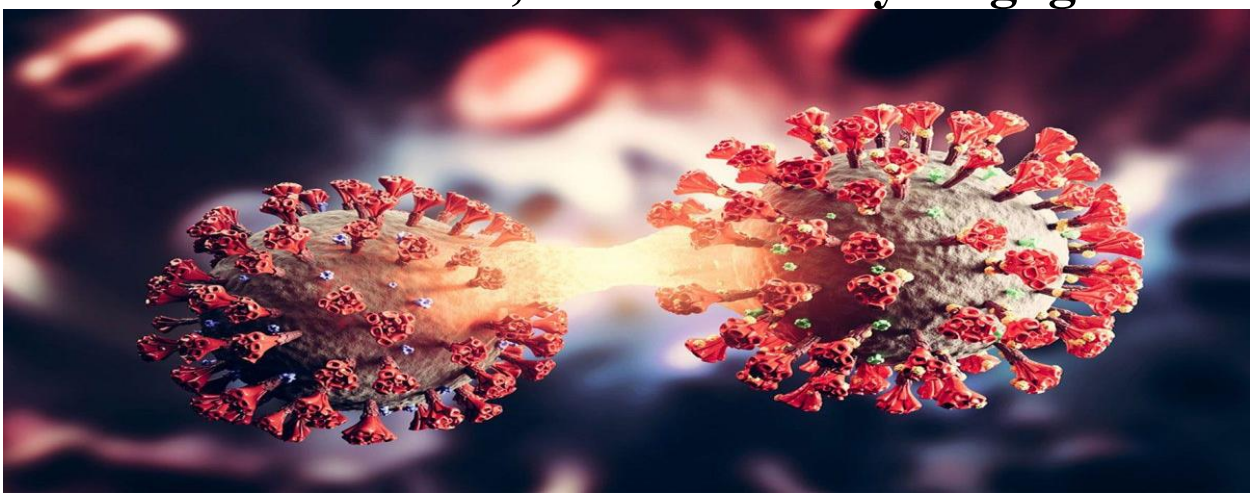
Mississippi Urban Research Center
Online Journal
of Rural and
Urban Research

Special Edition

COVID-19:

Challenges to Healthcare Programming, Vaccination Efforts, & Community Engagement



Spring 2023

JSU 1877 JACKSON STATE UNIVERSITY®

Table of Contents

Preface

The Coronavirus (COVID-19) pandemic created historic public health, economic, and social challenges globally and locally. The virus outbreak led to: wide-spread illnesses and deaths; a global economic crisis; major disruptions in education and employment systems; surging mental health-related cases resulting from individual isolation and community lockdowns; wide-spread fear and miscommunications; and changes in the way individuals, institutions, and organizations conducted their daily activities. This special edition of the *MURC Online Journal of Rural and Urban Research* features several articles that highlight many of the above challenges encountered by organizations, policymakers, health officials, individuals, and families during the early stages of the pandemic. It also shares lessons learned from adapting to the pandemic.

In this edition, the operational and cultural challenges encountered by the healthcare organization Magnolia Medical Foundation are highlighted as an example of the virus' impact on a healthcare organization. Also presented is research from public health and social science officials discussing "vaccine hesitancy," and how communications and trust-related issues impacted community engagement efforts to contain the virus. And finally, the personal testimony of one student researcher who experienced the health, educational, economic, and family impact of COVID-19 is shared to illustrate and humanize the virus' many effects.

The goal of this journal edition is to provide the reader with unique insights, perspectives, and recommendations as to how some organizations, individuals, communities, and healthcare providers adapted to the COVID-19 pandemic during its early stages. One cross-cutting theme linking all the journal articles is the virus' impact on underserved communities in need of vital healthcare services. The authors' research findings and accompanying recommendations help provide a blueprint for addressing current and future health-related issues particularly impacting those communities. As becomes readily apparent in reading this journal edition, some minority and marginalized communities often face additional challenges during a health crisis that are related to language, available resources, and access to services. This journal edition seeks to provide readers with information that can be used to improve health-related conditions for all communities regardless of their socio-economic status, racial identity, or geographic location.

Acknowledgements

The publisher of this edition would like to thank all internal and external reviewers for your time, effort, reviews, and feedback on this project. A word of thanks is also extended to those organizations and individuals who provided valuable insight and recommendations on the impact of COVID-19 in their local communities. Your contributions are greatly valued in helping to ensure the quality and utility of this special edition.

Journal Articles

Vaccine Hesitancy and COVID-19 Resource Hesitancy Among Diverse Populations on the Mississippi Gulf Coast

Authors:

Justice Nguyen, MPH, Magnolia Medical Foundation, Gulfport, MS, justice.nguyen@magmedfound.org

Mireya Alexander, BA, LSC, CHW, Program Manager, Magnolia Medical Foundation, Gulfport, MS, mireya.alexander@magmedfound.org

Erica Thompson, MD, MPH, Chief Executive Officer, Magnolia Medical Foundation, Gulfport, MS, magnoliamedfoundation@gmail.com

Sandra C. Melvin, DrPH, MPH, Chief Executive Officer, Institute for the Advancement of Minority Health, Jackson, MS, smelvin@advancingminorityhealth.org

Nakeitra Burse, DrPH, CHES, Owner Principal Strategist, Six Dimensions, Ridgeland, MS, nburse@sixdims.com

Abstract

Background: According to the Mississippi State Department of Health (2022), only 52% of Mississippi's population had a vaccine uptake of at least one dose, and only 45% had been fully vaccinated. Those rates are lower than the national average for vaccination rates which is 74.4% for at least one dose, and 62.2% for full vaccinations (CDC, 2022). *Objective:* This study examined trends, patterns, and factors that influenced vaccine and COVID-19 resource hesitancy among selected communities residing in the Mississippi Gulf Coast region. *Design:* This study utilized a cross-section comparative design examining the time period from August 2021 to October 2021. Participants were gathered using convenience sampling conducted during Magnolia Medical Foundation's community events. Investigations focused on determining disparities and differences between individuals who primarily spoke English and individuals who primarily spoke Spanish. Two hundred one surveys (n = 201) were analyzed using Chi square and Odds Ratios analysis. *Results:* There were significant associations between vaccine hesitancy, COVID-19 resource hesitancy, and selected factors (e.g. time availability, affordability, transportation, and internet access) suggesting participants who were hesitant to use COVID-19 resources were: more likely to report not being vaccinated; more likely to be from Harrison County; and did not have transportation to receive or access COVID-19 resources. In comparing participants who primarily spoke English and participants who primarily spoke Spanish, findings indicated participants who primarily spoke Spanish were more likely to report issues related to both vaccine hesitancy and resource hesitancy. *Conclusions:* Vaccine hesitancy and COVID-19 resource hesitancy are associated with many factors, and there are clear disparities for those who primarily speak Spanish related to vaccine hesitancy and using COVID-

19 resources. Future program and research activities should focus on information that can help mitigate those factors contributing to vaccine and COVID-19 resource hesitancy.

Keywords: COVID-19, vaccine hesitancy, vaccine uptake, Mississippi, Gulf Coast

Introduction

According to the Mississippi State Department of Health (Mississippi State Department of Health [MSDH], 2022), Mississippi is one of the states with the lowest percentage of COVID-19 vaccine uptake. As of January 11, 2022, only 52% of the population had at least one vaccine dose, and only 45% have been fully vaccinated (MSDH, 2022). These percentages fall under the national average for vaccination rates, which is 74.4% for at least one dose and 62.2% for full vaccinations (Center for Disease Control and Prevention [CDC], 2022). According to the CDC (2021), Mississippi had a 16% to 20% vaccination hesitancy rate dependent on county. Magnolia Medical Foundation (MMF), in partnership with The University of Southern Mississippi, Mississippi Public Health Institute, and other affiliate organizations have worked to increase access to COVID-19 resources and education as well as identify the barriers to vaccine uptake among the state's most vulnerable residents.

The purpose of this study is to gain a better understanding of perceptions regarding structural barriers to COVID-19 vaccine uptake, using COVID-19 resources, and other factors influencing vaccination hesitancy within African-American and Hispanic communities on the Mississippi Gulf Coast. For purposes of this study, vaccine hesitancy refers to delay in acceptance, or refusal, of vaccination despite the availability of vaccination services. Vaccine uptake is the number of people vaccinated with a certain dose of the COVID-19 vaccine in a certain time period, which can be expressed as an absolute number or as the proportion of a target population. From a health equity standpoint, access and availability refers to the systems in

place to ensure that those individuals in the community that want to obtain the vaccine can do so regardless of socioeconomic status or other factors known to influence the development of health disparities. The next section presents the methodology used to conduct this study.

Methodology

This study utilized a cross-sectional comparative design examining the time period from August 2021 to October 2021. A questionnaire (termed "Operation COVID-19") developed by the Institute for the Advancement of Minority Health and the Magnolia Medical Foundation was administered to individuals from communities on the Mississippi Gulf Coast. Participants were surveyed using convenience sampling conducted during Magnolia Medical Foundation's community events. The survey was distributed in Harrison and Jackson counties at events that included two vaccination drive events, one back-to-school event, and various community health advisor (CHA) activities in primarily Spanish-speaking communities.

Survey Design

The survey consisted of 14 qualitative and quantitative questions. The survey examined participants' opinions regarding various structural barriers for vaccination uptake and accessibility of COVID-19 resources. In addition to one open-ended question, the survey contained a series of 13 binary (yes or no) questions regarding vaccination status and different factors relative to vaccine hesitancy and COVID-19 resource hesitancy. The survey questions asked: if participants were vaccinated; if they were hesitant to receive the vaccine; if they believed time was an issue in receiving the vaccination; if they had transportation to vaccination sites; if long lines affected their decision to get vaccinated; if the price of a medical visit to receive the vaccine affected their decision to get vaccinated; if the location of clinics that provide

vaccinations affected their decision to get vaccinated; if they could afford COVID-19 resources (e.g., masks, gloves, hand sanitizer); if they had transportation to access COVID-19 resources; if COVID-19 resources were easily accessible to them; if they were hesitant to use COVID-19 resources; and if COVID-19 resources were available to them.

There was one open-ended question in the survey. This question served as a follow-up question regarding whether participants were hesitant to getting a vaccination. If the survey participant said "yes" to being hesitant to receiving the vaccination, then the participant was asked to provide reasons for the hesitancy. Responses for this question were separated and organized into different categories during data analysis.

To ensure validity, the inclusion criteria for collected surveys was five or less incomplete responses. Magnolia Medical Foundation (MMF) collected surveys during various community outreach events. Surveys were distributed in either English or Spanish as necessary. Due to the nature of MMF's work, there was a high inclusion of surveys from primarily Spanish- speaking communities. Full translation and explanation of the survey in Spanish was also provided by members of MMF and CHA.

Data Analysis

Responses to survey questions were analyzed and converted to descriptive statistics that included frequency counts, percentages, and proportions. Additional analysis was conducted utilizing Chi-square and Odd Ratios statistics to identify significant associations and differences between key study variables. Specific variables examined included vaccine hesitancy, vaccine uptake, access to COVID-19 resources, utilization of personal protective equipment (COVID-19 resources), time availability, waiting in long lines, and availability of resources. Based upon the type of analysis being conducted, the dependent variable alternated between vaccine hesitancy

and access to COVID-19 resources. The other variables previously listed served as the independent variables during data analysis.

Results

Of the 251 surveys completed, 80.4% (n = 201) met the inclusion criteria for data analysis. Of the 201 included in the data analysis, 68.18% (n = 135) were from Harrison County and 24.75% (n = 49) were from Jackson County. The other 14 participants were from counties outside of Harrison and Jackson. These other counties included George, Stone, Pearl, and St. Landry Parish. Of the 201 surveys, 58.71% (n = 118) were completed in Spanish and 41.29% (n = 83) were completed in English.

Factors Influencing Vaccine Uptake

Survey results indicated 68% of participants were vaccinated, and 46% of participants were hesitant to take the vaccine. Table 1 lists major factors influencing participants' decisions to take the vaccine. Those factors included transportation (86%); affordability of COVID-19 resources (22%); and internet access (20%). Survey findings also indicated that most participants had access to COVID-19 resources and that they could afford available resources. Furthermore, most survey participants were not hesitant to utilize COVID-19 mitigation strategies such as facemasks, gloves, wipes, and sanitizer.

As indicated in Table 1, the order of highest-to-lowest percentage of reported barriers to vaccine uptake are as follows: Price of Medical Visit (22.28%, n = 41), No Internet Access (20%, n = 40), Issue of Time (15.03%, n = 29), and Long Lines (13.13%, n = 26).

Table 2 presents the results for the open-ended question regarding other reasons for vaccine hesitancy. Percentages are derived from the 88 individuals who reported

Table 1

Factors Influencing Vaccine Uptake

Questions	No	Yes
Do/Did you feel that the time it would take to get vaccinated (i.e. schedule appointment and visit site) is/was a problem?	164 (85%)	29 (15%)
Do/Did you have adequate transportation to reach vaccination sites?	166 (86%)	26 (14%)
Did/Do long lines to receive the vaccine affect your decision to get vaccinated?	172 (87%)	26 (13%)
Does the price of a medical visit to receive the vaccine affect your decision to get vaccinated?	143 (78%)	41 (22%)
Did/Does the location of clinics that provide vaccination in your community affect your decision to get vaccinated?	175 (88%)	25 (12%)
Do/Did you have internet access to sign-up for the vaccination?	40 (20%)	160 (80%)

Table 2

Operation COVID-19: Other Reported Hesitancy Reasons

Reason	Frequency	Percent
Fear of side effects	43	48.86%
Vaccine created too quickly	13	14.77%
Lack of information/misinformation on vaccine	7	7.95%
Interactions with other health related issues or circumstances	11	12.50%
Opinions of others/word of mouth	3	3.41%
News/social media	5	5.68%
Does not believe vaccine works/doubtful of vaccine effectiveness	6	6.81%
Does not believe vaccine is safe/concerned for safety	7	7.95%
Fear of needles	2	2.27%
Fear (in general)	4	4.55%
Antibodies/belief in a good immune system	2	2.27%
Religious reasons	3	3.41%

vaccine hesitancy and answered the question. Many individuals identified multiple reasons. All reported reasons were categorized into themes capturing the commonality of responses.

Table 3 presents survey results regarding factors influencing access to COVID-19 resources. The order of highest-to-lowest percentage of reported barriers to the use of COVID-19 Resources are as follows: Affordable COVID Resources (16.5%, n = 33), Access to COVID Resources (16.5%, n = 33), Availability of COVID Resources (16.08%, n = 32), and Transportation for COVID Resources (11%, n = 22).

Table 3

Factors Influencing Access to COVID-19 Resources

Question	No	Yes
Are you able to afford COVID-19 resources (e.g., masks, gloves, hand sanitizers, wipes, sanitizing products)?	33 (16%)	167 (84%)
Do you have adequate transportation to access COVID-19 resources (e.g., masks, gloves, hand sanitizers, wipes, sanitizing products)?	22 (11%)	178 (89%)
Are COVID-19 resources (e.g., masks, gloves, hand sanitizers, wipes, sanitizing products) easily accessible in your community?	33 (16%)	167 (84%)
Are COVID-19 resources (e.g., masks, gloves, hand sanitizers, wipes, sanitizing products, brochures) available in your community?	32 (16%)	167 (84%)

Table 4

Hesitancy Using COVID-19 Resources

Question	No	Yes
Do you have any hesitancy about using COVID-19 resources (e.g., masks, gloves, hand sanitizers, wipes, sanitizing products, brochures)?	171 (85%)	30 (15%)

Table 4 presents survey results regarding factors influencing "Hesitancy using COVID-19 Resources." In answering this question, a large percentage of respondents (85%) indicated they had no hesitancy about using COVID-19 resources.

Comparison of Factors Influencing Vaccine Hesitancy

Table 5 presents Odds Ratio results examining relationships and differences between vaccine hesitancy and selected variables. Results from the Odds Ratio analysis indicated those who said "time was a factor" in their decision making were four times more likely to be vaccine hesitant compared to those who did not see time as a factor. Those who indicated "long lines as a factor" were 3.5 times more likely to be vaccine hesitant compared to those who did not see long lines as a factor. "Location of the clinics/health care facilities" was another factor related to vaccine hesitancy. Those who live farther away from the clinics were 1.3 times more likely to be vaccine hesitant, though this was not found to be statistically significant.

