the side effects.

For some interviewees, concerns about potential side effects are significant deterrents that impede willingness to vaccinate during pregnancy.

Category 3: Pregnancy-Specific Attitudes & Tdap vs. Influenza. The third category, “Pregnancy-Specific Attitudes & Tdap vs. Influenza” encompasses participants' sentiments centered on vaccinations during pregnancy. In similar fashion to other categories, here, participants situated vaccinations during pregnancy as preventative measures, often necessary for protection of their unborn children. Uniquely, as a subtheme of this category, participants articulated clear distinctions between their perceptions of influenza versus Tdap vaccines. That is, the influenza

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shot was seen as a vaccine that *could* be avoided whereas other immunizations, such as Tdap, were situated as necessary and important. For example, as quoted from a participant in Table 3:

I got the whooping cough one...but any other shots, like the flu shot, I don't really get those...

Moreover, the influenza vaccine was also viewed as a facilitator for illness – an immunization that caused sickness, in order to prevent it. The same participant continues, stating:

I just feel like why inject myself with something that's gonna give me what I'm gonna have to fight off anyway? I just stay away from it.

However, because whooping cough is a well-known, and potentially fatal disease for children under 2, the respondents associated this vaccination with increasing positive health outcomes and preventing infant death. Although this was a less prominent finding in the data, it holds importance for developing effective educational materials that address their concerns and beliefs.

Category 4: Mistrust – Institutions, Clinicians, Vaccines. The next major category, “Mistrust – Institutions, Clinicians, Vaccines” encompasses participants’ sentiments of mistrust of doctors, hospitals, and contents of vaccines. Often, this mistrust was described as an impediment to engaging more closely with medical professionals, seeking additional information and medical advice regarding vaccines during pregnancy.

Within this category, the two major subthemes emerged, including sentiments of “Fear and Pressure” from clinicians to receive immunizations, along with “Agency, Information, Misinformation” surrounding vaccines.

Within the subtheme “Fear and Pressure,” participants noted feeling pressured by clinicians to vaccinate. Also, interviewees expressed concerns regarding the receipt of multiple vaccinations simultaneously. To clarify, as noted by one interviewee,

I went to those doctor's appointments...it's a lot of trickery, you know? They don't ask questions sometimes. They force you to do things. They try and scare you. Like I said earlier, they use the scare tactics.

More directly, this participant highlights “scare tactics,” “force” and “trickery” in connection with experiences with clinicians surrounding vaccine decisions.

Such sentiments allude to the next subtheme “Agency, Information, Misinformation,” which centers on participants’ need for more information surrounding decisions to vaccinate. As shown in Table 3, many of these participants spoke of abbreviated medical visits, and limited opportunities to converse with their doctors about their concerns. Some participants felt forced to make quick decisions about immunizing themselves and their children during doctor’s visits, without adequate information or thorough discussions with their clinicians. The following participant explains this further:

I just feel like in our community, they don't really give us the information that we supposed to have to make an accurate decision. And a lot of time when you forced like that you have regrets...that's not coming from a place of power.

In addition to critiquing lack of information surrounding vaccine decisions, this participant made connections between provision of information, their community, and “coming from a place of power.”

Category 5: Sources of Information & Decision Making. The final category, “Sources of Information & Decision-Making” encompasses participants’ views on the most appropriate methods to receive and disseminate information about vaccinations. Participants were asked to

identify the sources they employ to understand more about vaccines. Additionally, participants were asked which sources of information they would employ, given the chance to disseminate educational information on immunizations to members of their community. Interestingly, participants highlighted family/community members (e.g., community health professionals), clinicians/health care providers, social media, and medical brochures/pamphlets as trusted sources of information surrounding vaccine decisions.

