

Black American Vaccine Hesitancy: Using the Black Public Sphere to Understand How Minority Health Organizations Address the COVID-19 Vaccine on Twitter

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The unveiling of the COVID-19 vaccines has sparked widespread expressions of apprehension, distrust and fear. Especially among Black Americans, who have had a troubling relationship with Western medicine due to the centuries of medical oppression and racist practices by health practitioners. Researchers have found that culturally competent and ethnic targeted health messaging has worked to improve the health beliefs of Black Americans and to help Black patients adopt pro-social behaviors like vaccine uptake. In addition, online mediums like social media have been used in health communication as the world becomes more technologically connected. This study analyzes the Twitter messaging of three minority-based health organizations – the United States Department of Health and Human Services Office of Minority Health, the National Institute on Minority Health and Health Disparities, and Black Women’s Health Organization – to see how they combat the vaccine hesitancy of Black Americans. As guided by the Black public sphere, a content analysis of the organizations’ tweets found that they used communal frames, Black health care professionals and Black voices in their content, which aligned with the best practices for racially attuned messaging and differed from the mainstream presentation of the information. However, the organizations did not sufficiently address the elements or conversations distinct to Black Twitter users, specifically dialogue about the historical precedent of medical malpractice, which impeded their effectiveness in reaching the racial group. Evaluations of the content will be presented as guided by critical health communication recommendations.

Keywords: African Americans, COVID-19, vaccine apprehension, Black public sphere

Introduction

In a joint press release on April 13, 2021, the Center for Disease Control and Prevention (CDC) and the United States Food and Drug Administration (FDA) announced the immediate pause of the Johnson and Johnson (J&J) vaccine for COVID-19 (Office of the Commission, 2021). COVID-19 is the novel coronavirus that has since claimed the lives of more than six million people worldwide (Ritchie et al., 2021; The New York Times, 2021). Citing an “abundance of caution,” the two organizations state that six out of the 6.8 million people who got the J&J vaccine developed a rare type of blood clot, called cerebral venous sinus thrombosis (Office of the Commission, 2021). The cautionary language and lack of context in the press release fueled the growing anxiety of Americans about the efficacy of all the COVID-19 vaccines (Chow et al., 2021; Cohn, 2021; Linskey et al., 2021; Ruben & Goldberg, 2021).

Since the first FDA announcement of the emergency use of Pfizer’s COVID-19 vaccine in December 2020, Americans have been skeptical about getting any COVID inoculation. In partnership with German biotechnology company BioNTech, the biopharmaceutical company Pfizer used decades worth of scientific research, rapid clinical trials and an all-hands-on-deck approach to formulate the first approved COVID-19 vaccine (Browne, 2020; Pfizer, 2020a; 2020b; 2021). But, according to a December 2020 Pew Research Center survey, 40% of Americans said they would not get the vaccine, with 53% of those stating they would not get the vaccine even if there was more information (Funk & Tyson, 2020). Although vaccine apprehension had decreased more than 12% from the initial reports in May of 2020, Americans still cited personal concerns, distrust in the development process and even partisanship affiliation as reasons why they would not take the vaccine (Funk & Tyson, 2020; Szilagyi et al., 2021).

Overall vaccine skepticism has been seen amongst all Americans, but Black Americans' hesitancy towards the vaccine is the highest among all other racial groups. In a study conducted by the Kaiser Family Foundation, 52% of Black Americans stated they would "wait and see" before signing up for the vaccination, with only 20% committing to getting the vaccine when it was available (Hamel et al., 2021). This rate is lower than both White and Latin/Hispanic respondents in the survey. The majority of Black Americans also said they do not trust the vaccine, with only 14% stating they think it is safe, 18% stating they believe it is effective and 28% who said it was designed with "culturally specific testing and safety" (COVID Collaborative et al., 2020). When accounting for all other demographic information, the disparities amongst Black Americans are even more complex. Nationwide survey data from the U.S. Census found age discrepancies amongst vaccine apprehension. Black adults under the age of 40 were the most likely to state that they will not get the vaccine (Linke & Melgar, 2021) and Black men opting to wait for more vaccines rollout, at 45%, at a slighter higher rate than Black women, at 41% (Kaiser Family Foundation, 2021). The skepticism is combatted with disproportionate rates of Black Americans contracting and dying from the virus. Black Americans represent 14.9% of COVID-19-related deaths and are twice as likely to die from it compared to their White counterparts (APM Research Lab Staff, 2020).

Black American hesitancy toward the vaccine is not new, but a continuous consequence of the history of racist medical practices in American medicine (Cobb, 2020; McLernon, 2021; O'Donnell, 2020; Okorodudu & Okorodudu, 2021). Some of the biggest instances being of the Tuskegee syphilis experiment: the nearly 40-year-long study by the United States Public Health Services on nearly 400 impoverished African American sharecroppers in Alabama, who were injected with latent syphilis to see the effects of the STD when gone untreated (Brandt, 1978; Corbie-Smith, 1999; Reverby, 2013). This resulted in the death of 128 Black Americans. In addition, the Mississippi Appendectomy cases: the 60-year-long state-sponsored involuntary sterilization procedure that sterilized more than 8,000 poor women, 40% being Black, throughout the south (Sacks, 2019; Schully, 2004). These historic instances of maltreatment have set precedent and given credence to Black Americans' apprehension towards medicine as a whole.