Table 5

Odds Ratio Results for Selected Variables & Vaccine Hesitancy

Variable Related to Vaccine Hesitancy	OR	95% CI		P value
Vaccinated	0.10	0.05	0.21	<.0001
Issue of time	4.36	1.76	10.80	.0007
Transportation for vaccine uptake	0.60	0.26	1.39	.23
Long lines	3.55	1.41	8.95	.005
Price of medical visit for vaccine	1.80	0.89	3.67	.10
Location of clinics	1.30	0.54	3.10	.56
Internet access	0.63	0.31	1.27	.20

Results from the Chi-square analysis indicated those vaccinated were less likely to show hesitancy towards the vaccine than those who were not ($\chi 2 = 44.81$, $df = 1$, $p < .0001$). Participants who were vaccinated had .10 times the odds of reporting vaccine hesitancy than those who were not vaccinated. Participants who reported "time being an issue" with getting the vaccine were more likely to report vaccine hesitancy than those who did not report time being an

issue ($\chi 2 = 11.38$, df = 1, p = .0007). An individual who reported time as an issue was 4.36 times as likely to report vaccine hesitancy compared to someone who did not report time as an issue. Participants who reported "long lines" affected their vaccination decision were also more likely to report vaccine hesitancy than those who did not report the issue of long lines ($\chi 2 = 7.89$, df = 1, p = .005). A person reporting long lines being an issue was 3.55 times as likely to report vaccine hesitancy than someone who has not reported long lines as an issue.

Comparison of Factors Influencing Resource Hesitancy

Results from the Chi-square test indicated the relationship between a participant's county of residency and COVID-19 resource hesitancy was statistically significant ($\chi 2 = 6.45$, df = 2, p = .04). However, of the different county-to-county comparisons tested, only the comparison of Harrison and Jackson counties was statistically significant ($\chi 2 = 6.42$, df = 1, p = .01). According to those results, a person from Harrison County was more likely to report resource hesitancy compared to a person from Jackson County. Odds Ratio analysis indicated Harrison county survey participants were 5.6 times more likely report hesitancy to using COVID-19 resources compared to Jackson County survey participants.

Those who reported being vaccinated were less likely to report resource hesitancy compared to those who were not vaccinated ($\chi 2 = 19.06$, df = 1, p < .0001). A vaccinated individual was only .18 times as likely to report COVID-19 resource hesitancy than an unvaccinated individual. In addition, those who reported having transportation for accessing COVID-19 resources were less likely to report resource hesitancy compared to those who did not have access to transportation ($\chi 2 = 23.75$, df = 1, p < .0001).

Those with transportation for resources were .12 times as likely to report resource hesitancy than individuals who did not have transportation for resources. Also, those who

reported having access to the COVID-19 resources were less likely to report resource hesitancy compared to those who did not have access ($\chi 2 = 5.20$, df = 1, p = .02).

Table 6 presents Odds Ratio results examining relationships and differences between resource hesitancy, county residence, and selected variables.

Table 6

Odds Ratio Results for Resource Hesitancy, County Residence, and Selected variables

Variable Related to Resource Hesitancy	OR	95% CI		P value
County				
Harrison vs. Jackson	5.61	1.28	24.58	.01
Harrison vs. Other	1.43	0.30	6.79	.65
Jackson vs. Other	0.26	0.03	2.00	.17
Vaccinated	0.18	0.08	0.41	<.0001
Affordable COVID-19 resources	0.56	0.22	1.45	.23
Resource transportation	0.12	0.05	0.31	<.0001
Access to resources	0.37	0.15	0.89	.02
Resource availability	0.46	0.18	1.14	.09

Comparison of Factors Influencing Vaccine Hesitancy, Resource Hesitancy, and Primary Language

Results from the Chi-square test indicated those who completed the survey in Spanish (n = 118) were more likely to report resource hesitancy than those who completed the survey in English (n = 83; $\chi 2 = 6.60$, df = 1, p = .01). A person who primarily spoke Spanish was 3.28 times as likely to report resource hesitancy than a person who primarily spoke English. Those who completed the survey in Spanish were less likely to report being vaccinated than those who completed the survey in English ($\chi 2 = 32.58$, df = 1, p < .0001).

A primarily Spanish-speaking person was .12 times as likely to report being vaccinated than a primarily English-speaking person. Those who completed the survey in Spanish were more likely to report “time being an issue” for receiving vaccination than those who completed the survey in English ($\chi 2 = 14.85$, df = 1, p = .0001). A primarily Spanish-speaking person was

8.25 times as likely to report “time as an issue” than a primarily English-speaking person. Those who completed the survey in Spanish were less likely to report having “transportation for receiving the vaccination” than those who completed the survey in English ($\chi 2 = 12.30$, df = 1, p = .0005). A primarily Spanish-speaking person was .14 times as likely to report having “transportation for vaccination” than a primarily English-speaking person.

Those who completed the survey in Spanish were much more likely to report “long lines” being an issue with receiving the vaccine than those who completed the survey in English ($\chi 2 = 10.68$, df = 1, p = .001). Those who completed the survey in Spanish were 6.36 times as likely to report “long lines” being an issue with receiving the vaccine than those who completed the survey in English. Those who completed the survey in Spanish were more likely to report the price of a “medical visit for vaccination” as an issue with receiving the vaccine than those who completed the survey in English ($\chi 2 = 6.32$, df = 1, $p < .01$).

A primarily Spanish-speaking person was 2.61 times as likely to report price of a “medical visit for vaccination” as an issue than a primarily English-speaking person. Those who completed the survey in Spanish were less likely to report having internet access being an issue with receiving the vaccine than those who completed the survey in English ($\chi 2 = 7.43$, df = 1, p = .006).

A primarily Spanish-speaking person was .34 times as likely to report having “internet access” for signing up for the vaccination than a primarily English-speaking person. Those who completed the survey in Spanish were less likely to report having “transportation for accessing COVID-19 resources” than those who completed the survey in English ($\chi 2 = 7.91$, df = 1, p = .005).

A primarily Spanish-speaking person was .19 times as likely to report having "transportation for accessing COVID-19 resources" than a primarily English-speaking person. Those who completed the survey in Spanish were less likely to report "access to COVID-19 resources" than those who completed the survey in English ($\chi 2 = 6.70$, df = 1, p = .01; OR = .32). Table 7 presents OR results examining the relationships and differences between vaccine hesitancy, resource hesitancy, and primary language.

Table 7

Odds Ratio results for Vaccine Hesitancy, Resource Hesitancy, and Primary Language

Variable	OR	95% CI		P value
Vaccine hesitancy	1.23	0.69	2.17	.48
Resource hesitancy	3.28	1.27	8.42	.01
Vaccinated	0.12	0.05	0.26	<.0001
Issue of time	8.25	2.40	28.34	.0001
Transportation for the vaccine uptake	0.14	0.04	0.49	.0005
Long lines	6.36	1.80	21.98	.001
Price barrier	2.62	1.22	5.62	.01
Location barrier	1.30	0.55	3.11	.55
Internet access	0.34	0.15	0.75	.006
Affordable resources	0.56	0.25	1.25	.15
Resource transportation	0.19	0.06	0.67	.005
Resource access	0.32	0.13	0.78	.01
Resource availability	0.50	0.22	1.15	.10

Discussion

Results showed that nearly one-third of the participants are not vaccinated and a little less than half of the individuals reported having vaccine hesitancy. These findings highlight the need for determining the reason behind opinions and hesitancies regarding vaccinations for COVID-19. Based on survey results regarding vaccine uptake barriers, the issues of "price of a medical visit" for the vaccine and "no internet access" were the two most frequently reported issues. The "affordability of COVID-19 resources" and "access to COVID-19 resources" were the two most

reported issues related to using and accessing COVID-19 resources. It is worth noting a substantial amount (48.86%) of survey participants also reported hesitancy due to “fear of side effects” for the vaccine.

This study’s findings identified significant associations between vaccine hesitancy and the factors of vaccination status, the issue of time, and the issue of long lines. There were also significant associations between COVID-19 resource hesitancy and the factors of vaccination status, county of residence, transportation for COVID-19 resources, and access to COVID-19 resources.

Findings also showed significant associations regarding whether the individual was primarily English or Spanish-speaking and various factors related to vaccine hesitancy and COVID-19 resource hesitancy. Those factors included COVID-19 vaccination status, issue of time, transportation for vaccine uptake, long lines, the price of a medical visit for the vaccine, internet access, transportation for COVID-19 resources, and access to COVID-19 resources. Using Odds Ratios to compare primarily Spanish-speaking individuals to primarily English-speaking individuals, primarily Spanish-speaking individuals had a higher odd for reporting issues affecting their decisions regarding vaccination uptake and COVID-19 resource use. This suggests the barriers listed in the survey substantially affect primarily Spanish-speaking people more than primarily English-speaking individuals. The differences in Odds Ratio likelihoods in many cases can lead to poorer health outcomes for primarily Spanish-speaking people on the Mississippi Gulf Coast. This study’s findings support the perceptions of health disparities for the primarily Spanish-speaking community and opinions regarding vaccination, vaccine hesitancy, and COVID-19 resource use.

It is also worth noting that efforts of MMF and CHAs to translate information for use by the Spanish-speaking community highlights language barriers and its overall impact on the community's vaccine uptake and participation levels. Many Spanish-speaking individuals had questions about the events and COVID-19 information, but could not receive answers without translation assistance from MMF and CHAs. It can be inferred that without assistance, many of those who do not understand English will lose out on opportunities for vital information as well as important health events that affect their health and knowledge on topics such as COVID-19.

Conclusions

This study's findings highlight differences in participants' opinions on vaccination status, vaccine uptake, and the accessibility and availability of COVID-19 resources. It also showed the disparities that exist for the primarily Spanish-speaking community in terms of the factors listed in the survey. Those in the primarily Spanish-speaking community are more likely than primarily English-speaking communities to report issues and/or barriers related to vaccination uptake and COVID-19 resources. This finding shows future studies should explore factors that impact vaccine hesitancy and uptake in the primarily Spanish-speaking community. There are not many studies examining vaccine hesitancy in Mississippi, and there are even fewer studies examining vaccine hesitancy in the primarily Spanish-speaking population.

Much of the research that investigates COVID-19 hesitancy uses samples representative of the entire United States. Within that research, many of the findings conclude that socioeconomic factors, attitudes, race and gender, and many other factors play a role in vaccine hesitancy (Khubchandani, Sharma et.al., 2021; Soares, Rocha et.al., 2021; Trogen & Pirofski, 2021). However, given that the COVID-19 situation is incredibly recent and ever-changing in current circumstances, more research needs to be done on both a large (i.e., national) and small

(i.e., community) scale. Because there is not enough information on a large scale, there is likely to be even less information looking specifically at smaller populations such as those in primarily Spanish-speaking communities. This study highlights the opinions of one such primarily Spanish-speaking community in the United States with higher rates of vaccine hesitancy than many others. This study can be used as a comparison for future studies regarding vaccine hesitancy, and/or the primarily Spanish-speaking community's stance and status on vaccination.

Recommendations

Through exploring the opinions of survey participants, this study's authors believe there should be increased efforts in educating those in underserved populations, especially Hispanic communities, about vaccinations. With issues such as time, accessibility, and transportation being identified as key factors impacting vaccine and resource utilization, it is very important to educate community members about potential options and programs available to increase vaccine uptake. It is important to not only have programs that educate, but also provide safety assurance and other information that helps bridge the gap in disparities for underserved populations. Strategies to promote equity in the accessibility, availability, and uptake of COVID-19 vaccine and resources include collaborating with community-based organizations to 1) host community-based vaccination clinics, and 2) provide transportation to make it easier for community members to get to vaccine locations and other COVID-related resources. Furthermore, it is imperative that these strategies are developed and implemented based on feedback from the community so that they are culturally appropriate and therefore more likely to be effective in reducing COVID-19 disparities in these communities.

Study Limitations

There were several limitations impacting this study. For instance, the "Operation COVID-19 questionnaire" did not directly ask individuals for any demographic information regarding race, gender, or educational level. At the time of conducting data collection activities, there were no means of collecting demographic information on paper. This issue made it more difficult to perform analysis for specific groups and populations, therefore resulting in the need to adapt the survey to Spanish and using those responses as data representative of primarily Spanish-speaking people who participated in the study. Another limitation involved the design and distribution of the survey which could be simplified to make it easier to read and understand. For example, during data analysis there was a pattern of the "price of medical visit" question being skipped despite most of the other questions being answered. Distribution was primarily limited to being done by hand at specific locations and times which likely hindered participation. Also during some distribution events, the survey was handed out as a front and back paper survey; however, the back of many surveys collected were not filled out at all. This issue accounted for most of the surveys being removed from data analysis because of missing data.

Due to the high inclusion of primarily Spanish-speaking participants, more time and effort was needed to ensure participants understood the survey and filled it out appropriately. Additionally, primarily Spanish-speaking participants needed assistance in finding their way to event locations, as well as had many concerns about topics related to the survey and COVID-19. The overall need for translation required a lot of work and time by MMF and CHAs. This need was especially true for less educated participants completing the survey. As another example, some individuals needed to find locations for events, but their inability to read signs or ask for directions along the way meant they came to MMF for assistance. Since the majority of the

survey participants primarily spoke Spanish, there was much need to address these concerns as participation somewhat relied on it. Overall, future surveys should be streamlined to avoid issues that produce missing data. Since participant data were collected using convenience sampling, this study's findings may not be representative of the Mississippi Gulf Coast population regarding vaccine uptake and COVID-19 resources utilization.

References

Center for Disease Control. (2021). *Estimates of vaccine hesitancy for COVID-19.* https://data.cdc.gov/stories/s/Vaccine-Hesitancy-for-COVID-19/cnd2-a6zw

Center for Disease Control. (2022). *COVID data tracker.* Retrieved from https://COVID.cdc.gov/COVID-data-tracker/#vaccinations_vacc-total-admin-rate-total

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. https://doi.org/10.1007/s10900-020-00958-x

Mississippi State Department of Health. (2022). *Mississippi State Department of Health COVID-19 vaccination reporting.* https://msdh.ms.gov/msdhsite/_static/resources/12130.pdf

National Institutes of Health. (2020, September 16). *NIH funds community engagement research efforts in areas hardest hit by COVID-19.* https://www.nih.gov/news-events/news-releases/nih-funds-community-engagement-research-efforts-areas-hardest-hit-COVID-19#:~:text=CEAL%20is%20an%20NIH-wide%20effort%20led%20by%20the,efforts%20already%20underway%20by%20NIH%20COVID-19%20trial%20networks.

Soares, P., Rocha, J. V., Moniz, M., Gama, A., Laires, P. A., Pedro, A. R., … Nunes, C. (2021). Factors associated with COVID-19 vaccine hesitancy. *Vaccines*, *9*(3), 300. https://doi.org/10.3390/vaccines9030300

Trogen, B., & Pirofski, L. A. (2021). Understanding vaccine hesitancy in COVID-19. *Med (New York, N.Y.)*, *2*(5), 498–501. https://doi.org/10.1016/j.medj.2021.04.002

An Exploratory Investigation of COVID-19 Vaccine Hesitancy among Minority Communities

Authors:

Melinda G. Todd, DrPH, MPH, MCHES®, CPM, Jackson State University, Mississippi Urban Research Center

Yalanda M. Barner, DrPH, MBA, Jackson State University, Department of Health Policy & Management

Sam Mozee, PhD, Jackson State University, Mississippi Urban Research Center

Abstract

This article is one of two related research articles investigating various perspectives of vaccine hesitancy in minority communities. It examines factors and barriers that may affect decisions on whether to become vaccinated against COVID-19. A mixed methods case study research design was used to get feedback from minority community members in Jackson, Mississippi. Two focus group sessions (n = 11, n = 9) were held utilizing the Zoom video platform. Focus group participants responded to a five–question instrument exploring various issues possibly connected to vaccine hesitancy in the target community. Key Informant Interviews were also conducted via Zoom with four community leaders. Qualtrics' online survey software was used to survey community groups in the Jackson, Mississippi area. Ninety-six respondents (n = 96) completed the survey instrument. The top three themes emerging from all data collection activities included: 1) Fear; 2) Mistrust of government/medical community; and 3) Inequitable and limited resources. These themes help provide insight into factors influencing the beliefs and behaviors of minority community members regarding vaccine hesitancy and COVID-19. Recommendations resulting from this study's findings include: providing community level education on the benefits of becoming vaccinated; dispelling myths and other forms of misinformation regarding COVID-19; addressing inequitable and limited resource issues currently existing in minority communities regarding access to COVID-19 vaccines and support services; and providing more cultural sensitivity interventions designed to reduce social inequity.