COVID-19 Survey

Table 4 summarizes participant demographics. After obtaining informed consent, a total of 43 people returned the survey and 98.0% ($n=42$) completed the survey. The majority of participants were between the ages of 25 to 34, and with mixed educational backgrounds. Of those who responded, 95.4% identified as Black or African American and 4.8% identified as White. While the majority of women/birthing people identified as Black or African American, we included data on those that identified as White from the same underserved area to serve as a comparison group. Since <5% of participants identified as White, we have reported data on collective responses, regardless of race. Almost all participants (92.9%) had at least one child and half were currently pregnant or pregnant within the last 3 years.

Overall, 14.3% ($n=6$) intended to vaccinate themselves against COVID-19, 59.5% ($n=25$) of participants did not intend to be vaccinated and 26.2% ($n=11$) were neutral. Additionally, 57.1% of participants ($n=24$) did not intend to vaccinate their children, 7.1% agreed they would ($n=3$) and 33.3% ($n=14$) were neutral. Of the 42 respondents, 40.5% ($n=20$) received the influenza shot at least once and of those, 41.2% ($n=7$) said they would not get the COVID-19 vaccine while 23.5% ($n=4$) said they would.

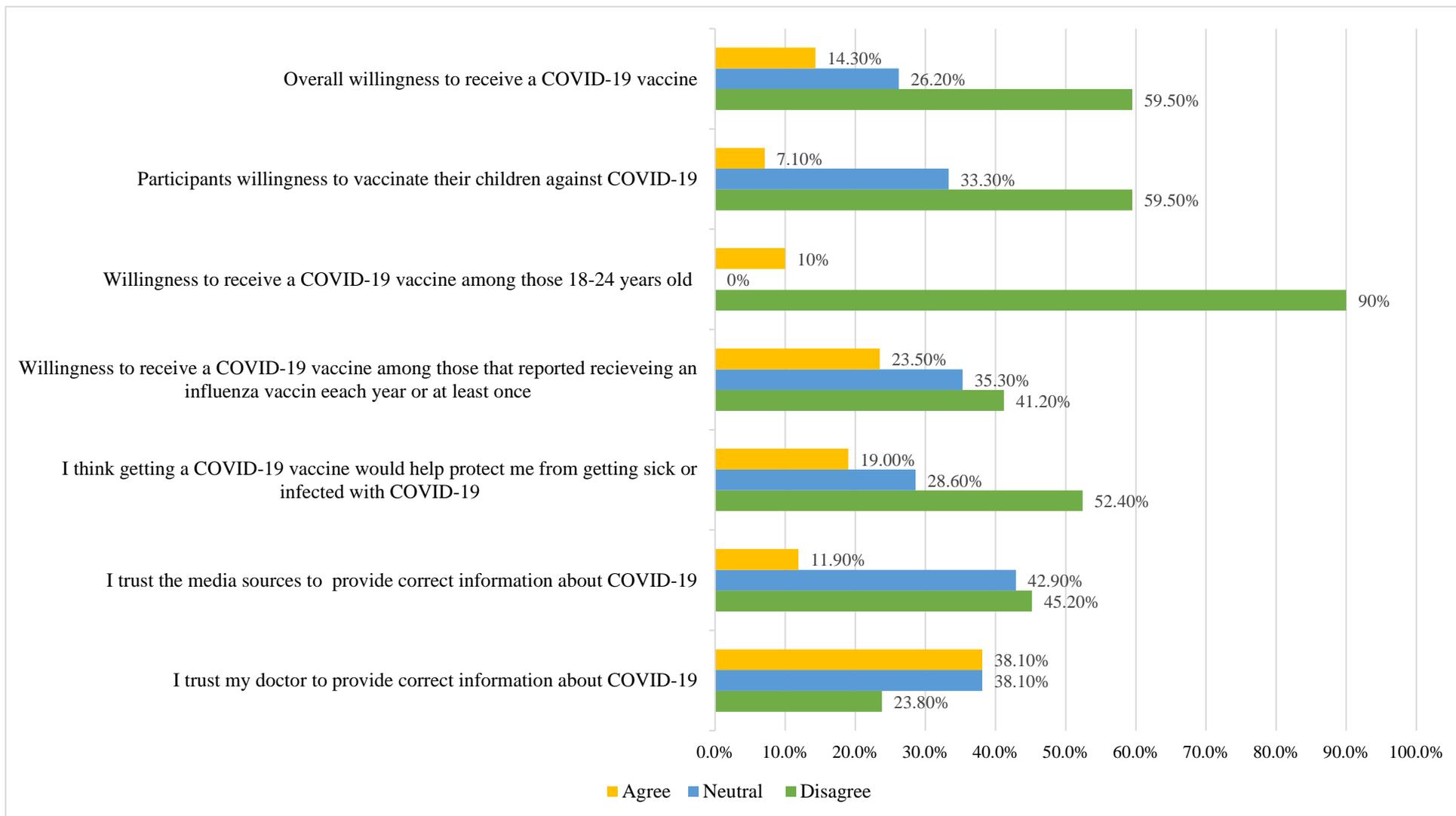
Participants were asked if they believed getting a COVID-19 vaccine would help protect them from getting sick or infected with COVID-19. Overall, 52.4% ($n=22$) disagreed, 19.1% ($n=8$) agreed, and 28.6% ($n=12$) were neutral. Among the 19.1% ($n=8$) of participants who believed the vaccine would help protect them, 62.5% ($n=5$) reported the intent to get vaccinated. In contrast, for those who did not believe the COVID-19 vaccine would protect them, only 4.6% ($n=1$) intended to be vaccinated. Of those participants who reported receiving the influenza shot or at least once ($n=20$), 29.4% ($n=5$) thought the vaccine would help protect them from getting sick; a slightly larger percentage than that for all participants. Among those who never received an influenza shot, only 13.6% ($n=3$) agreed the COVID-19 vaccine would protect them.