Researchers have identified practices in health communication to overcome Black American uncertainty towards vaccines that include targeting local and national campaigns (McLernon, 2021), specific cultural framing for vaccine communication (Privor-Dumm & King, 2021; Quinn et al., 2016), and using social media and technology as a tool to relay health-related messaging (Leader et al., 2020; Puri et al., 2020). Specifically, Twitter has been identified as a viable medium for health messaging toward Black Americans due to the high percentage of Black users, the accessibility of the site and its ability to spark larger conversations (Brock, 2012; McClellan et al., 2016; Xu, 2016).

Purpose and Theoretical Framework

The purpose of this study is to understand the current COVID-19 vaccine messaging toward Black Americans to identify three things: if the information is culturally relevant, how it is framed to overcome vaccine apprehension, and how it caters to a Black specific audience. Black Americans' distrust of the COVID-19 vaccination has sparked public discussions in newspapers (Blackstock & Blackstock, 2021; Boodman, 2021; Kum, 2020), medical communities (Quinn et al., 2016; Robeznieks, 2020), and national public health entities like the CDC and the American Public Health Association (Akintobi et al., 2020; Ferdinand, 2021). This means that the issue is well-known amongst the scholarly community, medical practitioners and government-run health organizations. Solutions, recommendations and best practices have also been identified by scholars and members of the health field, and have been made available for widespread use. This study will test if those suggestions are being implemented, and how minority-based health organizations disseminate vaccine information to the most vulnerable and doubtful community: Black Americans.

German philosopher Jürgen Habermas' central concept of a public sphere will be used to guide this study. The idea of a public sphere is the literal and figurative arena where members of society get together to freely discuss issues to reach a common goal (Habermas et al., 1964; Calhoun, 1997; McKee,

2009). Despite its original conception envisioning a physical space for the public discourse, the idea of a public sphere has been used to explore online communities (Dahlberg, 2001; Moe, 2008; Papacharissi, 2002) and digital societies that emerge amongst social media users (Bruns & Highfield, 2015; Kruse et al., 2018; Shirky, 2011). The Black public sphere is specific to the Black diaspora, where members create spaces to connect, discuss issues, and circulate content that reflects the racial, cultural and social components of the group (Black Public Sphere Collective, 1995). Scholars have used the Black public sphere to explore how Black ecosystems are formed on the internet, particularly Twitter (Brock, 2012, 2020), and how they function outside of the mainstream voice (Lewis, 2012; Mahoney, 2021). Black Twitter users have been found to gravitate towards racial hashtags, events correlated with Black history and Black social influencers (Maragh, 2017; Pruitt, 2015; Sharma, 2013). The underpinnings of the public sphere will help in the assessment of the minority-based health organizations that are attempting to infiltrate Black online communities, which historically operate as a counter-public, to spread health information. The goals of this study are to answer these research questions:

RQ1 What are the major themes and elements in tweets from minority-based health organizations about the COVID-19 vaccine?

RQ2 What are the differences between how mainstream and minority-based health organizations present COVID-19 vaccine information and misinformation?

RQ3 Are mainstream and minority-based health organizations specifically addressing vaccination apprehension of Black Americans in their Twitter content?

Literature Review

Racist Medicine and Black Americans

In a deep dive into institutional racism in the medical field, John Hoberman (2012a) gives an overview of how medical racism is perpetuated and sustained throughout healthcare. Hoberman explains how medical texts screws data to privilege White patients, prejudice toward Black patients is reinforced through word-of-mouth anecdotes and the unwillingness of the health field to be self-critical, has created a harmful environment for Black people (Hoberman, 2012c; 2012b). This implicit bias toward Black patients has been seen as early as medical school (Hoberman, 2012b; van Ryn et al., 2015) with continued occurrences in the field (Sabin et al., 2009). Some of these racial biases include physicians stereotyping disease and treatment for African Americans upon seeing their skin color without a proper assessment (Moskowitz et al., 2012); perceiving that Black Americans are less prone to feeling pain when reporting the same or more amounts of pain than their White counterparts (Hoffman et al., 2016; Tait & Chibnall, 2014; Wyatt, 2008); and medical practitioners assuming Black patients' socioeconomic and health status when providing treatment options (Chapman et al., 2013; Greer, 2010; Moskowitz et al., 2012).