Keywords: vaccine hesitancy, COVID-19, minority community, Jackson, Mississippi

Introduction

According to the World Health Organization (2022), vaccine hesitancy is a significant threat to global health. The Coronavirus (COVID-19) Pandemic has created an unprecedented public health challenge at the global, national, state, and local levels. As of August 20, 2021, Mississippi's COVID-19 cases and deaths were 406,249 cases and 7,991 deaths, including seven

children's deaths (Mississippi State Department of Health [MSDH], 2022a). At the time of this study, Mississippi had the third highest COVID-19 death rate in the United States (MSDH, 2022a). Hinds County, which contains the City of Jackson, had the highest number of reported cases in Mississippi with 27,441 cases (MSDH, 2022a). The pandemic has disproportionately impacted minority and elderly populations (Center for Disease Control and Prevention [CDC], 2022a), and according to 2020 Census Bureau data, the City of Jackson is over 80% Black/African-American which makes its population particularly vulnerable to the virus (U.S. Census Bureau, 2021). According to Saied et al. (2021), vaccine hesitancy poses serious challenges to achieving coverage for population immunity. Achieving high COVID-19 vaccination acceptance rates can help communities achieve higher levels of health and well-being (CDC, 2022a).

The local community's perspective about vaccine hesitancy in Jackson, Mississippi during the COVID-19 pandemic is an important topic with local and national implications, especially as related to other areas with large minority populations. This research study examined multiple issues possibly contributing to greater vaccine hesitancy in minority communities with regard to COVID-19. This study seeks to provide greater insight into the context, motives, perceptions, beliefs, and feelings of community members as to why there is some hesitancy in taking the COVID-19 vaccine. This information can prove useful to public health agencies, faith-based organizations, local governments, social organizations, and individuals concerned with promoting healthy communities. This study's specific benefits included the collection of timely data on the COVID-19 vaccine hesitancy problem; an increase in community outreach, education, and collaboration efforts with local organizations; and the establishment of baseline data needed for developing programs and services to decrease the level of vaccine hesitancy. The

overall purpose of this study was to gain a better understanding of why minority communities may be hesitant in taking the COVID-19 vaccination.

This article is one of two articles generated from a research study investigating various perspectives of vaccine hesitancy in minority communities. This article focused on examining vaccine hesitancy from a "big picture," multiple issues perspective. The second associated article focused on examining how issues related to trust and misinformation may be contributing to vaccine hesitancy. Both articles utilized a common dataset investigating this issue from the previously mentioned multiple perspectives.

Background

According to the Mississippi State Department of Health (2022a), for the week of August 10-16, 2021, there were 23,760 reported COVID-19 cases. The number of deaths reported for that week totaled 195. Hinds County, which contains the City of Jackson, MS, had the highest number of reported cases in the state with 25,992 cases. Mississippi has made national headlines for being one of the least vaccinated states in the U.S. with approximately 33% of its population vaccinated to date, which is behind the nation's average of 50% (MSDH, 2022b).

According to the Center for Disease Control and Prevention (CDC), more than 36,951,181 Americans have contracted COVID-19 with 620,493 deaths reported (CDC, 2022a). There are currently millions of Americans living with the current and residual effects of COVID-19 trauma, including mental and physical effects such as increases in depression, anxiety, trauma, grief, isolation, loss of employment, financial instability, loss of loved ones, and other challenges (Reinert et al., 2021).

As reported in multiple data sources, among patients under 18, children between the ages of 11 and 17 have the highest infection rate, with 29,852 cases identified (Haselhorst, 2022;

MSDH, 2022a). In Mississippi's capital city (Jackson, MS), the state's flagship hospital – the University Mississippi Medical Center (UMMC), constructed a make-shift field intensive care unit hospital in its parking garage to handle the large number of COVID-19 cases it was experiencing (Haselhorst, 2022). Table 1 provides a numerical comparison of vaccinations in the United States, globally, and in Mississippi.

Table 1

Progress in Vaccinations

2nd Dose	1st Dose	Total Population
United States 207,121,547 (62.4%) 169.87 Doses per 100 people	255,975,678 (77.1%)	332,008,832
Global 4,586,702,670 (58.6%) 144.93 Doses per 100 people	5,095,226,868 (64.9%)	7,845,261,000
Mississippi 1,747,822 (48%) 128.31 Doses per 100 people	1,532,648 (53%)	3,779,915

Sources: www.cdc.gov; www.msdh.gov/msdhsite/_static/resources/12130

To help reduce the growing caseloads of COVID-19 cases, the CDC made several recommendations regarding strategies that have proven effective. Some of those recommendations included urging the population age 65 or older (and those with serious pre-existing health conditions) to stay out of all crowded spaces, and recommending everyone wear a mask in crowded spaces whether public or private (CDC, 2022b).

Since the spread of the pandemic to the United States around March, 2020, it has created the worst public health crisis in the U.S. in more than a century (The White House, 2022). COVID-19 has created havoc across the United States and globally, resulting in the closing of businesses, keeping children out of school, a lack of care for the most vulnerable populations (e.g., the elderly, homeless, mentally ill, and incarcerated persons), and the forcing of the general

public into isolation and lock downs to ensure health and safety (Haselhorst, 2022; The White House, 2022). Currently in year three of the pandemic, more is known about how to address and take precautions to reduce COVID-19 infections and how to protect the general population, and there is currently an abundance of knowledge, funding, and personal protective equipment (PPE) including masks and vaccines. Yet there remains some hesitancy among certain groups to take the COVID-19 vaccine. This study seeks to bring awareness and insight regarding those potential issues contributing to vaccine hesitancy among certain minority communities.

Theoretical Framework: Health Belief Model (HBM)

This study utilized the Health Belief Model (HBM) as its theoretical framework to help guide its research approach and interpret its research findings. The Health Belief Model, developed by psychologist Irwin Rosenstock in 1966, maintains there is a connection between an individual's beliefs and their behavior regarding health-related issues. It also maintains there are several factors that must support a belief before an individual decides to change their health behaviors. Those factors include: (1) Perceived seriousness of the health problem; (2) Perceived susceptibility to the health problem; and (3) Cues to action, which implies the influence of direct and indirect cues in making change. This theory will be used to help understand and interpret study results regarding participants' perceptions of COVID-19, and those cues that may be influencing their health decisions and behaviors regarding whether to take available COVID-19 vaccines.

Methods

A mixed methods case study research design was used to get feedback from minority community members in Jackson, Mississippi. The case study design allows for a more in-depth examination of the context, motives, perceptions, beliefs, and feelings associated with the investigation of a specific issue (Guetterman & Fetters, 2018). Case study has a tradition of

collecting multiple forms of data, both qualitative and quantitative, to gain a more complete understanding of the case, and it integrates well with mixed methods research which seeks a more complete understanding through the integration of qualitative and quantitative research (Guetterman & Fetters, 2018).

Study Participants

All of the focus groups and Key Informant interviewees were African-Americans, and were recruited utilizing snowball sampling/recruitment methods from local community groups, faith-based organizations, and other organizations in the Jackson, Mississippi community. Specific recruitment activities included: (1) identification of underserved community groups in the local community; (2) assessment of interest in participation in a focus group or an informant interview; and (3) offering timing arrangements that encourage participation from community members. Twenty community members participated in the focus group sessions, four community leaders participated in the Key Informant interviews, and 96 community members completed the online survey. The following procedures were utilized to gather information and data from community members regarding their motives, perceptions, beliefs, and feelings on issues associated with vaccine hesitancy.

Procedures

Two focus group sessions (n = 11, n = 9) were held via the Zoom video conferencing platform after 5:00 p.m. to accommodate working individuals. Focus group participants responded to a five–question instrument discussing various issues possibly connected to vaccine hesitancy in the target community. Focus group participants were allowed to share additional comments or concerns related to vaccine hesitancy at the end of the sessions. Focus group participants' responses were recorded via Zoom, transcribed, and then cleaned with minimal

editing for final report writing. A gift card incentive of $25.00 was distributed to each participant completing the focus group session.

Key Informant interviews were conducted via Zoom with community leaders (n = 4) in the targeted minority community. These community leaders represented a faith-based organization, a medical clinic, a community based-organization, and a Mississippi Legislature Senate member.

An online vaccine hesitancy survey was distributed to more than 10 community groups. The survey consisted of 14 questions seeking input from respondents on various issues possibly connected to vaccine hesitancy in the target community. The Qualtrics online survey software tool was used to collect participants' responses. The survey collected 96 responses (n = 96). The survey instrument is included in the Appendix section of this research article.

Data analysis consisted of tabulating descriptive statistics (i.e., frequency counts, percentages) from the online survey findings, and conducting qualitative thematic analysis focusing on common words, phrasing, topics, and themes emerging from the focus group sessions and Key Informant interviews.

Findings

The following sections present major findings from this research study's online survey, focus group sessions, and Key Informant interviews. These findings are as follows:

Online Survey Results

Table 2 presents responses from participants when asked if they were vaccinated against COVID-19. Over 83% responded "Yes."

Table 2

Vaccinated Against COVID-19

Answer	%	Count
Yes	83.33%	80
No	16.67%	16
Total	100%	96

Table 3 indicates approximately 80% of respondents knew someone who has not been vaccinated.

Table 3

Do You Know Someone Who Has Not Been Vaccinated?

Answer	%	Count
Yes	80.00%	76
No	20.00%	19
Total	100%	95

Table 4 responses provide a demographic profile of those respondents who completed the online survey. That profile includes: the racial category of Black/African-American comprising 100% of survey respondents; over 50% of survey respondents being age 36 or older; and the most frequent (18.95%) income category for respondents being $40,000 to $55,000.

Table 5 contains responses regarding those who received the vaccine. Within that table, the two largest categories of responses for the question "*Some Reasons Why You Chose to Receive the COVID-19 Vaccine"* were Keep from getting the COVID-19 virus (26.43%) and Protect my family & community (25.99%).

Table 6 responses are from those individuals who reported why they elected not to receive the COVID-19 vaccine. The three largest categories of responses were Vaccine is not proven to work (22.73%), Do not trust the Government (18.18%), and Other reason (22.73%).

Table 7 contains responses to the question "*If you know someone who has not been vaccinated, what are some reasons they give for not getting the vaccine?"* Within that table, the two largest categories were Afraid the vaccine will make them sick (21.54%) and Do not trust the Government (21.54%).

Table 4

Survey Demographics

Category	%	Count
Race		
Black/African-American	100	96
Age Group		
0-17	3.13%	3
18-35	30.21%	29
36-58	39.58%	38
59-70	23.96%	23
71 and above	3.13%	3
Total	100%	96
Gender		
Male	36.84%	35
Female	63.16%	60
I prefer not to say	0.00%	0
Other (Please Specify)	0.00%	0
Total	100%	95
Household Yearly Income		
$0 - $10,000	1.05%	1
$10,001 - $25,000	4.21%	4
$25,001 - $40,000	16.84%	16
$40,001 - $55,000	18.95%	18
$55,001 - $70,000	15.79%	15
$70,001 - $85,000	10.53%	10
$85,001 - $100,000	15.79%	15
More than $100,000	16.84%	16
Total	100%	95

Table 5

Some Reasons Why You Chose to Receive the COVID-19 Vaccine (Check all that apply)

Reasons	%	Count
Keep from getting the COVID-19 virus	26.43%	60
Required by my job	8.81%	20
Protect my family & community	25.99%	59
Show support for my government	2.20%	5
Trust the vaccine is safe	13.66%	31
Recommended by a trusted source (e.g., family, doctor, pastor)	11.89%	27
It was free/no-cost	9.25%	21
Other reason	1.76%	4
Total	100%	227

Table 6

Some Reasons Why You Have Not Received the Vaccine (Check all that apply)

Reasons	%	Count
Not enough information	9.09%	2
Not enough time to go get the vaccine	4.55%	1
Vaccine is not proven to work	22.73%	5
Afraid the vaccine will make me sick	13.64%	3
Government is using vaccine to track people	4.55%	1
Do not trust the Government	18.18%	4
Against my religion	4.55%	1
Cannot get the right type of vaccine	0.00%	0
Other reason	22.73%	5
Total	100%	22

Table 7

If You Know Someone Who Has Not Been Vaccinated, What are Some Reasons They Give for Not Getting the Vaccine? (Check all that apply)

Answer	%	Count
Not enough information	14.87%	29
Not enough time to go get the vaccine	2.56%	5
Vaccine is not proven to work	16.92%	33
Afraid the vaccine will make them sick	21.54%	42
Government is using vaccine to track people	11.28%	22
Do not trust the Government	21.54%	42
Against their religion	5.13%	10
Cannot get the right type of vaccine	0.00%	0
Other Reason	6.16%	12
Total	100%	195

Table 8

Ways You Suggest to Get More People Vaccinated (Check All That Apply)

Answer	%	Count
Give free vaccination shots	7.23%	25
Give monetary (“money”) incentives	10.98%	38
Provide free transportation to local vaccine sites	9.54%	33
Set-up vaccination sites in the local community	12.43%	43
Arrange for people to get free shots at a local medical doctor	10.98%	38
Arrange for people to get free vaccinations at their homes	9.83%	34
Provide more accurate information on the vaccines	13.87%	48
Provide more information on advantages of getting vaccinated	15.32%	53
Do a better job of advertising free vaccination shots	6.94%	24
Other	2.89%	10
Total	100%	346

Table 8 contains responses to the question "*Ways you suggest to get more people vaccinated?"* Within that table, the three largest categories of responses were Provide more information on advantages of getting vaccinated (15.32%), Provide more accurate information on the vaccines (13.87%), and Set-up vaccination sites in the local community (12.43%).

Focus Groups

After conducting a qualitative thematic analysis of common words, phrasing, themes, and topics discussed during the focus group sessions, five distinct themes emerged. The narrative descriptions in Table 9 present those themes.

Table 9

Themes Emerging from Focus Groups

#	Description of Theme
1	Exhausting, limiting, and a different experience
2	Expressed concern with receiving poor and/or inaccurate information regarding the vaccine
3	Lack of trust by focus group participants regarding the vaccine itself and the government's intentions
4	Concerns regarding the vaccine's health effects
5	Recommendations related to education, training, and marketing information

First Theme

The first theme emerging from the focus group sessions was a view of the COVID-19 pandemic being "Exhausting, limiting, and a different experience." Most focus group respondents stated the COVID-19 pandemic brought on experiences that were exhausting, limiting, and once in a lifetime for them. Several of the respondents shared other experiences that included anxiety, fear, anger, and a limited or restricted environment.

Focus group participants stated the pandemic significantly disrupted and limited their daily lives to the point of causing physical and mental fatigue. Participants provided responses

such as: "*being on lock down the entire time;" "not being able to meet with family and friends, just fellowship and those types of things;" "a new experience like nothing I ever thought I would ever experience in my lifetime;" "I felt paralyzed;" "not really knowing how to do things…simple things like going to the store, having gloves, wearing mask;" "fear of contracting COVID, being around other people;" and "serious anxiety and exhaustion."*

Second Theme

The second theme emerging from the focus group sessions involved various aspects of the term information (e.g., lack of information, poor information, inaccurate information). With this theme, focus group participants expressed concern regarding taking the vaccine as related to not knowing enough about the vaccine, its efficacy, and possible short- and long-term side effects. Participants also expressed concern with receiving poor and/or inaccurate information regarding the vaccine. They provided statements such as: *"what effects will be long term on the body;" "I waited for three, four, and five months to see if it was going to affect people;" "I heard it was the mark of the Beast, and a curse for Black people;" "I am a transplant recipient… I had lots of concerns;" "fear came when so many people started dying, and when they would get a cold … they were so sick! I was really scared;" "anxiety of not knowing what to do;" "finding a location;" "I heard a lot on negative responses on 'Fake News' on social media;" "it is a curse;" "Government trying to take us out;" "don't trust taking the shot;" "side effects include 'growing an extra thumb;'" "using the Black race as a guinea pig;" and "COVID is a hoax."*

Third Theme

The third theme emerging from the focus group sessions involved a lack of trust by focus group participants regarding the vaccine itself and the government's intentions behind promoting

the acceptance of the vaccine. With this theme, focus group participants expressed such statements as: "*frustration with other people's negligence;" "I was concerned, what are they trying to do to us;" "it was magnetized to track your location;" "our neighborhood did not trust it because of the government;" and "thought the government was trying to do genocide on us*."

Fourth Theme

The fourth theme emerging from the focus group sessions was participants' concerns regarding the vaccine's health effects. As expressed by participants, the vaccine's health effects (known and unknown) were a major source of fear, anxiety, frustration, and uncertainty regarding whether to take the vaccine. Focus group participants made statements such as: "*talk about infertility;" "worried about an adverse reaction;" "I waited to see if I would have an allergic reaction;" "I waited to see if people were going to grow a thumb or anything;" and "worried about the side effects*."