Participants were asked what sources were most trustworthy for COVID-19 information. A total of 42.9% ($n=18$) of participants distrusted media sources, while 11.9% ($n=5$) trusted such sources, and the remaining 45.2% ($n=18$) were neutral. In comparison, 38.1% ($n=16$) of participants trusted their doctor to provide correct information about COVID-19, while the same percentage, 38.1% ($n=16$), remained neutral and 23.8% ($n=10$) did not trust their doctor.

Table 4. Demographic characteristics of COVID-19 survey participants

| Demographic Categories | Frequency (n=42) | Percentage |
|-------------------------------|-----------------------------|-------------------|
| Gender | | |
| Female | 41 | 97.6% |
| Non-Binary | 1 | 2.4% |
| Age | | |
| 18 to 24 | 10 | 23.8% |
| 25 to 34 | 22 | 52.4% |
| 35 to 44 | 9 | 21.4% |
| 45 or older | 1 | 2.4% |
| Ethnicity | | |
| Black or African American | 40 | 95.2% |
| White | 2 | 4.6% |
| Education Level | | |
| Some high school | 4 | 9.5% |
| Graduated from high school | 15 | 35.8% |
| Some college | 11 | 26.2% |
| Bachelor or higher | 12 | 28.5% |
| Number of Children | | |
| None | 3 | 7.1% |
| 1 | 15 | 35.8% |
| 2-4 | 20 | 47.6% |
| 5 + | 4 | 9.5% |

Figure 1. COVID-19 survey results



DISCUSSION

Among this cohort of pregnant/recently pregnant Black women/birthing people living in low-income neighborhoods in Baltimore, attitudes towards vaccines during pregnancy ranged from favorable to extreme rejection. While other studies have examined the effect of race on vaccine uptake, (Quinn et al., 2017), this project focused on pregnant women/birthing people's attitudes about vaccines during pregnancy and their willingness to vaccinate themselves, as well as their children. Our findings identified a continuum of vaccine beliefs, with key salient subthemes. There is minimal historical data on vaccine attitudes among Black pregnant women/birthing people, therefore this study presents a unique perspective about this population conducted in a predominantly Black, historically socioeconomically disadvantaged area of Baltimore, Maryland – a city with a legacy of racial mistrust in healthcare (Brandon, Isaac, & LaVeist, 2005).