In addition, the biases have amassed to tension between White doctors and Black patients fueling a cycle of distrust that has continuously perpetuated standoffish behavior of practitioners while discouraging Black patients from seeking health care (Hoberman, 2012b). Levy (1985) found that regardless of social class, Black patients and White doctors can have a low-quality relationship due to cultural differences that are not alleviated or addressed by the doctors' medical training. Gordon et al. (2006) found that not only were Black patients more passive in inquiring about information regarding lung cancer treatment from their White doctors, but they received less information overall when they did ask. Elliott et al. (2016) even found that White doctors displayed significantly fewer positive and empathetic non-verbal cues towards Black patients compared to White ones. Studies have shown that the lack of communication between Black patients and White doctors has decreased the quality of care and health outcomes for Black Americans (Cooper et al., 2012; Kahn, 1994; Street et al., 2007). However, when Black patients are matched with Black doctors, they report greater satisfaction with the medical care and services (LaVeist & NuruJeter, 2002), which also corresponds to the litany of research documenting

better outcomes of health expectancy when Black patients are paired with doctors who are also Black (Alsan et al., 2019; Hill et al., 2018; Mahase, 2020).

Despite medical racism being well-known, the American medical community has yet to re-access its colorblind ideology (Hoberman, 2012a). In a 2015 systematic review, Hall et al. (2015) found that most healthcare providers had negative attitudes toward people of color, with Black patients facing the most implicit bias, although physicians stated they treat all patients the same. Malat et al. (2010) interviewed 22 White doctors and nurses and found that color-blindness drove their avoidance of acknowledging health disparities in practice when questioned about racist medicine. Clark-Hitt et al. (2010) found that White doctors were more likely to place blame on Black patients for health-related divergences than on their own racial bias. This history of medical racism has created a contentious environment, and especially during heightened times like the COVID-19 pandemic, where hyper-skeptical Black patients have instinctive angst towards western-based medicine and are increasingly difficult to reach.

Social Media and Health Communication

Social media has become a central source in spreading health information. Elements of social media like its cost-effectiveness and ability to reach audiences have made it an effective tool in health communication, which can subsequently affect health-related decisions (Moorhead, 2013; Yeung, 2018). In addition, online-based primary healthcare practices, like Brooklyn-based *Hello Health* and teletherapy organization *Talkspace*, have heavily used social media to promote services that have eschewed health insurance limitations and improved patient-doctor communication (Hawn, 2009; Wiederhold, 2018). Due to its growing popularity, political leaders and major health organizations – like the American Heart Association, the American Cancer Society, and the American Diabetes Association – have used social media to disseminate health information to the public (Marshall, 2019; Park et al., 2015; Powell, 2021).

There have been several studies on the uses of social media during viral disease outbreaks. During the Ebola outbreak in 2014, Fung et al. (2016) found that there was little medical misinformation about the disease on Twitter and users regularly disproved falsehoods when presented. In another study, D'Agostino et al. (2017) discovered that posting helpful health content on Twitter, particularly if locality was indicated, helped the information receive greater acceptability amongst users. During various outbreaks of influenza, researchers have found that some users of social media are more likely to be vaccinated than non-users (Ahmed et al. 2018; Jarrett et al., 2015); discourse about the virus on social networks is more likely to emphasize its harmfulness and encourage the flu shot than in traditional media (Lehmann et al., 2013); and how social media had a positive effect on mitigating the spread of the virus during peak outbreaks (Kumar et al., 2021).

For COVID-19 communication, social media has emerged as one of the most prevalent spaces to get immediate health information. Early research on the pandemic has found that social media influencers can have a positive impact on spreading helpful preventative measures (Khasawneh et al., 2021; Klucarova, 2021); online platforms can be used as a coping mechanism for groups looking for mental and emotional support (Pagnini et al., 2021); and social media can be used by government leaders to subdue fear, misinformation and divisive sentiments (Limaye et al., 2020; Powell, 2021). This study will build upon the growing body of work on social media use during the age of COVID as a crisis mitigating tool for health organizations.

Social Media and Health Misinformation

While social media has uprooted traditional barriers to obtaining health information, it also comes with its own issues. Pershad et. al (2018) found that the biggest issue with online health communication is the balance between popularity and accuracy, to which the popularity of a person giving the information is the clearest indicator of whether it will be well-received or not. Sylvia Chou et al. (2020) also found that there needs to be health surveillance of information on social media because it can propagate false

information about vaccines and even quasi health remedies that can have widespread effects on health decisions. In addition, some studies have shown that misinformation related to COVID-19 was more likely to circulate on social networking platforms and particularly on Twitter (Bridgman et al., 2020), with bots contributing greatly to COVID-19 conspiracy posts (Himelein-Wachowiak et al., 2020). Adding to the number of studies on social media's detrimental effects during health crises (Chrousos et al., 2020; Larson, 2018; Rubin, 2019), researchers have honed in on harmful uses of the internet, particularly during viral epidemics and pandemics.