Fifth Theme

The fifth theme emerging from the focus group sessions involved providing recommendations related to education, training, and marketing information. As mentioned in earlier themes, participants felt the lack of good, accurate, reliable information was a significant factor in determining whether to take the COVID-19 vaccine shot. Focus group participants made statements such as: "*more transparency from medical doctors and chemists;" "basically telling us what is in it;" "help break the information down for us;" and "know more about the ingredients in the shot.*"

Key Informant Interviews

Four Key Informant interviews were conducted via Zoom with African-American community leaders representing the areas of State Government (Mississippi Legislative Senator

and Mississippi Legislative Black Caucus Chair); community-based organization; healthcare organization (medical clinic); and African-American faith-based organization (church). After conducting a qualitative thematic analysis of common words, phrasing, and topics discussed during the Key Informant interviews, four distinct themes emerged. The following tables and narrative descriptions present those themes. Table 10 presents the themes emerging from Key Informant interviewees regarding their COVID-19 experiences. Table 11 presents recommendations from Key Informant interviewees for getting more people to take the COVID-19 vaccine.

First Theme

The first theme emerging from the Key Informant interviews was a view of the COVID-19 pandemic creating very different experiences and interactions. This finding is similar to the

Table 10

Themes Emerging from Key Informant Interviews

#	Description of Theme
1	COVID-19 pandemic creating very different experiences and interactions
2	Information-related issues being a major contributor towards vaccine hesitancy in minority communities
3	Need to use social media and community outreach as means for promoting access to vaccines
4	Improve “Communications and Information” and “Providing other Support Services”

“Focus Group” theme regarding the pandemic significantly disrupting lives and creating fear, anxiety, and hardships. Participants provided responses such as: “*it is something I have never experienced in my life and could never have fathomed;” “it has caused panic and fear in the minds of people due to not understanding the vaccine;” “it’s just hard to believe we are actually*

experiencing a pandemic in the United States of America;" "COVID changed the way people interact;" and *"changed the role of church health ministries.*"

Table 11

Recommendations for Getting More People to Take the COVID-19 Vaccine

Recommendations	Number of Responses
More information / transparency about vaccine / educate / marketing	14
Take shot (will encourage others such as family members)	7
Healthcare workers serve as role models to get shot	2
Paying people to get shot (vaccination)	2
Target younger generation	2
Promote personal safety measures	2
Give grants for testing	1
Avoid social media	1
Total	31

Second Theme

The second theme emerging from the Key Informant interviews was information-related issues being a major contributor towards vaccine hesitancy in minority communities. Again, as with the focus group responses, informant interviewees stated the availability and accuracy of information is an important factor as to whether people decide to take the vaccine. Participants provided responses such as: *"we have heard of the syphilis experiments that have taken place regarding our people, African-Americans (Black people), the way that they (we've) been used for studies. So, I think that makes us skeptical of government in general or health related issues as it pertains to government;" "another issue is information that we've just seen widespread in the media that was coming out of the White House political propaganda – the incidence itself has been with the pandemic, and the response to it has been politicized;" "anti-vaccinators creating doubt in people who are considering vaccination;" "when communicating messages to the*

community the messages must be clear, concise and streamlined to foster trust and motivate the community to act progressively to seek vaccinations and not to create fear."

Third Theme

The third theme emerging from the Key Informant interviews was the use of social media and community outreach as means for promoting access to vaccines. Interviewees noted how social media both helped and hindered the provision of services during the pandemic including initiatives encouraging more people to become vaccinated. Participants provided responses such as: "*using social media and web sites;" "we made our sanctuary available for vaccination dissemination;"* and *"physically going out into the community, creating community screenings as well as vaccine options*." Table 12 provides a listing of strategies suggested by Key Informants to promote vaccine access.

Fourth Theme

The fourth theme emerging from the Key Informant interviews was the recommendation of improved "Communications and Information" and "Providing other Support Services" as means for overcoming vaccine hesitancy in the minority community. Interviewees believed many of the problems contributing to vaccine hesitancy are connected to issues related to communications and good information.

Participants provided responses such as: "*I believe we just have to be consistent in communicating to people, sharing our own testimonies about information that we receive about the vaccine;" "I just think we just try to dispel a lot of the myths, the way to do it is with constant messaging;" "speaking the language of the community we are attempting to serve, going into communities, communicating with them an understanding of health literacy;"* and *"creating materials and resources that they can actually read on 3rd and 5th grade level*."

Table 12

Strategies to Promote Vaccine Access

Reason	Number of Responses
Going out into community / mobile unit	9
Providing other services / shots / emergency care	8
Social media / texting / website / online registration	5
Phone calls	2
Making facilities available	2
Partnering with other organizations	1
Word-of-mouth	1
Radio	1
Television	1
Total	30

Table 13 provides a listing of strategies suggested by Key Informants regarding "*What needs to be done to overcome vaccine hesitancy*" to promote vaccine access.

Table 13

What Needs to be Done to Overcome Vaccine Hesitancy?

Reason	Number of Responses
Communications / constant messaging / education & training	10
Reaching unvaccinated crowd	3
Increasing trust	2
Using personal protection equipment (PPE)	2
Overcome fear	1
Offering low-cost / free services	1
Partnering with other organizations	1
Use college think tanks	1
Total	21

Discussion

According to the Mississippi State Department of Health (2022), a total of 132,553 citizens in Jackson, Mississippi have been vaccinated. In Mississippi, there were 1,547,646 (52%) fully vaccinated individuals; whereas nationally, there were 215 million people in the

United States who are fully vaccinated, and two-thirds of eligible adults have gotten their booster shot (The White House, 2022). There are now a variety of COVID-19 treatment options and recommendations that include pills, vaccines, free testing, hand wipes, specialized masks, boosters, and special treatments. Some of the behavioral interventions recommended by sources such as the CDC to reduce the spread of COVID-19 include social distancing practices, hand washing, and using hand sanitizers. While there are currently a lot of treatment options and recommendations addressing the COVID-19 crisis, as evident by this study's research findings, there is still some reluctance and hesitancy in certain communities to utilize those treatment options and recommendations.

This research study has identified three overarching themes that are possible major contributors to vaccine hesitancy in minority communities: 1) Fear; 2) Mistrust of the government and the medical community; and 3) Inequitable and limited access to vaccine resources. The following sections discuss each of these themes in greater detail.

Fear

Fear of the unknown regarding the impact and the outcome of contracting COVID-19, spreading the virus, residual health effects, and the potential for death was a major theme recurring in the focus group settings, Key Informant interviews, and the online surveys. Study participants expressed the following concerns: fear of what had happened or would happen; why was COVID-19 in the community; how did it get into the community; will it kill us; and who brought COVID-19 to the community? The emotion of fear brought on many questions but provided few answers, and there were many myths and rumors circulating among community members. While fear of contracting COVID-19 and death were at the forefront of many people's minds, the fact of simply contracting COVID-19, unknown outcomes if infected with COVID-19, and unfamiliarity with vaccine contents and the aftereffect of vaccinations all sparked fear in

people; thus, there is a possible link between fear, COVID-19, and vaccine hesitancy as expressed by many of the study participants. Credible information is therefore needed to maintain trust by the community in government officials and the medical community.

Mistrust of Government/Medical Community

Mistrust of the government and the medical community were two dynamic factors that repeatedly emerged throughout this study's data collection activities. Those that did not take the vaccination communicated that they did not trust the government or the scientific community. According to many community residents participating in this study, trust in the medical community was tarnished due to miscommunication and mixed messages in media sources such as Facebook, television, TikTok, and newsprint. After the mixed messages circulated throughout the communities, it was hard to restructure positive information about getting vaccinated. Some negative messages were: (getting the vaccine) "*your body will grow extra body parts;" "the vaccine will track you;" "it is designed to kill off a certain group of people;" "I don't trust the vaccine it has something in it;"* and "*is everyone getting the same vaccine?*" Many residents shared that their mistrust came out of not being sure if they would be offered the same vaccine as residents in affluent communities. This mistrust could potentially impact vaccine hesitancy by causing people to delay and or not access the vaccine. Some of the focus group participants expressed mistrust in the government, government officials and the medical community due to mixed messages about vaccines.

Inequitable and Limited Resources

Despite the high concerns of fear and mistrust surrounding the COVID-19 vaccine, the majority of study participants did receive the COVID-19 vaccination. A minority of this study's participants did exhibit vaccine hesitancy and initially refused the COVID-19 vaccine.

For many participants in this study, the availability and access to the COVID-19 vaccine was a major issue. Limited access to vaccinations and scarcity of resources can potentially increase the risk of participants not getting vaccinated and becoming ill from the virus. As mentioned in the survey, focus groups, and interviews, gaining access to the vaccine was not easy due to confusing (and sometimes conflicting) messages regarding what is needed to get the vaccine, what to do, where to go, and how to get there to receive the vaccine. For many study participants, there were too many instructions, too many steps to complete, with many not having access to computer devices, access to the internet, jobs, transportation, and other resources. Participant observations regarding "Inequitable and Limited Resources" have significantly impacted and contributed to vaccine hesitancy in vulnerable communities. According to participants, this has created additional stressors regarding accessing COVID-19 vaccinations at the availability and rates of other local citizens. Participants shared they felt left out and discriminated against.

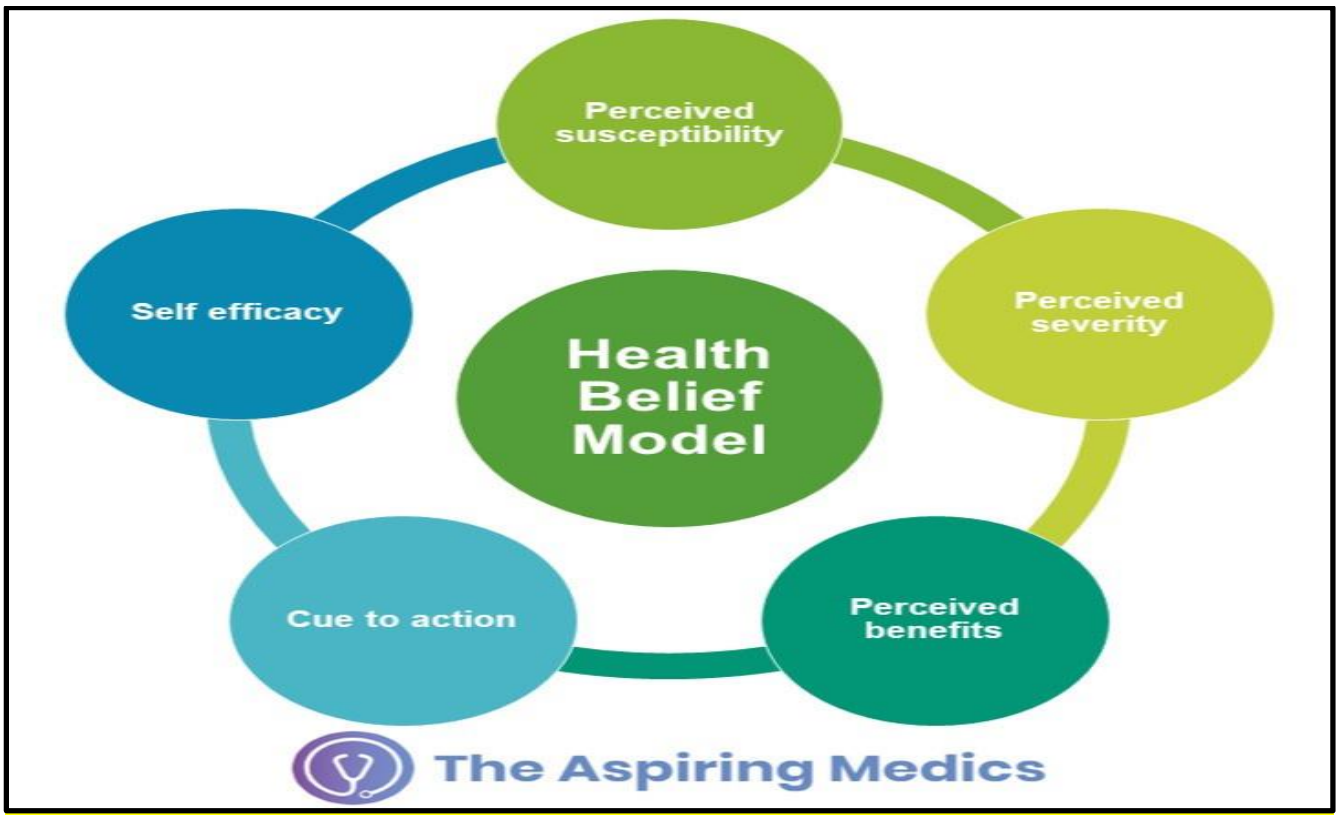
Connection to Health Belief Model

According to Rosenstock (1966) and Cottrell, Grivan, and McKenzie (1999), the Health Belief Model (HBM) addresses an individual's perceptions regarding a health problem's threat, and the likely outcome of the prevention or management of that problem. Using the HBM model as a guide to interpreting this study's findings, the residents who participated in this study approached the COVID-19 vaccination issue (i.e., the problem) based on their individual perceptions of the COVID-19 threat.

Through the lens of the HBM model, those participant perceptions resulted in reactions that were often slow, stagnant, delayed, and/or hesitant regarding vaccine acceptance or usage.

Figure 1

Health Belief Model Major Elements



Sources: Rosenstock (1966); Cottrell, Grivan, and McKenzie (1999); and Health Promotion, Aspiring Medics.com

Feelings, beliefs, and trust issues expressed by study participants are consistent with the HBM model's major elements regarding perceived susceptibility, perceived severity, perceived benefits, and cues to actions (see Figure 1).

Conclusions

The Coronavirus (COVID-19) pandemic has created an unprecedented public health challenge at the global, national, and local levels, and has disproportionately impacted minority and elderly populations (CDC, 2022a). Hinds County (MS), which contains the City of Jackson, had the highest number of reported cases in Mississippi with 27,441 cases (MSDH, 2022a), and

Hinds County and the City of Jackson both have populations that are over 70% Black/African-American with vaccination rates below the national average (MSDH, 2022b).

This research study examined various factors impacting decision-making among select African-American communities in Jackson, Mississippi regarding vaccination against COVID-19. Three overarching themes emerged from this study's data collection activities: 1) Fear; 2) Mistrust of the government/medical community; and 3) Inequitable and limited resources. These themes help provide a better understanding of various factors influencing vaccine hesitancy beliefs and behaviors of minority community members. Other major findings of this study included self-reported barriers and perceptions to vaccine hesitancy such as: 1) the shot/vaccines not being tested enough or on the market long enough; 2) people who received vaccination shots still became ill with COVID-19; 3) vaccinations were viewed as a means to benefit the medical community; 4) community members did not trust the vaccine for various and wide-ranging reasons; and 5) other concerns such as limited vaccine access, a lack of computer technology in the homes to initially register to receive the vaccine, and more affluent communities having more initial access to vaccination scheduling.

The Jackson, Mississippi community, like other communities across the United States and around the world, suffered severe personal, health, and economic losses which are irreplaceable. Moving forward, findings from this study suggest comprehensive, systemic pandemic emergency protocols should be incorporated into every community to ensure minimal disruption and loss of lives in the event of future pandemics. When protocols are designed to address basic and urgent needs of underserved and minority communities during pandemic emergencies, those communities are more likely to become vaccinated against health threats such as COVID-19.

Systemic support from community organizations, churches, government officials and organizations, and the medical community are needed to address many of the fears, concerns, and trust issues expressed by participants in this study. This type of support will help mitigate many of the "vaccine hesitancy" issues discussed throughout this research article, and will help increase the chances of getting higher COVID-19 vaccination rates in minority communities. Achieving higher vaccination rates can help individuals and communities better protect themselves, their loved ones, and return to their daily activities safely.

Government, the health and medical communities, community-based organizations, faith-based organizations, and other local service organizations need to strategically work together to increase awareness about vaccine hesitancy, implement strategies to reduce hesitancy in minority communities, and improve access and acceptance to vaccine utilization. Health education and health promotion is a multidisciplinary science that requires cooperation, trust, and equity to be effective. As evident in this study's findings, the absence or questioning of any of those elements can potentially lead to higher levels of vaccine hesitancy and lower levels of vaccine utilization in minority communities.