In regard to the routine immunizations – Tdap and influenza – there are three key findings from the focus groups, VSFGs, and interview:

- (1) Even those in favor of immunization expressed an overwhelming amount of distrust and hesitancy;
- (2) Pregnant women/birthing people view Tdap/Pertussis as more important and safer than influenza vaccine;
- (3) Social media (including Facebook, Twitter, and Instagram) and community members are the preferred sources of information on vaccines. While the lack of insurance or a co-pay were mentioned, the largest barrier was overall hesitancy towards vaccines related to concerns about side effects. The influenza vaccine was deemed “unnecessary,” whereas participants articulated direct benefits from protecting against whooping cough.

Spanning each of the focus groups was the underlying subtheme of mistrust – a finding not surprising given the historical context of racialized medical exploitation in Baltimore and the U.S. (Brandon et al., 2005). These results support other studies that identify trust as the central concept driving health care decision-making. Furthermore, when considering immunization, trust is an important deciding factor for whether to vaccinate (Larson et al., 2018).

Mistrust ranged from interactions with healthcare workers and hospital systems, to the government in general. This is likely directly connected to racial disparities in healthcare outcomes and lower levels of access to healthcare. There is a consistent racial disparity in vaccine coverage (Lu et al., 2015) and other studies have explored the multiple dimensions of trust related to immunization. This research affirms that Blacks, overall, report lower trust than Whites across all measures (Freimuth et al., 2017; Wooten, Luman, & Barker, 2007). For instance, Fu, Haimowitz, & Thompson investigated varying levels of trust in influenza vaccines and potential reasons for low uptake (Fu et al., 2019). Additionally, multiple studies found skepticism with the influenza vaccine due to the need for annual shots – a perceived moneymaker for the pharmaceutical industry. Given the legacy of racial mistrust toward the healthcare system and the experiences of specific minority groups in the US, it is understandable why Blacks would view the influenza vaccine specifically – and medical care in general – differently than other racial groups.

The ongoing COVID-19 pandemic gave our research team the opportunity to assess attitudes towards a new vaccine. The online survey furthered these results with more severe attitudes towards COVID-19 vaccines. Results included collective data from both Black/African

American and White participants. However, the overwhelming majority of women/birthing people identified as Black or African American (including interview/focus group discussants, and 95.2% of survey respondents). Women/birthing people from the same community who identified as White were included in the survey to serve as a comparison point for our population.

Participants identified physicians as sources of information, but overall, the majority still reported they would not receive a COVID-19 vaccine for themselves or their children. These findings highlight the need for educational initiatives and health interventions targeted at specific populations including low income, pregnant or recently pregnant Black women/birthing people, which is extremely relevant as the Omicron variant surges. Additional studies on attitudes towards COVID-19 vaccines prior to emergency use authorization showed that intent to vaccinate was significantly lower and hesitancy significantly higher among non-Hispanic Blacks/African Americans (Khubchandani et al., 2021; Largent et al., 2020; Salmon et al., 2021). Factors that have slightly increased willingness to vaccinate include higher degrees of vaccine efficacy (Kreps, Dasgupta, Brownstein, Hswen, & Kriner, 2021). Unfortunately, the concerns identified in our survey and other surveys have been realized, with fewer than 16% of pregnant, Black women/birthing people being fully vaccinated with COVID-19 vaccines as of September 2021 (Centers for Disease Control and Prevention, 2021c).