The COVID-19 pandemic has created an even more divisive environment on social media as misinformation is strongly correlated with the political, geographical and cultural positions of users (Brindha et al., 2020; Leng et al., 2021; Tasnim et al., 2020). Looking at strongly partisan affiliated news institutions, Freiling et al. (2021) showed that a user's primary source of news correlated to their willingness to share false claims about COVID-19 online. Several studies have found that members of the Republican party or self-identified conservatives are more likely to spread false information about the virality, deadly effects and treatment options related to COVID-19 (Calvillo et al., 2020; Chen et al., 2021; Druckman et al., 2021). On more international-based social networking sites, like *WhatsApp* and *Telegram*, research has shown a surge of false claims and vaccine rumors amongst the older and non-Western populace that uses the platforms (Bowles et al., 2020; Malhotra, 2020). Correspondingly, different racial and ethnic groups across the world also share a variety of COVID-19 misconceptions across all social media sites (Guntuku et al., 2021; Muric et al., 2021).

Specific to the Black population, health misinformation during pandemics is strongly correlated to the historical mistreatment of Black patients and the solutions that were created to subvert the system (Druckman et al., 2021; Prasad, 2022). Oyeyemi et al. (2014) found that more than half of the Twitter posts pulled from Guinea, Nigeria and Liberia during the Ebola outbreak contained misinformation and those tweets had the greatest reach. Some treatment options posted by users contained pseudo-plant-based remedies as cures (Oyeyemi et al., 2014) and when local governments would dispute some of the false claims, those posts circulated at a smaller level. Early during the pandemic, notions of Black people's "natural" immunity to the disease caused long-term confusion about susceptibility and apprehension towards treatment, even after being disproven at large by the mass media (Tabong & Segtub, 2021). Misinformation on social media during the COVID-19 pandemic has continued to intensify Black American distrust in western medicine, and this study will analyze how health organizations effectively combat it.

Black Americans, Social Media and Effective Health Communication

In addition to the various uses of social media by Black Americans, the group has historically gravitated towards alternative and minority-focused organizations to get informed during their health decision processes (Brodie et al., 2010; Flanders et al., 2017; Mesch et al., 2012; Richardson et al., 2012). Caburnay et al. (2008) found that Black communities rated their local Black newspaper as a more trusted source for health-related news compared to national media and that the information is just as credible as advice from a healthcare provider (Caburnay et al., 2008). In a subsequent study, on the framing of genetic-related news, Caburnay et al. (2014) found that the Black press offered more recommendations for high-risk populations and highlighted individual responsibility to know their family history, whereas the mainstream press did not. The Black press also uses distinct health frames in their messaging emphasizing community-based involvement in treatment and preventive measures (Pickle et al., 2002); giving detailed analyses of healthcare policies and connecting individual choices to health disparities within the community (Rasmussen, 2014); and can subsidize the mainstream news by addressing minority issues and concerns (Brodie et al., 199). Alternative media and minority-focused media are more trusted within the Black community and specifically frame health information in ways that the mainstream media does not. This study builds upon that assumption and will investigate how minority-focused organizations present COVID-19 vaccine information to Black Americans.

Understanding the different cultural, linguistic and historical barriers that Black Americans have had to endure, critical research has been done to guide entities in their health communication with the vulnerable group. Quinn (2017) found that when health care providers recommended a service, like the flu vaccine, African Americans are more likely to see it as important to their health. In addition, she found that discussions with high-risk patients about the benefits of the vaccine and potential complications can improve trust within patients, which correlates to getting the vaccine (Quinn, 2017). In a meta-analysis of flu-related communication, Nowak et al. (2015) found that intergenerational photos of African Americans in influenza public service announcements were an important factor to garner African Americans' attention and increase their influenza vaccine uptake. Pictures of African Americans in health communication can also overcome low literacy barriers among the community (Houts et al., 2006), increase enrollment in health programs (Goodman et al., 2017), and improve their overall engagement with health information (Kreuter et al., 2008).

There are also distinctions in how health data is presented. In a focus group, Sanders Thompson et al. (2008) found that specific statistical information about the affected community, as opposed to general stats, increased the attentiveness of the participants and especially if it was paired with information about the signs and symptoms (Sanders Thompson et al., 2008). Furthermore, having static "ethnic-specific" statements regarding disparity and prevalence was also preferred by African Americans and increased the relevance of the information (Sanders Thompson et al., 2008). Baty et al. (2003) also utilized a focus group of African Americans and discovered that they responded more to "personalized" and "relevant" information about their targeted group, rather than technical detail (Baty et al., 2003). They also note that the most successful strategies were:

"nontechnical images to explain genetic concepts, clip art images to energize and personalize word slides, vibrant color, identifiably African American figures, and the development of themes relevant to many African Americans." (Baty et al., 2003).

The practices that have been identified to help increase overall attentiveness to health content and preferred communication methods by Black Americans will be used in the present study's analysis of the data. Not only will these strategies help in evaluating the perceived effectiveness of the minority-focused organizations messaging, but they can also help identify where improvements need to be made. With the history of medical mistreatments toward Black Americans, the uncorrected practices that have amplified health disparities, the uses and misuses of social media for health information, and the vital role of cultural competency to effectively reach the Black community – this study's goal will evaluate a modern pandemic and vaccination communication towards Black Americans.