Study Recommendations

The goal of this study was to examine possible issues contributing to vaccine hesitancy in minority communities regarding taking the COVID-19 vaccination. This study sought to obtain greater insight into the context, motives, perceptions, beliefs, and feelings of community members regarding hesitancy in taking the COVID-19 vaccine. Since the level of vaccine hesitancy negatively affects mass vaccination programs and the ultimate control of the pandemic, it is necessary to implement strategies and recommendations that can lower vaccine hesitancy

and promote higher vaccination rates. Based upon this study's findings, the following recommendations are offered to address many of the issues previously identified and discussed:

- Assess, confront, and dissipate misinformation on COVID-19 vaccines, including misinformation coming from social media;
- Provide trusted information and education to minority communities regarding health threats and ways to overcome those threats such as using effective vaccines;
- Provide funding and resources (including vaccines) equitably, efficiently, and without unnecessary delay to address issues of equity and accessibility;
- Reduce and eliminate stigma (e.g. healthcare, poverty, education) in vulnerable communities;
- Activate comprehensive emergency plans and protocols to assist residents in preparing and responding to public health emergencies;
- Ensure basic needs of residents and very vulnerable communities are met;
- Improve communications between local, state, and national organizations and local communities/citizens; especially in local communities with high communication barriers and challenges (e.g., low internet access; limited transportation; language barriers);
- Use evidenced-based information to promote greater acceptance and utilization of the COVID-19 vaccines;
- Organize a comprehensive, expert group of healthcare professionals and scientists for collective engagement on COVID-19 vaccinations to provide credible and understandable information to reduce confusion and promote a trustworthy relationship with local communities.

Study Limitations

There were several limitations that impact this study's findings, interpretation, and generalizability. The first limitation involved the study's overall survey sample size (n = 96) which is not correlated to a power analysis of the City of Jackson's population. Another limitation involved the selection of study participants, which was not randomized and utilized a snowball sampling/referral technique for the identification of participants. Another limitation

involved the timing of this study in terms of its implementation, which occurred during several pandemic "waves" – thus potentially impacting recruitment and participant perceptions of the pandemic. Other issues, such as having limited access to computers, the internet, vaccine types, and transportation by some study participants (and members of the general population) also impacted the generalizability of this study's findings. While the impact of each limitation varies, the overall study findings regarding verifiable levels of vaccine hesitancy among Jackson, Mississippi's minority community is beyond debate. In seeking to build upon the body of knowledge regarding vaccine hesitancy in minority communities, the authors of this study strongly encourage the replication of this study across the United States and globally by other researchers. Copies of the online survey instrument, focus group, and Key Informant interview questions are listed in the appendix section of this research article. This study's authors give permission for other researchers to use the survey tool and focus group/Key Informant questions if proper reference attribution is listed.

Acknowledgements

The authors of this study would like to thank all project participants, community members, focus group participants, and community stakeholders for their time and interest in this research study. The findings from this project will be used to inform public, private, and non-profit officials as they consider actions to promote higher COVID-19 vaccination rates. Special thanks again to all who participated and/or played a role in this research project to assist in increasing knowledge of COVID-19.

References

Center for Disease Control and Prevention. (2022a). *CDC COVID-19 data tracker*. Retrieved from https://www.COVID.cdc.gov/COVID-data-tracker/#datatracker-home

Center for Disease Control and Prevention. (2022b). *Isolation and precautions for people with COVID-19*. https://www.cdc.gov/coronavirus/2019-ncov/your-health/isolation.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fyour-health%2Fquarantine-isolation.html

Cottrell, R.R., Girvan, J. T., and Mckinzie, J. F., (1999). *Principles and foundations of health promotion and education*. United Kingdom: Allyn and Bacon.

Guetterman, T. C., & Fetters, M. D. (2018). Two methodological approaches to the integration of mixed methods and case study designs: A systematic review. *American Behavioral Scientist*, *62*(7), 900–918. https://doi.org/10.1177/0002764218772641

Haselhorst, S. (2022, January). State's largest hospital reeling from COVID-19. *Clarion Ledger,* 1A, 5A.

Mississippi State Department of Health. (2022a). *Coronavirus disease 2019 (COVID-19).* Retrieved June 25, 2022, from https://msdh.ms.gov/msdhsite/_static/14,0,420.html#Mississippi

Mississippi State Department of Health. (2022b). *Mississippi State Department of Health COVID-19 vaccination reporting*. Retrieved May 23, 2022, from https://msdh.ms.gov/msdhsite/_static/resources/12130.pdf

Reinert, M. Fritze, D. & Nguyen, T. (October 2021). *The state of mental health in America 2022*. Mental Health America, Alexandria VA.

Rosenstock, I.M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly,* 44, 94-127.

Saied, S. M., Saied, E. M., Kabbash, I. A., Abdo S. A. E. (2021). Vaccine hesitancy: Beliefs and barriers associated with COVID-19 vaccination among Egyptian medical students. *Journal of Medical Virology, 93*(7): 4280-4291. doi: 10.1002/jmv.26910.

The White House. (2022). *National COVID-19 preparedness plan*. Washington, D.C.

U.S. Census Bureau. (2021). *Quick facts population estimates.* www.census.gov/quickfacts/fact/table/US/PST045221.

World Health Organization. (2002). *Coronavirus disease (COVID-19).* www.who.int/health-topics/coronavirus#tab=tab_1

Appendix

JSU Mississippi Urban Research Center / JSU Department of Policy and Management

COVID-19 Awareness Vaccine Hesitancy Survey

I. Demographics

Which age group do you fall under?

- 0-17
- 18-35
- 36-58
- 59-70
- 71 and above

What is your gender?

- Male
- Female
- Transgender Male
- Transgender Female
- I prefer not to say
- Other (Please Specify)

List County of residence

_____

II. Reasons for Vaccinations

Have you heard of the Coronavirus (COVID-19) outbreak?

- Yes
- No
- Maybe

Approximately when did you hear about the COVID-19 outbreak? (List approximate date)

_____

What is your main source of information regarding COVID-19?

- Newspaper and television news
- Social Media
- Government official websites
- Public health banners
- Friends and family
- From your doctors
- Other (Please Specify)

Do you think your county health department is doing enough to prevent the outbreak from spreading?

- Yes
- No
- Unsure

Rate your county health department in the following aspects:

(Rating Scale --- 1- Terrible, 5- Outstanding)

Health and hygiene awareness	1	2	3	4	5
Travel Limitations	1	2	3	4	5
Screening and tests to detect the virus	1	2	3	4	5

Availability of Hospitals 1 2 3 4 5

Availability of healthcare professionals 1 2 3 4 5

Quality of treatment 1 2 3 4 5

Is handwashing important to preventing the spread of the virus?

- Yes
- No
- Unsure

Does wearing a mask help prevent the spread of the virus?

- Yes
- No
- Maybe

Would wearing gloves help prevent the spread of the virus?

- Yes
- No
- Maybe

Can COVID-19 be cured with antibiotics?

- Yes
- No
- Maybe

What are the main symptoms of the virus? (Check all that apply)

- Cold
- Cough
- Sore throat
- Stomach pain
- Shortness of breath
- Redness in eyes
- Fever
- Toothache
- Nausea
- Itching
- Diarrhea

Do you know where to go if you start to develop symptoms?

- Yes
- No
- Maybe

Are you vaccinated?

- Yes
- No

Ways to get people vaccinated?

- Free shots
- Monetary Incentives
- Local Mobile vaccine sites
- MD visits
- Home visits
- Other _____

JSU Mississippi Urban Research Center / JSU Department of Policy and Management

Key Informant Interview Questions

Background:

Currently in Mississippi, over 7,991 people have died from coronavirus. The virus has hit minority communities the hardest with increased hospitalizations, long COVID-19 sickness, and deaths. Our JSU Team (MURC and the JSU Department of Policy and Management) have reached out to you and other key community leaders to better understand vaccine hesitancy in minority communities who you come in contact with on a daily basis. We simply want to pick your brain as to what barriers or issues affect the minority population and vaccine hesitancy. Thus, we want to know: Why are minorities not taking the vaccination shot?

- What are your thoughts about the whole COVID-19 Pandemic?
- From your organization's view, what do you think are some problems causing vaccine hesitancy?
- What methodology/strategies are you using to promote vaccine access?
- What methodology was used for your study?
- From your organization's perspective, what needs to be done to overcome vaccine hesitancy?

JSU Mississippi Urban Research Center / JSU Department of Policy and Management

Vaccine Hesitancy Focus Group Questions

Background:

Currently today in Mississippi, over 8,409 people have died from coronavirus. The virus has hit minority communities the hardest with increased hospitalizations, long COVID-19 sickness and deaths. Our team has assembled this group to understand vaccine hesitancy in minority communities. **Simply stated, why are minorities not taking the vaccination shot?**

- What are your thoughts about the whole COVID-19 Pandemic?
- Can you share your concerns for taking the COVID-19 vaccination?
- Can you share your reasons for not taking the COVID-19 vaccination?
- What stories have you heard about the vaccine?
- What would it take for you to get the vaccination?

ADDITIONAL QUESTIONS:

What can you tell me about the COVID-19 vaccination shot?

Can you share your top four preventive methods to avoid contracting the Coronavirus?

Have you been offered the COVID-19 vaccination?

Have you been told the benefits of the vaccination?

Has a medical professional shared with you the effects of not being vaccinated?

Have other members of your household taken the vaccination? How many?

Do you wear a mask 100% of the time in public and when out in crowds?

Analysis of the National Diabetes Prevention Program at the Magnolia Medical Foundation in Mississippi

Authors:

Mireya Alexander, BA, LSC, CHW, Program Manager, Magnolia Medical Foundation, Gulfport, MS, mireya.alexander@magmedfound.org

Justice Nguyen, MPH, Magnolia Medical Foundation, Gulfport, MS, justice.nguyen@magmedfound.org

Erica Thompson, MD, MPH, Chief Executive Officer, Magnolia Medical Foundation, Gulfport, MS, magnoliamedfoundation@gmail.com

Abstract

This study examined program delivery changes utilized in the Magnolia Medical Foundation Diabetes Prevention Program (DPP) second cohort group during the COVID-19 pandemic from November 2019 to November 2020. A cross-sectional, retrospective cohort research design was used to determine if changes to service delivery methods (due to COVID-19) affected the efficacy of the program. Efficacy of the program is defined as the ability to meet and exceed the CDC Diabetes Prevention Recognition Program requirements. The study's primary research question examined if switching program delivery methods during the COVID-19 pandemic affected the efficacy of the DPP program in the 2019-2020 cohort. Participants for the DPP were included according to age (> 18 y/o), risk questionnaire results, and participant glucose/weight parameters established by the Center for Disease Control and Prevention (CDC). For the 2019-2020 DPP cohort group, the program was delivered in Spanish. Data were collected on a sample of 20 Spanish-speaking DPP participants. The data were split into two data sets representing two equal time periods of "pre-COVID-19" and "post-COVID-19" restrictions. Data were analyzed using Paired t-tests and Wilcoxon signed-rank statistical tests. Findings indicated while the program met its goals and requirements throughout the entire cohort in accordance with the Diabetes Prevention Recognition Program, there were significant decreases in some measures between the "pre-COVID-19" and "post-COVID-19" time periods. The differences in results between the two time periods suggest that the delivery method for the "pre-COVID-19" (in-person) time period had a higher efficacy than the "post-COVID-19" (virtual) time period. Based on study findings, it may be prudent, whenever possible, to continue with in-person delivery while ensuring effective infection control protocols are in place (e.g., masking and social distancing).

Keywords: COVID-19, National Diabetes Prevention Program, Mississippi, cohort, Spanish-speaking

Introduction

Type-2 diabetes is a chronic, long-lasting health condition that affects tens of millions of Americans. It is the seventh leading cause of death and drastically increases the medical costs of those who are afflicted with it (Center for Disease Control and Prevention [CDC], 2020). According to the CDC (2020), "Medical costs for people with diabetes are twice as high as for people who don't have diabetes." Considering the burden of diabetes and the issues associated with the onset of the disease, many healthcare organizations have taken measures to help with the prevention and reduction of risk for diabetes. Particularly in Mississippi, there is a high overall presence of diabetes. According to the Mississippi State Department of Health (2018), over 300,000 Mississippi adults, representing 13% of the population, live with diabetes. This percentage of diabetes prevalence is also significantly higher than the national average which sits at 10.5% (CDC, 2020).

In addition to the burden of disease, there is a considerable gap in the risk of diabetes between racial and ethnic groups. The Mississippi State Health Department (2018) also identified that certain groups within the population have higher numbers of people who live with diabetes in comparison to other groups. As an example, the prevalence of diabetes for Black adults is almost five percent higher than the prevalence of diabetes in White adults. From the *2017 CDC Diabetes Report Card*, the percentage of adults who have been diagnosed with diabetes is much higher in ethnic groups such as American Indian, Hispanic, and Black groups (CDC, 2021b). Data from the Center for Medicare and Medicaid Services shows that the prevalence of diabetes is much higher in Black and Hispanic beneficiaries than White beneficiaries, and health outcomes are worse for minority groups (CMS, 2021b).

National Diabetes Prevention Program

One significant measure to counteract the burden of diabetes, as well as address the health disparities existing among minority groups, is the National Diabetes Prevention Program (NDPP). This program aims to create partnerships among different organizations, both public and private, to implement interventions for the prevention of type-2 diabetes throughout the US (CDC, 2021a). It is research-based and emphasizes lifestyle changes that reduce risk for type-2 diabetes such as physical activity and healthier eating (CDC, 2021a). Through research and interventions, many organizations utilizing this program have been implementing initiatives and activities focused on effective communication of health goals within areas of need for priority populations. The Centers for Medicare and Medicaid Services (CMS) has identified multiple strategies, methods, and programs within the NDPP program that have proven successful for addressing many of the cultural barriers related to the health disparities (CDC, 2021a). Some examples include engaging with the community and its members to understand their needs and wants for the program, engaging with relevant stakeholders such as translators and physicians to ensure trust with participants, and using resources to ensure that the specific needs of minority and low socioeconomic groups participating in the program are addressed (CMS, 2021a).

National DPRP Requirements

To investigate the efficacy of the Magnolia Medical Foundation's Diabetes Prevention Program, it is first necessary to understand some of the national requirements of the CDC Diabetes Prevention Recognition Program (DPRP). The national DPRP program requires that at least five participants complete the year-long program. Program completion is defined as having at least eight sessions in the first six months and having the time between the first session and final session in the program to be at least nine months (CDC, 2021c). The recognition program

also has a retention requirement in which a minimum number of participants should be retained throughout the program. The minimum retention requirements are 50% by the fourth month from the subject's first session, 40% by the seventh month, and 30% by the tenth month (CDC, 2021c). The final requirement used for investigation is the participant risk reduction at 12 months. According to the recognition program requirements, at least 60% of those who have completed the program must have either 5% weight loss 12 months after the cohort began, or have had 4% weight loss and 150 minutes per week of physical activity on average after 12 months (CDC, 2021c). While this study only looked at a portion of the cohort's study period, the above requirements were still checked and evaluated to understand the program's performance during the period under review.

Magnolia Medical Foundation (MMF)

The Magnolia Medical Foundation (MMF) is one of many organizations that implements the NDPP program and utilizes some of its strategies for addressing cultural and linguistic barriers. Magnolia Medical Foundation is a quality and assurance resource that aims to lessen disparities among Mississippi communities in need. It aims to ensure quality health and social services are provided, and to promote healthy well-being and behaviors throughout Mississippi with locations in Natchez, Jackson, and the Gulf Coast. Underserved populations such as the African-American and Hispanic populations in the U.S. have a higher risk of both prediabetes and diabetes (CDC, 2020). Within Mississippi, Spanish-speaking populations are not widely researched. Members of Magnolia Medical Foundation (including a Lifestyle Coach) have been assisting and educating the Spanish-speaking community for the past three years which includes the COVID-19 outbreak.

Description of MMF Diabetes Prevention Program

The program starts with weekly educational sessions for 16 weeks, followed by two months of biweekly sessions, and weekly sessions for the next consecutive 26 weeks (six months). Each week, Magnolia Medical Foundation's Lifestyle Coach conducts a presentation going over a module from the National Diabetes Prevention Program's (NDPP) *Lifestyle Coach Facilitators Guide*. In addition to education and assistance, weekly progress for each participant is reviewed. Weekly weight and minutes of physical activity are documented. The overall goal of the program is to reduce the risk of type-2 diabetes by achieving a weight reduction of 5-7% and maintaining a minimum of 150 minutes of physical activity per week as outlined by the DPRP.

Study's Purpose

This study examined program delivery changes utilized in the Magnolia Medical Foundation Diabetes Prevention Program's second cohort group during the COVID-19 pandemic. There were 25 Spanish-speaking participants in the program. This study's analysis focused on the second semester of the program year which spanned from February 2020 to November 2020. A factor of interest during this time period was the efficacy of the program's delivery methods during the COVID-19 pandemic. The MMF DPP program delivery methods changed from largely in-person learning to distance learning (virtual/online). The aim of this report was to determine if the switch in delivery methods influenced the efficacy of the program. Efficacy is defined as the ability to meet and exceed the CDC Diabetes Prevention Recognition Program requirements (DPRP). Program data were analyzed to see if the program maintained reasonable efficacy with changes made in response to COVID-19, and whether there were significant differences in the results between the two delivery methods. Efficacy for the program

was determined through comparing descriptive data results with national CDC program recognition requirements.