The importance of these findings is twofold: First, the data further clarifies attitudes towards vaccine hesitancy based on vaccine type and the decision-making process related to attitudes towards immunizations. Second, the findings will drive future messaging and intervention styles that align with the way individuals in this community seek information based on the vaccine. Overall, participants desired more information on vaccines, to include possible risks and side effects, which supports evidence found in other similar studies (Danchin et al., 2018; Dudley et al., 2020; Rosso et al., 2019). While public health professionals and healthcare providers cannot remedy the legacy of racism, they can “recognize that challenge, and take steps to strengthen trust with individuals and populations” (Jamison, Quinn, & Freimuth, 2019). One approach would be to refocus research from the exploration of the reasons for distrust in minority populations to investigating optimal means to earn the trust of minority populations (Jamison et al., 2019). Ultimately, interventions that disseminate information through trusted community individuals and institutions, and seek to remedy distrust of institutions, clinicians, and vaccines themselves, could enhance positive health outcomes for pregnant women/birthing people in this community. Partly as a result of these findings, BHB U/DH community health workers, who are already trusted in their community, have pivoted some of their work toward educating neighbors about the benefits and safety of COVID-19 vaccines, both in-person and through social media. Lessons learned from this effort may also be applicable to increasing influenza vaccination.

Significance and Implications for Future Research

Based on our findings, a multi-component intervention is the optimal way to reach economically underserved pregnant Black women/birthing people in Baltimore. Education on vaccines and vaccination is clearly important, coupled with improved outreach targeted to the needs of the specific community (e.g., pregnancy and parenting information). Partnering with community-based organizations to address concerns and provide education as well as working with the community and building trust through repeated conversations may improve immunization rates, particularly for the COVID-19 and influenza vaccines (Suryadevara, Bonville, Ferraioli, & Domachowske, 2013). Ensuring messages are delivered from trusted sources in the community is

critical, as has been shown previously (Fu et al., 2019). It is also essential to acknowledge the decision-making process of Black women/birthing people by asking and listening to their opinions, as well as following their recommendations. Possible strategies to increase acceptance include communication about vaccines from trusted sources and open and informative conversations about vaccine hesitancy. Understanding the barriers to vaccine uptake is extremely relevant during the COVID-19 pandemic. Black communities have been disproportionately affected by the pandemic and it has been shown that these communities are less likely to accept COVID-19 immunizations (Kaiser Family Foundation, 2021). Without targeted outreach and concerted efforts to disseminate accurate vaccine information, racial and ethnic health disparities will persist. Understanding the factors that contribute to disparities in vaccine coverage may allow for more adapted targeted approaches to increase vaccine uptake and enhance public health outcomes.