Methodology and Research Design

A content analysis was implemented on tweets from six health organizations to analyze their COVID-19 vaccine messaging. Content analyses are a commonly used qualitative methodological approach to get a deeper understanding of data that is text-based (Downe-Wamboldt, 1992; Shelley & Krippendorff, 1984) and offer a systematic way to review large sums of text in order to draw trends (Berelson, 1952; Harwood & Garry, 2003; Stemler, 2000). Content analysis has also been extensively used in health communication research to understand messaging of health information to the public (Vargas & De Pyssl, 1999; Hsieh & Shannon, 2005).

Only verified Twitter accounts were chosen for this study, as the verification symbol not only indicates to Twitter users that the account is certifiable real but also means that those accounts are deemed more trustworthy and authentic than unverified accounts (Kabakuş & Şimşek, 2019; Paul et al. 2019). This also confirmed that the Twitter accounts were the actual accounts of the respective organization. Purposeful sampling is an analytic procedure that can be used for qualitative data collection and analysis to assemble the most information-rich records during specific times and particularly when there are limited resources (Palinkas et al., 2015; Patton, 2014). For this study, this process was used to gather tweets from specific health organizations that target minorities.

The minority-focused health organizations that were chosen are the United States Department of Health and Human Services Office of Minority Health (@MinorityHealth), the National Institute on Minority Health and Health Disparities (@NIMHD), and Black Women's Health Organization (@blkWomensHealth). Two of these organizations are government-run, @MinorityHealth and @NIMHD, and one is a non-profit, @blkWomensHealth. Although Black Women's Health was originally found to address the health and reproductive rights of African American women (Black Women's Health, n.d.), it was chosen because Black women have been found to be the decision-makers for health-related issues of their families (Matoff-Stepp et al., 2014; McCarroll & Frantz, 2015). Thus, analyzing a Black women-specific organization can give insight into information an entire Black family receives. These three organizations were chosen because they are all centered on minority health messaging and have the three largest Twitter presences compared to other minority-based health organizations.

The three mainstream health organizations chosen for this study are the Center for Disease Control and Prevention (@CDCgov), the United States Department of Health & Human Services (@HHSgov), and the American Public Health Association (@PublicHealth). Two of these organizations are government-run, @CDCgov and @HHSgov, and one is a non-profit, @PublicHealth. These organizations were chosen as they too have the largest Twitter following of any U.S.-based mainstream health organization.

An advanced Twitter search was conducted on April 14, 2021, using each organization's "@" name and the word "vaccine" to vet posts that were vaccine-related. Additionally, only tweets from January 1, 2020, were used, to ensure the "vaccine" tweet is related to COVID-19 and no other vaccine information. After the search was conducted, all tweets were manually extrapolated and put into an excel file for each organization. Photos were also pulled from vaccine tweets, for further analysis. Tweets with the term "vaccine" that were not related to the COVID-19 vaccine, were manually removed from the sample.

A thematic analysis was then applied to each of the organizations individually and then redone per the two categories, minority-based and mainstream, to understand individual and collective sentiments. Thematic analysis is often used in conjunction with qualitative methodologies to aid in the formation of themes and highlight "similarities and differences, and generating unanticipated insights" (King, 2004; Nowell et al., 2017). This will be helpful in the individual and group synthesis, as well as for comparative purposes across minority-based content and mainstream content.

A thematic analysis relies on coding procedures to identify and categorize themes (Braun & Clarke, 2012). Braun and Clarke (2012) detailed a six-phase process for coding to use with thematic analyses. The first phase is the initial reading of the data; in phase two an early set of codes are formulated; in the third phase codes are combined into primary themes; in phase four the themes are analyzed for how they support the data; in phase five a comprehensive analysis of each theme is conducted; and phase six is the final write up the findings (Braun & Clarke, 2012). This coding process was applied to the data collected in the study.

Findings

A total of 280 tweets across all organizations were vaccine-related content from January 1, 2020, to April 14, 2021. See Table 1 for the breakdown of the followers and number of tweets per health organization. Minority-based health organizations produced 109 vaccine-related tweets, the majority being from government-based health organizations (@MinorityHealth and @NIMHD). Mainstream health organizations produced 171 tweets. The follower ratio of the mainstream to minority-based health organizations was 42:1 and the vaccine tweet ratio was 1:5. Five themes were found in minority-based organizations' vaccine Twitter messaging that were used to answer the research questions.

Table 1

Followers, Vaccine Tweet Count and Focus of Twitter Health Organizations

Account	Followers	Number of Vaccine-Related Tweets	Focus
@MinorityHealth	71,400	51	Minority
@NIMHD	21,100	50	Minority
@blkWomensHealth	31,600	8	Minority
@CDC	3,800,000	69	Mainstream
@HHSGov	1,000,000	45	Mainstream
@PublicHealth	504,000	57	Mainstream

How Do Minority Organizations Present Covid Information on Twitter?