Methodology

This study utilized a cross-sectional, retrospective cohort research design to examine program changes made due to the COVID-19 pandemic, and how those changes affected the efficacy of the Magnolia Medical Foundation's Diabetes Prevention Program (DPP). Program operations were reviewed for the time period of November 2019 to November 2020. DPP participants were recruited from three Gulf Coast counties (i.e., Hancock, Harrison, and Jackson) utilizing Magnolia Medical Foundation's recruitment procedures such as advertising through health fairs, distributing informational flyers, and making announcements at local area churches. In keeping with this study's goal of examining changes in the program's delivery methods on the targeted cohort group, data were collected from dividing the cohort into two groups (i.e., November 2019 to July 2020, and August 2020 to November 2020). Data analysis was performed using SAS Studio statistical software. Wilcoxon-ranked tests and Paired t-tests were used to test differences between the two groups across selected factors related to program efficacy.

Participant Inclusion Criteria

Individuals were included in this study based on eligibility criteria as outlined in the Center for Disease Control and Prevention (CDC) Diabetes Prevention Recognition Program (DPRP). According to the DPRP, participants were selected by age (> 18 y/o), score on the risk questionnaire, and participant glucose/weight parameters. A total of 25 individuals met criteria for participation in the National Diabetes Prevention Program (NDPP). Of those 25 participants,

20 successfully completed the year-long NDPP program. Participants' average age was 44 years, and 70% had less than or equal to a high school education.

Data Analysis

Analysis was conducted on data obtained from program participants identified in the inclusion criteria. Data from the cohort group were divided into two data sets for analysis. The first set consisted of program data covering the time period between November 2019 to July 2020. This set represents data obtained before the imposition of COVID-19 restrictions. During this time period, the program was delivered in-person. This time period is known as the *"pre-COVID-19 in-person period."*

The second set consisted of data obtained between August 2020 and November 2020, after the imposition of COVID-19 restrictions. This time period is known as the *"post-COVID-19 distance learning period,"* where sessions were fully adapted to accommodate for COVID-19 procedures and were performed on the Zoom platform every week.

The average weight, physical activity, net weight loss, average weight loss per session, and average physical activity increase per session for each subject was calculated for both data sets. To examine the efficacy of the program, the net weight loss (measured in pounds) and the average physical activity (measured in minutes) were calculated for each time period.

Statistical Testing

To compare the *"pre-COVID-19"* and *"post-COVID-19"* time periods, the difference of means for each dataset variable was calculated using Paired t-tests and Wilcoxon signed-rank tests, as the two data sets are from the same sample. Paired t-tests were used where the variables of interest had normal distribution for the difference in paired values. Wilcoxon signed-rank tests were used where the variables of interest did not have normal distribution for the difference in

paired values. The variables of interest tested for differences in mean scores were average weight, average physical activity, average weight loss per session, average physical activity increase per session, and net weight loss. The statistical significance level was set to alpha = .05.

Results

For the Diabetes Prevention Program at Magnolia Medical Foundation, there were 20 Spanish-speaking participants who completed the program. The retention rate by the end of the program for this cohort group was 80%. Table 1 lists the percentage weight loss and average physical activity per week for each subject.

Table 1

Percentage Weight Loss and Average Physical Activity for MMF NDDP Participants

Participant	Weight Loss (%)	Average Physical Activity (minutes per week)
1	10.06%	229.1
2	2.35%	272.12
3	5.92%	244.37
4	10.61%	296.62
5	7.89%	258.12
6	2.03%	313.50
7	5.95%	309.62
8	15.45%	258.75
9	4.58%	212.62
10	13.92%	682.30
11	1.59%	179.25
12	3.43%	234.37
13	1.97%	232.12
14	3.16%	268.52
15	6.45%	311.50
16	5.59%	246.72
17	5.30%	258.87
18	5.36%	260.51
19	6.12%	261.62
20	-3.66%	192.12

All participants reported their average weekly physical activity was at or above 150 minutes. Thirteen of the 20 participants had percentage weight loss greater than 4%. Twelve of the 13 participants had percentage weight losses above 5%. Using the CDC DPRP criteria as an assessment guide, 65% of the participants met diabetes risk reduction criteria. Table 2 lists the mean scores for each variable in the *"pre-COVID-19"* and *"post-COVID-19"* time periods.

Table 2

Means for Pre- and Post-COVID-19 Groups

Variable	Pre-	Post-
Average weight	164.01	160.70
Average physical activity	288.24	253.55
Net weight loss	7.90	2.25
Average weight loss per session	0.29	0.16
Average physical activity increase per session	-5.44	1.38

The mean scores in Table 2 show the change from pre-COVID-19 to post-COVID-19 time periods. Based on the results, all variables showed decreases from the pre-COVID-19 period to the post-COVID-19 period, except for average physical activity increase per session.

Paired t-Test Results

Paired t-tests were used to test the variables of average weight loss per session and average physical activity increase per session. Findings from those tests indicate there was not a statistically significant difference in pre-COVID-19 average weight loss per session and post-COVID-19 average weight loss per session ($t(19) = 1.41$, $p = .17$). This finding suggests changes made in program delivery methods during the time period under review did not significantly impact program efficacy for this variable.

Test results for the variable average physical activity increase per session indicate there was a statistically significant difference in pre-COVID-19 average physical activity increase per session and post-COVID-19 average physical activity increase per session ($t(19) = -2.38$ p = .02). This finding suggests changes made in program delivery methods during the time period under review did significantly impact program efficacy for this variable. On average, the pre-COVID-19 time period had 6.8 minutes less "Increase in average physical activity per session" compared to the post-COVID-19 time period.

Wilcoxon Signed-rank Tests Results

Using Wilcoxon signed-rank statistical tests, the variables of average weight, average physical activity, and net weight loss for differences in paired measures were tested. Table 3 provides the results from the Wilcoxon signed-rank tests. The results indicated the paired rank difference is not symmetric around zero, which means there is a statistically significant difference (alpha = .05 (Z = 84, p = .01) in the average weights from the pre-COVID-19 time period and post-COVID-19 time period. The p-value for the variable of net weight loss was

Table 3

Wilcoxon Signed Ranked Tests – Average Weight, Physical Activity, Net Weight Loss

Variable	Z Statistic	p-Value
Average weight	84	< .01
Average physical activity	27	.33
Net weight loss	71	< .01

also statistically significant at alpha = .05 (Z = 71, p = .0061). This means there is a statistically significant difference in the net weight loss values between the pre-COVID-19 and post-COVID-

19 groups. No significant difference in average physical activity using Wilcoxon signed rank tests.

Discussion

In terms of efficacy, the Diabetes Prevention Program at Magnolia Medical Foundation met the requirements for recognition based on national DPRP criteria (CDC, 2021c). The program far exceeded participation and retention requirements. Despite having to adjust for COVID-19, the program was still able to meet the participant risk reduction requirements and excel in certain aspects of actions towards those goals.

Based on this study's data analysis results, there were significant differences in paired t-test measures for the variables of average weight, net weight loss, and average physical activity increase per session. For the difference of average weight, the results showed there was a statistically significant difference in average weights from the pre- and post-COVID-19 time periods. The difference in the average weight mean scores suggest that average weights of the participants decreased from the pre-COVID-19 time period to the post-COVID-19 time period. This further supports the efficacy of the program as it is aiming for weight reduction over time.

As related to net weight loss, the results showed a difference in the net weight loss from pre- and post-COVID-19 time periods. The difference in net weight loss mean scores indicate net weight loss decreased from the pre- to post-COVID-19 time period. This finding suggests that the work before COVID-19 protocols and accommodations were implemented produced higher weight loss than after COVID-19 accommodations. Therefore, it can be inferred that the transition to accommodating for COVID-19 negatively affected average net weight loss, thus working against the goal for weight loss in the Diabetes Prevention Program.

Test results for “average physical activity increase per session” indicated there was a statistically significant difference between the mean score average for the pre-COVID-19 time period and the mean score average for the post-COVID-19 time period. For the pre-COVID-19 time period, the mean score for average physical activity increase per session was negative, suggesting there was a decrease in physical activity per session. This indicates that overall physical activity levels were decreasing throughout the first half of the program. The mean score average physical activity per session for the post-COVID-19 time period was close to zero, indicating little increase in average physical activity per session. This shows the amount of physical activity each week stayed constant throughout this period. This can be attributed to the transition to COVID-19 distance learning as well. There was a trend in which at the time of switching to Zoom meeting sessions; rather than continuing to conduct in-person sessions, the amount of physical activity would fluctuate with spikes of higher and lower physical activity. However, after a month or so, physical activity would drop lower than before the transition, and then become constant, like during the post-COVID-19 time period. From this, it can be surmised that the transition overall led to a decrease in physical activity, thus explaining why average physical activity increase per session is lower in the pre-COVID-19 time period compared to the post-COVID-19 time period.

Conclusions

Overall, the Diabetes Prevention Program at Magnolia Medical Foundation proved to be successful at reducing the risk for type-2 diabetes, especially when applying culturally and linguistically appropriate services. However, the changes that COVID-19 brought to the program has produced hindrances and overall negative efficacy effects for the program. Due to many of the COVID-19-related changes implemented, a lot of physical distance was created between the

Magnolia Medical Foundation's Lifestyle Coach and participants of the program. This affected program participants in terms of motivation, adherence, and cooperation, especially for underserved populations such as the program's Spanish-speaking participants. Thus, potential methods toward solving this and other issues identified in this study should be investigated.

Recommendations

Based on this study's findings regarding overall operations of the Magnolia Medical Foundation's Diabetes Prevention Program (DPP) during the COVID-19 pandemic, the following recommendations are suggested for future operations and activities:

- Continue identifying issues that participants are having while in the program and work towards specifically addressing those issues so participants can better achieve DPP goals;
- Deliver services "in-person" to uphold a higher level of efficacy;
- Implement other projects, efforts, and programs to tackle specific challenges to program participation, and uptake of distance learning, so that retention and efficacy of the new delivery method is not lost. For example, ensuring that all participants have internet access and a reliable way to access meetings through Zoom. Also ensuring participants understand how to work the Zoom meeting platform and be kept engaged over the duration of the program;
- When using distance learning methods, investigate likely barriers and potential problems, and look at the participant's perspective to achieve optimal program outcomes;
- Future research should be done to investigate overall opinions of both the "in-person" and a "distance learning" program delivery methods;
- Continued research comparing the results between the "in-person" and "distance learning" program delivery methods;
- Based on the Magnolia Medical Foundation's experience during the COVID-19 pandemic, networking with multiple organizations and applying those efforts towards the well-being of the participants could lead to more effective and efficient results.

Study Limitations and Program Challenges

It is important to note that despite the variables and factors examined, other factors could have influenced or contributed to this study's findings. This study was limited to the 20 participants that were included in the cohort grouping. Different findings might be possible if similar Spanish-speaking DPP cohorts could have been included during the COVID-19 pandemic, and therefore help increase the generalizability of this study's findings.

The National Diabetes Prevention Program at Magnolia Medical Foundation had been facilitated using traditional, in-person sessions. With the COVID-19 lockdown, in-person sessions were no longer possible. By March 2020, virtual sessions using the Zoom platform were developed by the MMF Lifestyle Coach following instructions from the Centers for Disease Control and Prevention. However, the shift from face-to-face to virtual sessions was not an easy process. Many of the DPP participants did not have computers or smart phones to be able to take on distance learning, and only a few of those who did have access to the necessary hardware knew how to manage distance learning. The MMF Lifestyle Coach established practice sessions for those participants that had a computer or smartphone, and conducted telephone classes with those that could not connect to the platform. In addition to the lack of hardware and knowledge, the participants, like so many others, experienced increases of stress and anxiety, as some of them were laid off from their jobs, kids were out of the classroom and at home, knowledge of COVID-19 and COVID-19 protocol were confusing and/or inconsistent, and food supplies were running low. These factors could have also contributed to this study's findings.

The MMF Lifestyle Coach identified ways to help the participants amid this period of uncertainty. To help with the technological barrier of the participants, Magnolia Medical Foundation, in cooperation with Neighborhood Wireless, held computer tablet giveaways where

participants who met eligibility requirements received a computer tablet with a five-year data plan at no cost. Materials such as COVID-19 resources and Internet Safety handouts were also provided.

The MMF Lifestyle coach invited participants to attend virtual medical talks about COVID-19 during a time when scientists were still exploring and understanding the disease. MMF invited local area physicians to give educational presentations that were then translated into Spanish by the MMF Lifestyle Coach. Presentations educated participants on proper infection control, what to expect, and what to do in case they became infected. Presentations were given immediately after the prescribed DPP Session.

Novo Nordisk and Magnolia Medical Foundation were able to rally resources and supply extra boxes of fruits and vegetables through the end of the DPP program cycle. Additionally, Catholic Charities of Biloxi funded a group of volunteers, consisting of DPP participants, in making CDC-criteria homemade masks for all DPP participants, their families, and the community. Throughout this period and up to the end of the program, only two out of 20 DPP participants ended up with COVID-19.

While Magnolia Medical Foundation made efforts to reduce changes, additional factors could have influenced the efficacy of the program, such as distractions of children in the home, housing, work, and food insecurity, as well as a lack of internet access.

References

Center for Disease Control and Prevention. (2020). *Diabetes fast facts.* https://www.cdc.gov/diabetes/basics/quick-facts.html

Center for Disease Control and Prevention. (2021a). *About the National DPP.* https://www.cdc.gov/diabetes/prevention/about.htm

Center for Disease Control and Prevention. (2021b). *Addressing health disparities in diabetes.* https://www.cdc.gov/diabetes/disparities.html

Center for Disease Control and Prevention. (2021c). *DPRP standards and operating procedures.* https://nationaldppcsc.cdc.gov/s/article/DPRP-Standards-and-Operating-Procedures

Center for Medicare and Medicaid Services. (2021a). *Diabetes prevention programs: Equity tailored resources.* https://www.cms.gov/files/document/culturally-and-linguistically-tailored-type-2-diabetes-prevention-resource.pdf

Center for Medicare and Medicaid Services. (2021b). *Racial and ethnic disparities in diabetes prevalence, self-management, and health outcomes among Medicare beneficiaries.* https://www.cms.gov/About-CMS/Agency-Information/OMH/research-and-data/information-products/data-highlights/disparities-in-diabetes-prevalence

Mississippi State Department of Health. (2018). *2018 Mississippi diabetes action plan*. https://msdh.ms.gov/msdhsite/index.cfm/ 29,7612,296,pdf/2018%20Diabetes%20Action%20Plan.pdf

The Role of Trust, Mistrust, and Misinformation in COVID-19 Vaccine Hesitancy: Views from an African American Community

Authors:

Yalanda M. Barner, DrPH, MBA, Jackson State University, Department of Health Policy & Management

Melinda G. Todd, DrPH, MPH, MCHES®, CPM, Jackson State University, Mississippi Urban Research Center

Sam Mozee, PhD, Jackson State University, Mississippi Urban Research Center

Jasmine Bolden, Jackson State University, Department of Health Policy & Management

Azia Hill, Jackson State University, Department of Health Policy & Management

Russell L. Bennett, PhD, MPH, MS, RN, NE-A, C, Jackson State University, Department of Health Policy & Management

Abstract

This article is one of two related research articles investigating various perspectives of vaccine hesitancy in African American communities. This study examined how the issues of trust, mistrust, and misinformation influence the level of vaccine hesitancy occurring among African-American communities in Jackson, Mississippi. This research project utilized a mixed methods case study design that focused on obtaining feedback from community members in the Jackson, Mississippi area. Two focus group sessions (n = 11, n = 9) were conducted utilizing the Zoom platform to accommodate working individuals. Focus group participants responded to a five–question instrument discussing various issues related to vaccine hesitancy in the target community. Key Informant interviews were conducted via Zoom with four key community leaders. An online vaccine hesitancy survey was distributed via email to more than 10 community groups for a total of 96 respondents. Three general themes emerged from the data collection activities: (1) lack of information, poor information, and inaccurate information regarding the virus and vaccines; (2) lack of trust in government and medical organizations regarding the vaccine's effectiveness or intent; and (3) need for more education, training, and marketing to reduce hesitancy and increase vaccination rates. Study recommendations include providing minority community members with educational methods and public health messaging on the COVID-19 vaccine (to gain a better understanding of the vaccine), and increasing vaccination rates among African-American communities.