REFERENCES

- Advisory Committee on Immunization Practices. (2013). Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) in pregnant women--Advisory Committee on Immunization Practices (ACIP), 2012. *MMWR Morbidity Mortality Weekly Report*, 62(7), 131-135.
- Berg, B. L., & Lune, H. (2012). Qualitative research methods for the social sciences. In Pearson. (Ed.), (8th ed. ed.).
- Brandon, D. T., Isaac, L. A., & LaVeist, T. A. (2005). The legacy of Tuskegee and trust in medical care: is Tuskegee responsible for race differences in mistrust of medical care? *Journal of the National Medical Association*, 97(7), 951-956. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/16080664>
- Centers for Disease Control and Prevention. (2019). Flu Disparities Among Racial and Ethnic Minority Groups. Retrieved from <https://www.cdc.gov/flu/highrisk/disparities-racial-ethnic-minority-groups.html>
- Centers for Disease Control and Prevention. (2021a). COVID-19 vaccination among pregnant people aged 18-49 years overall, by race/ethnicity, and date reported to CDC - Vaccine Safety Datalink, * United States. Retrieved from <https://covid.cdc.gov/covid-data-tracker/#vaccinations-pregnant-women>
- Centers for Disease Control and Prevention. (2021b). COVID-19 Vaccines While Pregnant or Breastfeeding Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html>
- Centers for Disease Control and Prevention. (2021c). V-safe COVID-19 Vaccine Pregnancy Registry. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafepregnancyregistry.html>
- Danchin, M. H., Costa-Pinto, J., Attwell, K., Willaby, H., Wiley, K., Hoq, M., . . . Marshall, H. (2018). Vaccine decision-making begins in pregnancy: Correlation between vaccine concerns, intentions and maternal vaccination with subsequent childhood vaccine uptake. *Vaccine*, 36(44), 6473-6479. doi:<https://doi.org/10.1016/j.vaccine.2017.08.003>
- Dooling, K., Marin, M., Wallace, M., McClung, N., Chamberland, M., Lee, G. M., Oliver, S. E. (2021). The Advisory Committee on Immunization Practices' Updated Interim Recommendation for Allocation of COVID-19 Vaccine - United States, December 2020. *Journal of Health Disparities Research and Practice* Volume 15, Issue 3, Summer 2022 <http://digitalscholarship.unlv.edu/jhdrp/>
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- MMWR Morbidity Mortality Weekly Report*, 69(5152), 1657-1660. doi:10.15585/mmwr.mm695152e2
- Dudley, M. Z., Limaye, R. J., Omer, S. B., O'Leary, S. T., Ellingson, M. K., Spina, C. I., Salmon, D. A. (2020). Characterizing the vaccine knowledge, attitudes, beliefs, and intentions of pregnant women in Georgia and Colorado. *Human Vaccines & Immunotherapeutics*, 16(5), 1109-1117. doi:10.1080/21645515.2020.1717130
- Freimuth, V. S., Jamison, A. M., An, J., Hancock, G. R., & Quinn, S. C. (2017). Determinants of trust in the flu vaccine for African Americans and Whites. *Social Science & Medicine*, 193, 70-79. doi:<https://doi.org/10.1016/j.socscimed.2017.10.001>
- Fu, L. Y., Haimowitz, R., & Thompson, D. (2019). Community members trusted by African American parents for vaccine advice. *Human Vaccines & Immunotherapeutics*, 15(7-8), 1715-1722. doi:10.1080/21645515.2019.1581553
- Grohskopf, L. A., Sokolow, L. Z., Broder, K. R., Walter, E. B., Fry, A. M., & Jernigan, D. B. (2018). Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices-United States, 2018-19 Influenza Season. *MMWR Recommended Report*, 67(3), 1-20. doi:10.15585/mmwr.rr6703a1
- Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code Saturation Versus Meaning Saturation: How Many Interviews Are Enough? *Qualitative Health Research*, 27(4), 591-608. doi:10.1177/1049732316665344
- Jamison, A. M., Quinn, S. C., & Freimuth, V. S. (2019). "You don't trust a government vaccine": Narratives of institutional trust and influenza vaccination among African American and white adults. *Social Science & Medicine*, 221, 87-94. doi:10.1016/j.socscimed.2018.12.020
- Kaiser Family Foundation. (2021). Latest Data on COVID-19 Vaccinations by Race/Ethnicity. Retrieved from <https://www.kff.org/coronavirus-covid-19/issue-brief/latest-data-on-covid-19-vaccinations-by-race-ethnicity/>
- Khubchandani, J., Sharma, S., Price, J. H., Wiblishauser, M. J., Sharma, M., & Webb, F. J. (2021). COVID-19 Vaccination Hesitancy in the United States: A Rapid National Assessment. *Journal of Community Health*, 46(2), 270-277. doi:10.1007/s10900-020-00958-x
- Kreps, S., Dasgupta, N., Brownstein, J. S., Hswen, Y., & Kriner, D. L. (2021). Public attitudes toward COVID-19 vaccination: The role of vaccine attributes, incentives, and misinformation. *npj Vaccines*, 6(1), 73. doi:10.1038/s41541-021-00335-2
- Largent, E. A., Persad, G., Sangenito, S., Glickman, A., Boyle, C., & Emanuel, E. J. (2020). US Public Attitudes Toward COVID-19 Vaccine Mandates. *JAMA Network Open*, 3(12), e2033324-e2033324. doi:10.1001/jamanetworkopen.2020.33324
- Larson, H. J., Clarke, R. M., Jarrett, C., Eckersberger, E., Levine, Z., Schulz, W. S., & Paterson, P. (2018). Measuring trust in vaccination: A systematic review. *Human Vaccines & Immunotherapeutics*, 14(7), 1599-1609. doi:10.1080/21645515.2018.1459252
- Loomba, S., de Figueiredo, A., Piatek, S. J., de Graaf, K., & Larson, H. J. (2021). Measuring the impact of COVID-19 vaccine misinformation on vaccination intent in the UK and USA. *Nature Human Behavior*, 5(3), 337-348. doi:10.1038/s41562-021-01056-1
- Lu, P.-j., O'Halloran, A., Williams, W. W., Lindley, M. C., Farrall, S., & Bridges, C. B. (2015). Racial and Ethnic Disparities in Vaccination Coverage Among Adult Populations in the