Black Faces and Clinical Trials

There were two main themes that emerged in the ways that minority-based health organizations disseminate vaccine information on Twitter. The first one is the utilization of authoritative Black leaders to speak about vaccine efficacy and effectiveness. Minority-based health organizations only used minorities, apart from Dr. Fauci, when they used a healthcare professional in their post. In one tweet by @MinorityHealth, they insert a quote: *"In addition to the review of data by career FDA scientists, there are multiple additional independent reviews of data for both safety & effectiveness before a COVID vaccine is approved & safety data continues to be collected..."* along with a video of a Black physician and the Minority Health Director, Dr. Felicia Collins, overviewing the research that went into the vaccine. The use of a Black doctor, health care specialist or researcher was seen on all the minority health organizations' tweets and indicated that the information given was coming from a member of the Black community. More examples included using a full Black panelist of doctors to speak about the vaccine development, a virtual health fair run by Black nurses and a virtual conference with people in the Black community called *BlackPeopleLikeMe*.

The second prevalent theme was the emphasis on Black Americans who got the vaccine or volunteered for a clinical trial. @NIMHD had several stories posted about Black healthcare leaders who volunteered themselves and their families for the vaccine trial. @BLKWomensHealth even highlighted the story of the first Black ICU nurse to get the vaccine in New York. These types of content often had a quick synopsis of the speaker and external links provided in the tweet. Minority organizations also stressed the importance of diversity in the clinical trials for the vaccine. Some of those tweets included:

"why diversity in #clinicaltrials is important to ensure vaccines are safe for everyone."

"NIH-funded clinical trials are underway to develop #COVID19 treatments and vaccines. These trials must include participation of diverse communities across the country. Learn how your participation can make a difference: <https://bit.ly/3pJZnuh> #ConquerCOVID #NIHCEAL"

All the government-based minority health organizations frequently made posts about clinical trials and attempted to solicit minorities to sign up for a trial to improve the overall development of the vaccine. These posts tended to have imagery, infographic or collages, of smiling racial minorities and links to sign up for a trial. These posts were also supplemented with community-oriented incentives like this one by @NIMHD:

"#DYK that when you get vaccinated, you're protecting yourself, your family, & your community? That's why NIH-funded scientists are working hard to develop #COVID19 vaccines that can help #StopTheSpread. Learn more."

And these by @MinorityHealth:

"You can help science move forward. Clinical trials to find a vaccine for #COVID19 are

taking place in your community. Learn more about participating”

“#DYK that when you get vaccinated, you’re protecting yourself, your family and your community? That’s why NIH-funded scientists are working hard to find a [#COVID19 vaccine](#) to help [#stopthespread](#). Learn more:”

These types of tweets were also more prone to specifically call out an ethnic or racial group like this tweet by @NIMHD:

“Data show that #COVID19 affects Black, Hispanic/Latino, & Native American populations at much higher rates. Including these groups in #ClinicalResearch can ensure the resulting vaccines and treatments will work for the people with greatest need.”

Hashtags and Photos for Vaccine Information

Minority-based health organizations also primarily used visuals and hashtags in their COVID-19 vaccination posts to supplement the content of the tweets. Pictures or videos accompanied almost every tweet across all three organizations. The majority of the pictures had a photo of a person of color with text somewhere on the photo. For the two governmental organizations, @NIMHD and @MinorityHealth, most of the images were watermarked by the CDC or the National Institute of Health and the photos had links to their websites to get more information. Other types of imagery include text-only photos and those were more frequently used for tweets that spoke about upcoming panels or news updates.

Only two videos were used on Twitter posts, and both were by @MinorityHealth. The first was a 2-minute clip of Dr. Lashawn McIver, a Black woman who is the Director of the Office of Minority Health, who was advocating for people to get the vaccine and communicating that it was free for all people regardless of their insurance or immigration status. In another tweet, the Associate Commissioner for the Office of Minority Health, a Latina woman named Richardae Araojo, explains that additional COVID-19 vaccine information is available on their website in a variety of languages.

Hashtags were used in almost every Twitter post from the minority-based health organizations about the COVID-19 vaccine. These hashtags included #DYK (do you know), #VaccineReady, #StopTheSpread and #COVID-19. The most comprehensive use was made by @NIMHD that posted “April is #NationalMinorityHealthMonth and this year’s theme is #VaccineReady. Together we can #StopTheSpread and empower underserved communities to get the facts about #COVID19 vaccines.” The hashtag #ClinicalTrial was solely used by the @NIMHD in tweets regarding the need for minorities to sign up for vaccine clinical trials. The hashtag #BlackWomensHealth was used solely by @blkwomenshealth in a post about a Black woman who did coronavirus research and was the only hashtag to indicate a racial identifier. @MinorityHealth had one-off uses of the hashtags #HealthCareProfessionals, #Fauci, #MondayMotivation and #WednesdayWisdom.