Keywords: trust, mistrust, misinformation, vaccine hesitancy, COVID-19, minority community, African-American, Jackson, Mississippi

Introduction

The Coronavirus (COVID-19) pandemic has caused an unprecedented public health challenge at the global, national, and local levels. According to the World Health Organization, as of June 2022, the coronavirus has contributed to more than 539 million confirmed cases, six million deaths, and approximately 11 billion vaccinations have been administered (World Health Organization [WHO], 2022). In the United States, over 86 million cases and approximately one million deaths have been confirmed, and over 105 million individuals have been vaccinated with one dosage of the COVID-19 vaccine (Center for Disease Control and Prevention [CDC], 2022a). As of June 2022, Mississippi has confirmed over 828,000 COVID-19 cases and 12,000 deaths; approximately one million individuals have been fully vaccinated but only 571,000 have received their booster vaccinations or third dosage (Mississippi State Department of Health [MSDH], 2022a; MSDH, 2022c). Mississippi currently has 38% of the overall COVID-19 deaths among the total Black population in the United States (Kaiser Family Foundation, 2022). Hinds County, Mississippi has the highest number of reported COVID-19 cases in the state with 55,021 cases and 773 deaths (MSDH, 2022b).

Research indicates that minority communities are disproportionately impacted by COVID-19, which causes more hospitalizations and deaths (CDC, 2022a). Minority communities are underserved when it comes to healthcare and consequently, most have chronic underlying health conditions (Tai et al., 2020). Furthermore, minority communities are at higher risk of developing complications if contracting COVID-19 (Artiga et al., 2020). Historically, there is a hesitancy in minority communities to receive vaccines based on issues related to mistrust in the healthcare system (CDC, 2022a).

This study examined the role of mistrust and misinformation as related to vaccine hesitancy among African-American communities in Jackson, Mississippi. It is one of two related

research articles investigating various perspectives of vaccine hesitancy in minority communities. The following are definitions of key terms used in this article: (a) *trust* is defined as the perceived loyalty and confidence in government other sources; (b) *mistrust* is defined as the lack of trust and confidence in government, healthcare providers, and the COVID-19 vaccine; and (c) *misinformation* is defined as poor, inaccurate, or lack of information given by the government, healthcare providers, and other social media resources in regard to COVID-19 vaccination.

Background

Several concerns have been researched as to why many people are unwilling to accept the COVID-19 vaccine. According to research conducted by Machingaidze and Wiysonge (2021) on understanding vaccine hesitancy, the United States has a 64.6% acceptance rate for the vaccine which is similar to rates for countries such as Pakistan and Burkina Faso whose rate is just above the United States at 66.5%. In some places like Africa, 79% of participants stated they will only be vaccinated against COVID-19 if it is deemed "safe and effective" (Govere-Hwenje et al., 2022). According to Razai et al. (2021), sociodemographic factors, such as gender, race, income, and education contribute to vaccine hesitancy. Race and ethnicity are influential factors with African-Americans reporting the highest level of vaccine hesitancy and the lowest level of vaccine confidence of any ethnic group (Razai, 2021). It was found that African-Americans were reluctant to get the vaccine because of concerns for long-term effects and side effects, but more importantly for their distrust of the vaccine (Razai, 2021).

Role of Misinformation and Trust

It is suggested by the Centers for Disease Control (CDC) that there are multiple ways to confront misinformation that appears in the media, on the internet, and on social media (CDC,

2020). On social media, for example, there is an escalation of false and misleading information about COVID-19, potentially risky treatments, and vaccination. Puri et al. (2020) indicated that it has become increasingly apparent that the discussion of vaccines may not be restricted to legitimate, human-run accounts. It is also common to see false accounts being used to spread information about COVID-19 on social media, particularly Twitter. Moreover, several people may find it challenging to determine the authenticity of information coming from multiple sources. A similar study found that 59% of those exposed to vaccine related websites were unable to detect misinformation, while over 50% reported incorrect vaccination information (Puri et al, 2020). For instance, recommendations from the CDC (2021) indicate that a person can listen to and analyze information coming from these sources and figure out when, where, and why it is spreading. Early identification of misinformation will allow the development and delivery of accurate information to address concerns and questions and will help close information gaps before inaccurate information is displayed (CDC, 2021).

Another major concern identified was the lack of trust that many have in the government and public health systems. As a result of systemic racism and discrimination, and previous unethical healthcare research conducted on Black populations, trust has been destroyed (Razai et al., 2021). Often, African-Americans' distrust of the medical field can be traced to the Tuskegee Syphilis Study (Willis et al, 2021). However, current issues of distrust have deep roots that go beyond a single incident and stem from a centuries-long pattern of racism in medical research and treatment. Willis et al. (2021) noted that a large amount of medical racism persists, and African-Americans do not need an extensive knowledge of medical racism to consider vaccines when they need to only look at recent experiences.

As cited earlier, African-Americans have experienced issues related to trust, mistrust, and misinformation of the COVID-19 vaccination delivered through government sources, healthcare providers, and/or other sources such as social media sites. To help gain a better understanding of issues involved with vaccine hesitancy and vaccination, a theoretical framework is needed to help provide clarity of those issues and identify potential solutions. The Social Ecological Model (SEM) is used in this study to identify factors and to understand how communities, particularly African-American communities, can gain knowledge and take actions needed to address trust-related issues about the COVID-19 vaccine and getting vaccinated.

Theoretical Framework

The theoretical framework utilized in this study was introduced during the 1970s by Urie Bronfenbrenner (Bronfenbrenner, 1994) as a model of human development. The Social Ecological Model (SEM) clarifies factors that impact the health of individuals through behavior change and provides guidance in developing effective programs through social and physical environments (Caperon et al., 2022). Latkin (2021) utilized SEM to gain an understanding of vaccine hesitancy. This model construct includes individual (intrapersonal), interpersonal (social network), organizational, community, and public policy as factors, but the foundation of the model is ultimately on the individual level. In this study, the individual (intrapersonal) level, interpersonal level, and the community level are pertinent in understanding how issues related to mistrust and misinformation possibly impact vaccine hesitancy in minority communities.

Methodology

This research project utilized a mixed methods case study design that focused on obtaining feedback from community members in the Jackson, Mississippi area. The case study design allows for a more in-depth examination of the context, motives, perceptions, beliefs, and feelings associated with the investigation of a specific issue (Crowe et al., 2011). It also produces

an in-depth understanding of a complicated matter that brings issues into a factual perspective (Crowe et al., 2011).

Participants

All of the focus groups and Key Informant interviewees were African-Americans, and were recruited utilizing snowball sampling/recruitment methods from local community groups, faith-based organizations, and other organizations in the Jackson, Mississippi community. Specific recruitment activities included direct phone calls, site visits, and word of mouth contacts. Below is a listing of procedures utilized to gather information that provides insight into the context, motives, perceptions, beliefs, and feelings of community members regarding possible trust-related issues associated with vaccine hesitancy in the target community.

Procedures

Two focus group sessions (n = 11, n = 9) were held via the Zoom platform after 5:00 p.m. to accommodate working individuals. Focus group participants responded to a five–question instrument discussing various issues possibly related to vaccine hesitancy in the target community. Participants were allowed to share any additional comments or concerns related to vaccine hesitancy at the end of the session. Participants' responses were recorded via Zoom, transcribed, and cleaned with minimal editing for final report writing. A gift card incentive of $25.00 was distributed for each participant completing the focus group session.

Key Informant interviews were conducted via Zoom with four community leaders. These community leaders represented a faith-based church, a medical clinic, a community based-organization, and a Mississippi Legislature Senate member.

An online vaccine hesitancy survey was distributed to more than 10 community groups. The survey consisted of 14 questions seeking input from respondents on various issues possibly

related to vaccine hesitancy in the target community. The Qualtrics online survey software tool was used to collect participants' responses. The survey collected 96 responses (n = 96). Data analysis consisted of tabulating descriptive statistics (i.e., frequency counts, percentages) from the online survey findings, and conducting qualitative thematic analysis focusing on common words, phrasing, topics, and themes.

Results

The following tables, figures, and narratives present findings from this research study's online survey, focus group sessions, and Key Informant interviews data collection activities. As related to the focus of this research study, emphasis was placed on identifying findings specifically related to the issues of trust, mistrust, and misinformation as possible connections to vaccine hesitancy in the target community.

Online Survey Results

Table 1

Vaccinated Against COVID-19

Answer	%	Count
Yes	83.33%	80
No	16.67%	16
Total	100%	96

In Table 1, a majority of survey respondents (83%) indicated they had been vaccinated with at least one dose of the COVID-19 vaccine.

Table 2 provides a summary of the survey respondents' demographic information. The majority of participants were Black/African-American; between the ages of 36-58; were female; and had an income level of $70,000 or lower.

Table 2

Survey Demographics

Category	%	Count
Race		
Black/African-American	100	96
Age Group		
0-17	3.13%	3
18-35	30.21%	29
36-58	39.58%	38
59-70	23.96%	23
71 and above	3.13%	3
Gender		
Male	36.84%	35
Female	63.16%	60
I prefer not to say	0.00%	0
Other (Please Specify)	0.00%	0
Household Yearly Income		
$0 - $10,000	1.05%	1
$10,001 - $25,000	4.21%	4
$25,001 - $40,000	16.84%	16
$40,001 - $55,000	18.95%	18
$55,001 - $70,000	15.79%	15
$70,001 - $85,000	10.53%	10
$85,001 - $100,000	15.79%	15
More than $100,000	16.84%	16

Table 3

Some Reasons Why You Chose to Receive the COVID-19 Vaccine (Check all that apply)

Reasons	%	Count
Keep from getting the COVID-19 virus	26.43%	60
Required by my job	8.81%	20
Protect my family & community	25.99%	59
Show support for my government	2.20%	5
Trust the vaccine is safe	13.66%	31
Recommended by a trusted source (e.g., family, doctor, pastor)	11.89%	27
It was free/no-cost	9.25%	21
Other reason	1.76%	4
Total	100%	227

Table 4

Some Reasons Why You Have Not Received the Vaccine (Check all that apply)

Reasons	%	Count
Not enough information	9.09%	2
Not enough time to go get the vaccine	4.55%	1
Vaccine is not proven to work	22.73%	5
Afraid the vaccine will make me sick	13.64%	3
Government is using vaccine to track people	4.55%	1
Do not trust the Government	18.18%	4
Against my religion	4.55%	1
Cannot get the right type of vaccine	0.00%	0
Other reason	22.73%	5
Total	100%	22

Table 3 provides a list of reasons why participants chose to receive the COVID-19 vaccine. Only 11.89% of respondents selected Recommended by a trusted source (e.g., family, doctor, pastor), with 13.66% selecting the answer choice Trust the vaccine is safe.

Table 4 provides a list of reasons why participants have not received the COVID-19 vaccine. The second largest response category was Do not trust the Government at 18.18%. The answer choice Not enough information was selected by approximately 9.09% of the survey respondents. Only one respondent selected the answer choice the Government is using vaccines to track people.

Figure 1 presents summary results for the question "*Do you know someone who has not been vaccinated?*" The overwhelming percentage of survey respondents (80%) indicated they did know someone who has not been vaccinated with at least one dose of the COVID-19 vaccine.

Figure 1

Do You Know Someone Who Has Not Been Vaccinated?

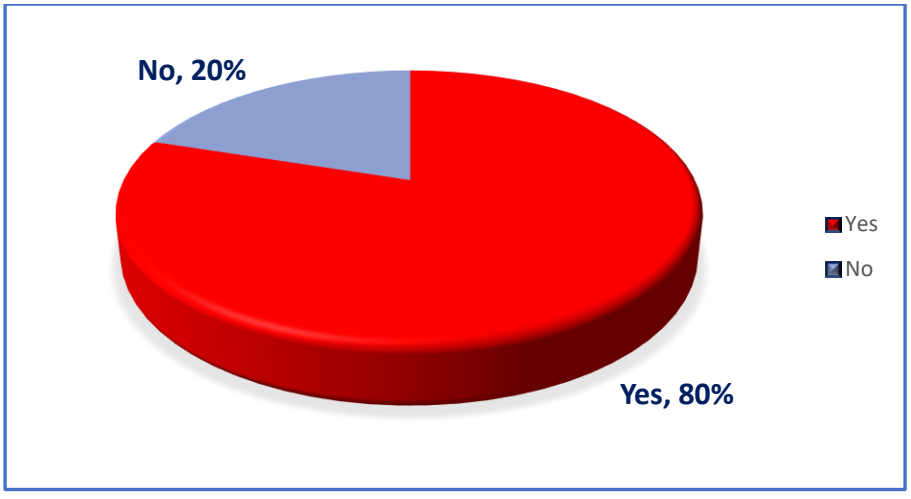


Figure 2 presents summary results for the question "*If you know someone who has not been vaccinated, what are some reasons they give for not getting the vaccine?"* The answer choice Do

not trust the government was tied with Afraid the vaccine will make them sick for the most selected response.

Figure 2

If You Know Someone Who Has Not Been Vaccinated, What Are Some Reasons They Give for Not Getting the Vaccine? (Check All That Apply)

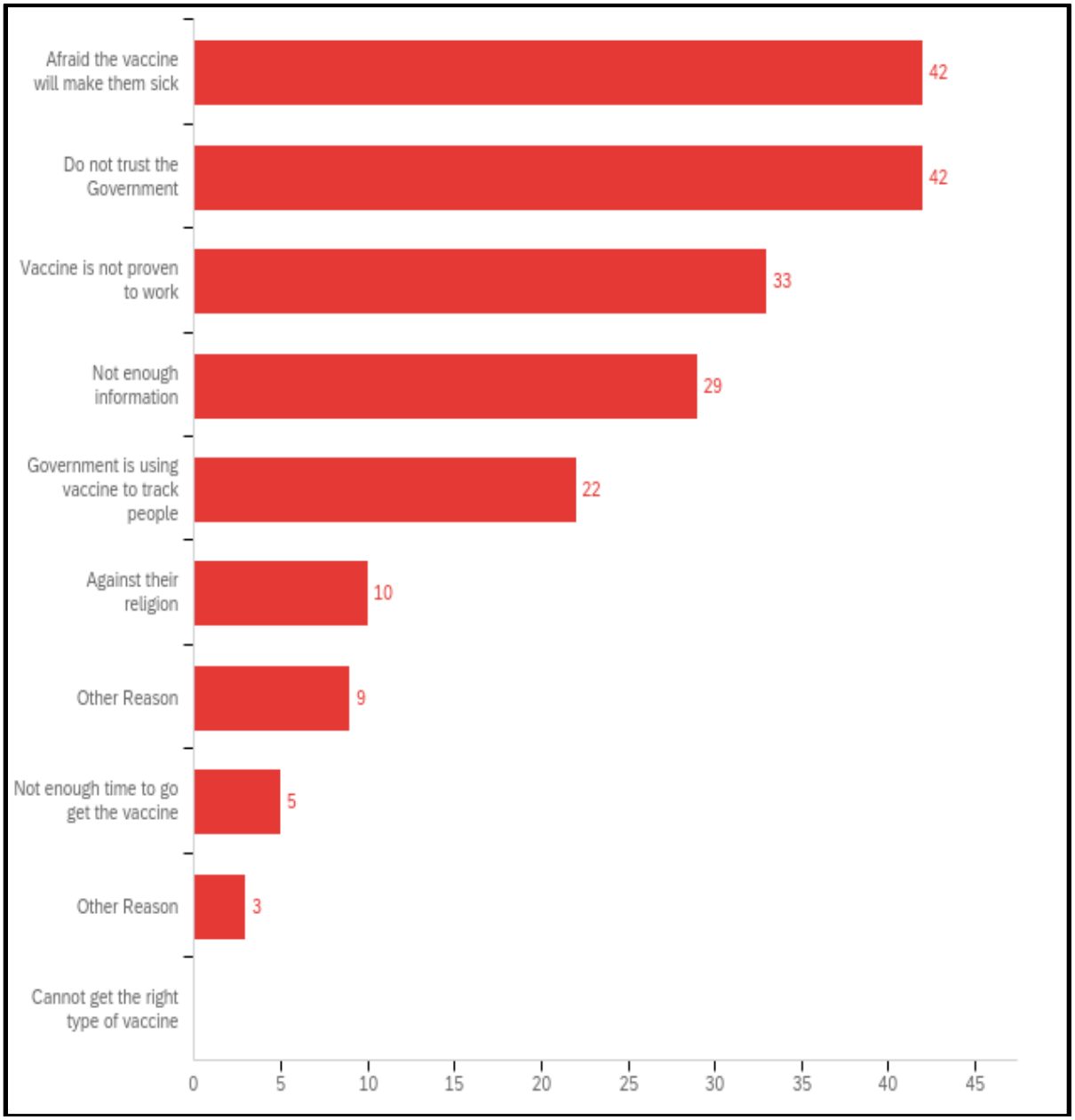


Figure 3 presents summary results for the question "*Do you think your county health department is doing enough to get more people vaccinated?"* Approximately one-third of respondents (33.33%) indicated they felt the county health department was not doing enough to get more people vaccinated.