55 Attitudes toward Influenza, Pertussis, and COVID-19 Vaccines among Economically Underserved Black Women/Birthing People
Cooper, et al.

- U.S. *American Journal of Preventive Medicine*, 49(6), S412-S425. doi: 10.1016/j.amepre.2015.03.005
- Nguyen, L. H., Joshi, A. D., Drew, D. A., Merino, J., Ma, W., Lo, C. H., . . . Chan, A. T. (2021). Racial and ethnic differences in COVID-19 vaccine hesitancy and uptake. *medRxiv*. doi:10.1101/2021.02.25.21252402
- Quinn, S. C., Jamison, A., Freimuth, V. S., An, J., Hancock, G. R., & Musa, D. (2017). Exploring racial influences on flu vaccine attitudes and behavior: Results of a national survey of White and African American adults. *Vaccine*, 35(8), 1167-1174. doi: 10.1016/j.vaccine.2016.12.046
- Rosso, A., Massimi, A., De Vito, C., Adamo, G., Baccolini, V., Marzuillo, C., . . . Villari, P. (2019). Knowledge and attitudes on pediatric vaccinations and intention to vaccinate in a sample of pregnant women from the City of Rome. *Vaccine*, 37(14), 1954-1963. doi:<https://doi.org/10.1016/j.vaccine.2019.02.049>
- Salmon, D. A., Dudley, M. Z., Brewer, J., Kan, L., Gerber, J. E., Budigan, H., . . . Schwartz, B. (2021). COVID-19 vaccination attitudes, values and intentions among United States adults prior to emergency use authorization. *Vaccine*, 39(19), 2698-2711. doi: 10.1016/j.vaccine.2021.03.034
- Stokes, E. K., Zambrano, L. D., Anderson, K. N., Marder, E. P., Raz, K. M., El Burai Felix, S., . . . Fullerton, K. E. (2020). Coronavirus Disease 2019 Case Surveillance - United States, January 22-May 30, 2020. *MMWR Morbidity Mortality Weekly Report*, 69(24), 759-765. doi:10.15585/mmwr.mm6924e2
- Suryadevara, M., Bonville, C. A., Ferraioli, F., & Domachowske, J. B. (2013). Community-Centered Education Improves Vaccination Rates in Children from Low-Income Households. *Pediatrics*, 132(2), 319-325. doi:10.1542/peds.2012-3927
- Vasquez Reyes, M. (2020). The Disproportional Impact of COVID-19 on African Americans. *Health and Human Rights*, 22(2), 299-307. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/33390715>
- Wilson, R. J., Paterson, P., Jarrett, C., & Larson, H. J. (2015). Understanding factors influencing vaccination acceptance during pregnancy globally: A literature review. *Vaccine*, 33(47), 6420-6429. doi:<https://doi.org/10.1016/j.vaccine.2015.08.046>
- Wooten, K. G., Luman, E. T., & Barker, L. E. (2007). Socioeconomic factors and persistent racial disparities in childhood vaccination. *American Journal of Health Behavior*, 31(4), 434-445. doi:10.5555/ajhb.2007.31.4.434