Differences in Mainstream and Minority Vaccine Information

Mainstream health organizations relayed more information about how vaccines work to prevent COVID-19 and how getting the vaccine can decrease the spread of the virus. Some of that information looked like this tweet from @HHSgov: “COVID-19 vaccines help our bodies develop immunity to the virus that causes COVID-19 without us having to get the illness. Learn more from the CDC” and these tweets from @CDCgov:

“mRNA vaccines teach our cells how to make a protein that triggers an immune response to #COVID19 inside our bodies. The immune response makes antibodies that protect us from getting infected if the real virus enters our bodies. More:”

“Nearly 154 million doses of #COVID19 vaccines have been administered in the U.S. Recent increases in COVID-19 cases and variants threaten this progress. The race to contain the virus is underway. Our actions will determine the outcome. Learn more”

Mainstream health organizations coupled these posts, with additional videos, infographics or links to outside sources that went into more detail. These organizations made tweets about the side effects of

getting the vaccine – like fever, soreness, flu-like symptoms – and positioned them as normal happenings. They also listed safety precautions that Americans should follow, even after getting the vaccine, like being socially distant and the continuous use of masks.

Minority-based health organizations were less likely to post about the vaccine logistics, side effects or how it works, and almost never had any of that information in their actual tweet. Only one post from the minority-based health organizations addressed the vaccine process and effects explicitly, from the @MinorityHealth:

#DYK the #COVID19 vaccines do not contain the live virus that causes the disease? Having symptoms like fever after you get a #vaccine is normal and a sign your immune system is learning to fight the virus. Learn the facts & get #VaccineReady

Instead, minority-based health organizations indicated that questions about how the vaccine works would be explained in an upcoming panel, video, or is detailed on an external website that was linked in the tweet. The majority of tweets plainly stated the vaccine was effective, but also urged minorities to sign up for clinical trials to confirm the presupposed effectiveness and help their community, like these tweets from @MinorityHealth, @NIMHD and @blkWomensHealth:

“Face coverings and quarantining of those infected with coronavirus can help stop the spread. But a safe & effective vaccine is our #BestShot against #COVID19. Learn how enrolling in a clinical trial can help. <https://go.usa.gov/xfShb> #ConquerCOVID19 #NativeHealthChat”

“A7: DYK? Hispanics/Latinos are 4–5× more likely to be hospitalized for COVID-19. #ClinicalTrials can help determine whether vaccines & treatments are safe & effective. Learn more about clinical trial participation in Spanish. #HealthyLatinos”

“Q6/A6: Pt. 2 - Covid19 vaccine trials further highlight the importance and the need for all black and brown communities.”

Differences in Mainstream and Minority Vaccine Addressing Misinformation

Mainstream health organizations posted a considerable number of tweets debunking vaccine myths and misinformation. This type of messaging was seen among all the mainstream organizations, with the majority coming from @Public Health and @HHSGov. A majority of these tweets demystified questions surrounding the vaccine modifying a person’s DNA. Mainstream organizations tended to use videos and infographics with these tweets that reinforced the information.

Minority-based health organizations also addressed misinformation but in a more subtle way that would require more engagement from the Twitter user to get the information. Whereas mainstream health organizations were more prone to answering the hesitancy questions directly in the Twitter post, minority organizations did not. Instead, they would post links to conversations and panels to address concerns and questions about the vaccine.

Vaccine Apprehension of Black Americans

As a collective, neither mainstream nor minority-based health organization did a substantiated job at addressing the vaccine apprehension of Black Americans. Although it was only two tweets, @PublicHealth had the most posts about the lack of trust from African Americans towards the vaccine. Those tweets were:

“Trust in a #COVID19 vaccine is low in Black and Hispanic communities, a new survey says. To protect health, we must identify and address misconceptions & concerns around vaccine safety and effectiveness. <http://covidcollaborative.us>”

“Watch live on Thursday, Feb. 25, at 9AM ET: APHA's Benjamin joins experts to talk about #COVID19 vaccine hesitancy, particularly in the Black community. What steps can we take to build trust? [https://facebook.com/events/253348662992277/...](https://facebook.com/events/253348662992277/) #CVSHealthLive”

While minority-based health organizations had general tweets about where to inquire more information about the COVID-19 vaccine, they never specifically addressed Black American apprehensiveness toward the vaccine. However, both the minority-based and mainstream health organizations had statical information about COVID-19 disproportionately affecting African Americans and used that as a point to push vaccination uptake.

Discussion

This study showed that minority-based health organizations' use of Twitter to inform Black Americans about the COVID-19 vaccine has been acceptable, but they overall fail to incorporate distinct culturally-attuned content. The use of Black people by the minority-based health organizations to speak as authoritative figures is a choice decision to gain the support of Black Americans, who are more prone to listening to health information from someone who looks like them (Alsan et al., 2019; Nowak et al., 2015). This is distinctly different from the mainstream organizations, which showed Black faces as somewhat removed from the content and did not explicitly indicate that the information presented was given by a minority figure in the health field. The use of Black professionals not only provides more credibility to the information, but people within the same community can understand cultural contexts in how they present information.

Partnering the need for diversity within the clinical trials and the collective benefits of getting the vaccine, as the Black press does often (Pickle et al., 2002), was presented to help Black Americans connect their individual decisions to the “greater good” and benefits to their community. Especially when this content is alongside photos of Black people, it works to signal behaviors towards positive collective action for Black Americans. The representations of Black people in health communication photos can increase attentiveness to the information because Black people can racially identify with them.

The use of hashtags was a bit divided because although they connected minority-specific posts to greater conversations about COVID-19, only one hashtag (#BlackWomensHealth) reflected a racial cue to discourse within the Black sphere alone. Using hashtags can help users identify that a post is a part of a bigger conversation. However, the lack of hashtags specific to a niche online community like Black Twitter could work against the minority-based health organizations in their strategies to infiltrate the group. Statistical information pertaining to the targeted community alone was also not used by any of the minority-based health organizations but could have been utilized to invoke vaccination immediacy among Black Americans.

Minority-based health organizations greatly differed from mainstream ones in the frames and content they used regarding the vaccine. Minority-based health organizations framed vaccination as a communal benefit to the Black community and focused on the trials rather than the logistical facts about the vaccine. The literature shows that Black Americans respond better to this community-based approach, but they also have better engagement with information regarding disparity, risk factors and prevalence – all of which were not addressed in the tweets analyzed from the minority-based health organizations. These organizations could improve their health messaging by using disparity and risk framing, which will better target Black audiences and help educate Black communities about the need for vaccines.

The biggest miss from minority-based health organizations was their failure to address the historical factors that have cumulated behind vaccine apprehension. These organizations fell in line with “colorblind medicine” practices, which have been shown to perpetuate health disparities among Black Americans. This replicated the trend in the mainstream health organizations of ignoring racial disparities, which continues to suppress a large bulk of the discourse from Black users online who have concerns about the vaccine. Assuming that audiences have time to watch a 30-minute panel, or wait until a live chat, is a poor judgment from these organizations, especially compared to mainstream organizations that have created infographics and visual posts to address general apprehension. Greater attention needs to be

paid to outwardly acknowledge Black American vaccine hesitancy, addressing the conversations of Black users and fighting misinformation about vaccines on social media.

Utilizing the Black public sphere in health messaging can be used as an addendum with various methodological approaches to better guide the interpretation of health information within a Black-centered community. Currently, the public sphere has been used in some studies on health narratives, health news, health data and other health-related content (Beck et al., 2013; Briggs & Hallin, 2010; Hallin et al., 2013; Holtzhausen, 2016), which has helped provide validity to the use of the public sphere in health communication. However, the utilization of the Black public sphere provides a new opportunity to analyze a vulnerable community and it fills in the gap in the literature that has yet to sufficiently use the ethnic-iteration of the theory in the health field. Critical health communication has identified strategic elements to target minority groups, however, these practices can look different as applied to Black communities in-person or online. Specifically, with Twitter, the explicit verbalization of historic and racial sentiments particularly resonates amongst its Black users and can alter the application of strategic practices. This study showed that “Black” hashtags and historic contexts are missing largely from health communication on Twitter and can hinder the acceptability of vital health information from Black Americans.

Limitations and Conclusion

This study focused on the Twitter posts from three minority-based health organizations, and not the total social media messaging from these organizations. These organizations utilize a plethora of social media platforms—like Instagram, Facebook and YouTube—where they also presumably post public vaccine information. Furthermore, this study only looked at three minority-based health organizations with the highest Twitter presence, among the hundreds of minority-based health organizations that use Twitter. These findings are not generalizable towards the entire Twitter health messaging that is specialized towards Black Americans; however, this study can indicate the trends in messaging due to these organizations having the largest following.

Minority-based health organizations’ use of Twitter in educating and informing Black Americans about new health treatments is another instrument to help overcome widespread health disparities. COVID-19 has added to the already growing list of health issues that disproportionately affect marginalized groups and communities. When focusing on a vulnerable group, special attention must be paid to catering information to the group and the supportive materials for that information. Subsequently, entities need to learn the cultural, social habits and cues of the group to effectively enter the community that often operates as a counter-public to the mainstream.

Critical health communication research has identified practices that help reach these communities and overall improve uptake in proactive health decisions. However, this is only half the battle; medical practitioners and health organizations need to be instrumental in applying culturally sensitive practices and teaching anti-racist medicine in order to make a long-lasting impact. As COVID-19 vaccine intake increases, as it becomes more accessible and required by some employers, future studies can be conducted on Black Americans to understand how social media influenced their decision to take it. In addition, studies on the Black followers of minority-based health organizations can also be done to understand how the organization’s information directly influences the health-related behaviors of a highly engaged consumer. This study can also be replicated on other minority or marginalized groups, who have a turbulent history with Western medicine. The implications of this kind of research can help bolster and expand the findings in critical health communication and better craft health messaging for vulnerable groups in the future.

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