Figure 3

Do You Think Your County Health Department Is Doing Enough to Get More People Vaccinated?

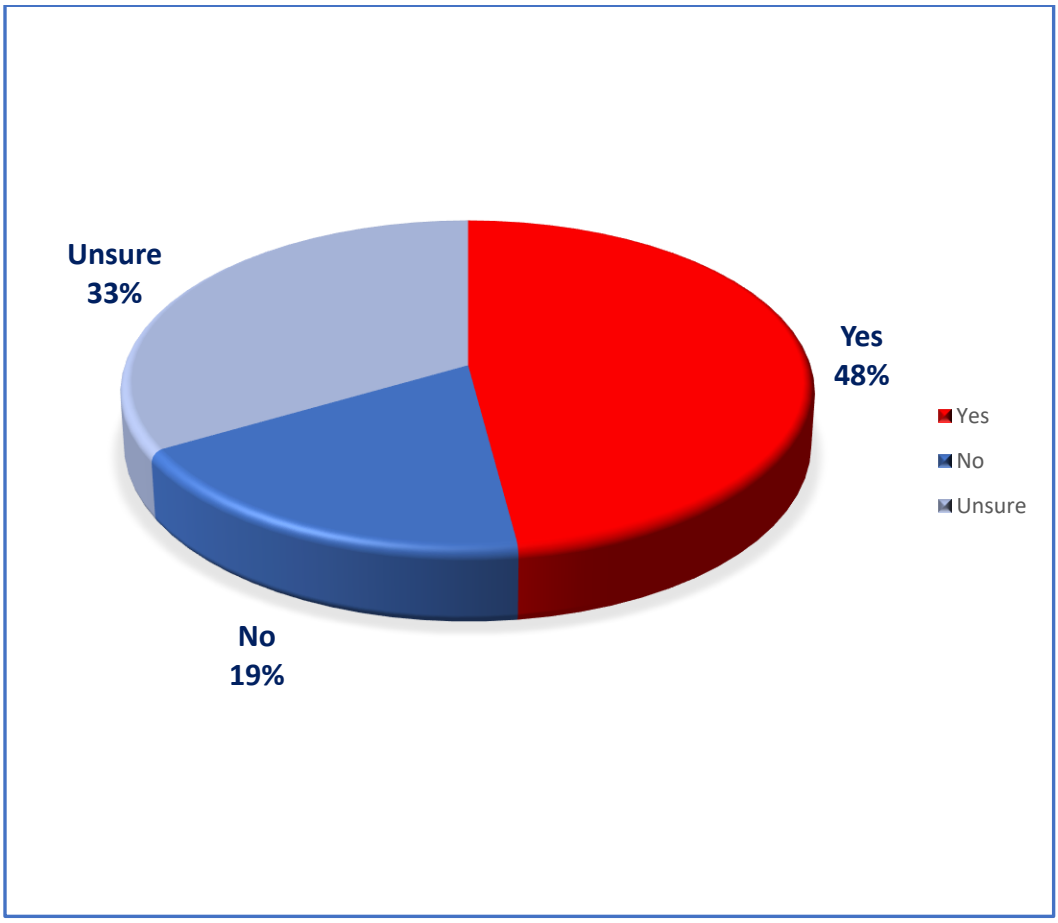
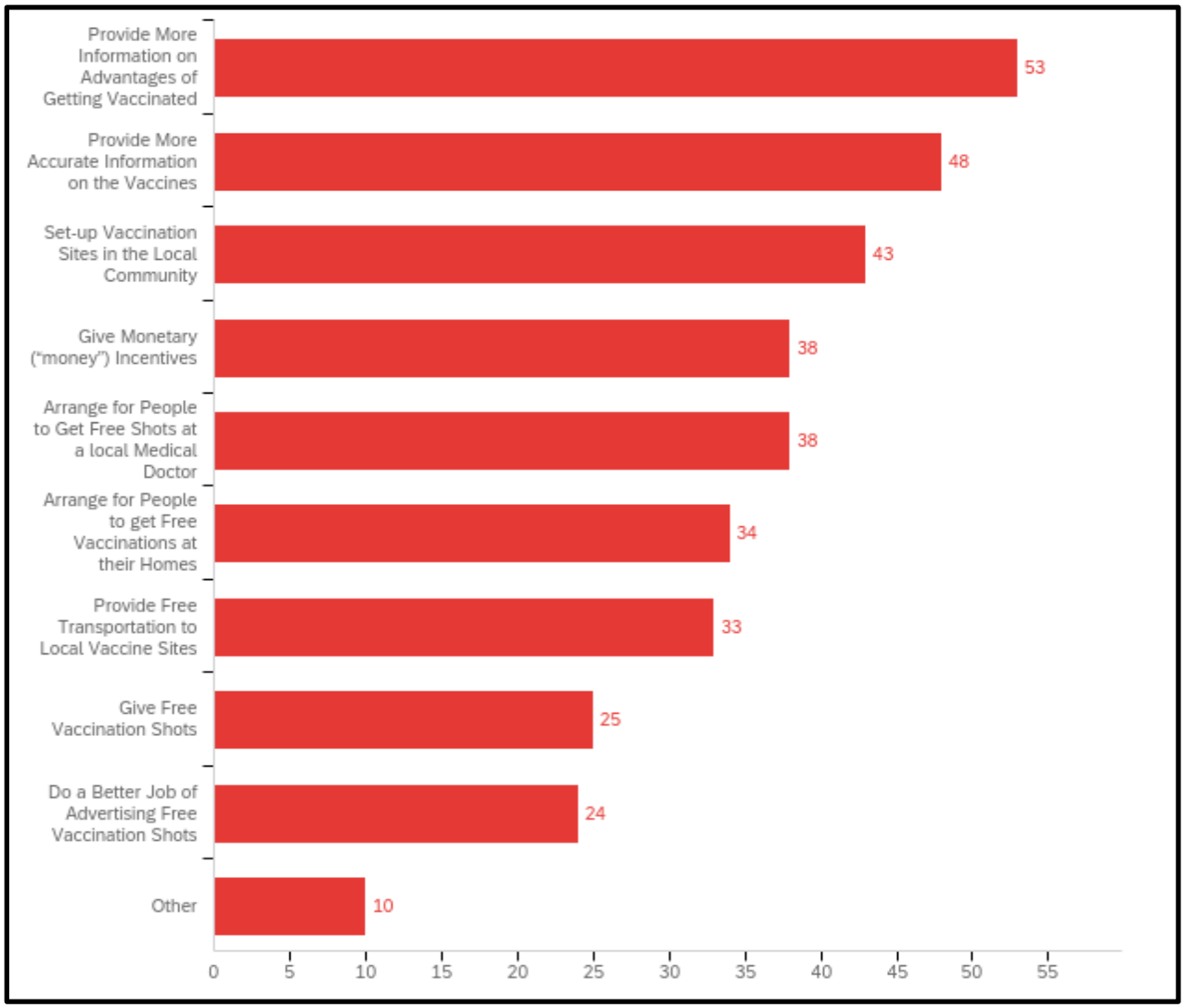


Figure 4 presents summary results for the question "*In your opinion, which of the following are ways you suggest getting more people vaccinated?*" The top two responses were Provided more information and Provide more accurate information.

Figure 4

In Your Opinion, Which of The Following Are Ways You Suggest to Get More People Vaccinated?



Focus Groups

After conducting a qualitative thematic analysis of common words, phrasing, and topics discussed during the focus group sessions, three distinct themes emerged as significant findings. Below are findings specifically related to the areas of trust, mistrust, and misinformation. Table 5 contains themes emerging from the collected responses.

Table 5

Themes Emerging from Focus Groups

#	Description of Theme
1	Focus group participants expressed concern regarding not having enough and accurate information.
2	A lack of trust by focus group participants regarding the vaccine itself.
3	Recommendations related to education, training, and marketing information.

First Theme

The first theme that emerged from the focus group sessions involved various aspects of information (e.g., Lack of Information, Poor Information, Inaccurate Information). With this theme, focus group participants expressed concern regarding not having enough and accurate information about the vaccine, its efficacy, and/or possible short- and long-term side effects. They provided statements such as: *"what effects will be long term on the body;" "I waited for three, four, and five months to see if it was going to affect people;" "I heard it was the mark of the beast, and a curse for Black people;" "I am a transplant recipient, I had lots of concerns;" "fear came when so many people started dying, and when they would get a cold, they were so sick! it was really scary;" "anxiety of not knowing what to do;" "finding a location;" "I heard a lot on negative responses on 'Fake News' on social media;" "it is a curse;" "government trying to take us out;" "don't trust taking the shot;" "side effects include 'growing an extra thumb;'" "using the Black race as a guinea pig;" and "COVID is a hoax."*

Participants also stated some of the "stories heard about the vaccine" included statements such as: *"the vaccine has metal in it;" "the Government using to track your location;" "it causes infertility;" and "the Tuskegee experiment/government genocide."* Table 6 lists the frequency of "concerns" identified by focus group participants.

Table 6

Concerns for Taking the COVID-19 Vaccination

No Concerns	Frustration / Worry	Health Effects	Where to Go / Location
3	7	10	2

Second Theme

The second theme that emerged from the focus group sessions involved a lack of trust by focus group participants regarding the vaccine itself, and the government's overall intentions behind promoting the acceptance of the vaccine. With this theme, focus group participants expressed such statements as: *"frustration with other people's negligence;" "I was concerned, what are they trying to do to us;" "it was magnetized to track your location;" "our neighborhood did not trust it because of the government;" and "thought the government was trying to do genocide on us."*

Third Theme

The third theme that emerged from the focus group sessions involved recommendations related to education, training, and marketing information. As mentioned in earlier themes, participants felt the lack of good, accurate, reliable information was a significant factor in determining whether to take the COVID-19 vaccine shot.

Table 7

Recommendations for Getting People to Take Vaccine

Take Shot (Will encourage others such as family members)	More Information / Transparency about Vaccine / Educate / Marketing	Healthcare Workers Serve as Role Models to Get Shot	Avoid Social Media
7	14	2	1

Focus group participants made statements such as: *"more transparency from medical doctors and chemists;" "basically telling us what is in it;" "help break the information down for us;" and "know more about the ingredients in the shot."* Table 7 above lists the frequency of "recommendation types" identified by focus group participants.

Key Informant Interviews

Table 8

Themes Emerging from Key Informant Interviews

#	Description of Theme
1	Information-related issues being a major contributor towards vaccine hesitancy in minority communities
2	Recommendation of improved "Communications and Information" and "Providing other Support Services" as means for overcoming vaccine hesitancy in the minority community

Four "Key Informant interviews" were conducted via Zoom with African-American community leaders representing the areas of State Government (Mississippi Legislative Senator - Black Caucus Chair); community-based organization; healthcare organization (two informants); and the African-American faith-based organization. Table 8 contains the themes from the collected responses.

After conducting a qualitative thematic analysis of common words, phrasings, and topics discussed during the Key Informant interview, three distinct themes emerged as related to the focus areas of trust, mistrust, and misinformation.

First Theme

The first theme emerging from the Key Informant interviews was information-related issues being a major contributor towards vaccine hesitancy in minority communities. Again, as

with the focus group responses, informant interviewees stated the availability and accuracy of information is an important factor as to whether people decide to take the vaccine. Participants provided responses such as: "*we have heard of the syphilis experiments that have taken place regarding our people, African-Americans (Black people), the way that they (we've) been used for studies. so, I think that makes us skeptical of government in general or health related issues as it pertains to government;" "another issue is information that we've just seen widespread in the media that was coming out of the White House political propaganda. the incidence itself has been with the pandemic and the response to it has been politicized;" "anti-vaccinators creating doubt in people who are considering vaccination;" "when communicating messages to the community the messages must be clear, concise and streamlined to foster trust;" "it has taught us about how people really don't trust not only the government but our medical communities;" "it sends out a call to action for more culturally competent education and training for providers;" "it has really shown we have a public distrust;" and "need to dispel myths."* Table 9 lists the frequency of "problems causing vaccine hesitancy" as identified by Key Informants.

Table 9

What Do You Think are Some Problems Causing Vaccine Hesitancy?

History / Past Government Experiments	Information / Lack of Information / Propaganda / Mixed Messages / Lack of Education	Fear	Lack of Personal Protection Equipment (PPE)	Lack of Transportation
3	10	3	2	1

Second Theme

The second theme emerging from the Key Informant interviews was the recommendation of improved "Communications and Information" and "Providing other Support Services" as

means for overcoming vaccine hesitancy in the minority community. Interviewees believed many of the problems contributing to vaccine hesitancy are related to communications and having access to good information. Participants provided responses such as: *"I believe we just have to be consistent in communicating to people, sharing our own testimonies about information that we receive about the vaccine;" "I just think we just try to dispel a lot of the myths. the way to do it is with constant messaging;" "speaking the language of the community we are attempting to serve, going into communities, communicating with them an understanding of health literacy;" and "creating materials and resources that they can actually read/use on third and fifth grade level."*

Table 10 lists the frequency of "recommendations for overcoming vaccine hesitancy" as identified by Key Informants.

Table 10

W*hat Needs to be Done to Overcome Vaccine Hesitancy?*

Communications / Constant Messaging / Education & Training	Increasing Trust	Reaching Unvaccinated Crowd	Overcome Fear	Using Personal Protection Equipment (PPE)	Offering Low-cost/Free Services	Use College Think Tanks
10	2	3	1	2	1	1

Discussion

This study examined how the issues of trust, mistrust, and misinformation possibly influence the level of vaccine hesitancy occurring among African-American communities in Jackson, Mississippi. Study results confirmed several perceptions associated with the issues of trust, mistrust, and misinformation as related to vaccine hesitancy. For example, approximately 12% of the participants chose to receive the COVID-19 vaccine because of a trust in their

healthcare provider. This finding is consistent with Bogart et al. (2021) findings that healthcare providers were trusted more than the government, and that healthcare providers valued their patients.

Despite being vaccinated to protect their families and communities, some participants expressed mistrust related to receiving the vaccination. This study's findings provide evidence that many participants were hesitant of receiving the vaccine due to a variety of reasons such as the long-term effects on the body, and/or how the vaccination would affect other people. These results are consistent with those results found by Pal et al. (2020) that mistrust in the vaccine is attributed to unanticipated protection of the vaccine and its effectiveness. Very few participants acknowledged the possibility that the vaccine would make them sick or ill. Additionally, some participants felt it was against their religion which also caused doubt or mistrust toward obtaining vaccination. Mistrust regarding the government's involvement was also frequently mentioned by study participants. This finding is similar to those of Pal et al. (2020) and Kalichman et al. (2021), whose findings show participants mistrust the government. Moreover, this study's participants indicated not only a lack of trust in the government but also with the medical communities. This finding is also consistent with findings by Pal et al. (2021) regarding a lack of trust among physicians.

Role of Misinformation

According to the Pan-American Health Organization (2020), individuals searching the website for COVID-19 information and updates have increased up to approximately 70%. Despite this statistic, individuals believe that misinformation is being circulated about the virus (PAHO, 2020). Participants in this study cited negative responses about COVID-19 in regards to the news and in social media. Other research has shown that information from different sources

were not totally trusted (Kalichman et al., 2021). Jennings et al. (2021) found that information on COVID-19 mortality rates may have been conflicting and thus causing communities to express doubt about obtaining the vaccination. Although participants in this research study recognized that there was not enough information reported, they also listed other reasons such as fear, the unknown, and finding a location to get vaccinated as issues associated with misinformation. This study's participants also recognized that myths about the vaccination were a major source of misinformation that needed to be dispelled.

Applying SEM Theoretical Framework

The Social Ecological Model (SEM) has been used by other researchers to gain an understanding of vaccine hesitancy from multiple perspectives (Latkin, 2021). Of particular importance to this study is the SEM's "individual/intrapersonal," "interpersonal/social network," and "community" components. On the *intrapersonal level*, participants provided detailed information regarding their trust, mistrust, and misinformation of the COVID-19 vaccination. Only a small percentage of the participants experienced trust in receiving the vaccination. This may have been based on their knowledge and understanding of trustworthy sources and information. Nevertheless, the majority of the participants were hesitant in receiving the vaccination as a result of their personal attitude and perceived beliefs. The information participants received may have been based on their level of education and their interpretation from the government, their physicians, and the Centers for Disease Control and Prevention. Al-Jayyousi et al. (2021) revealed that participants in their study believed that the COVID-19 vaccine may contribute to different attitudes toward its protection and effectiveness. Although some of the participants in this study felt the same way, survey and focus group results indicated

a need to implement an intervention within the community to essentially provide further education and training to gain their complete trust.

On the *interpersonal level*, social networking should be implemented through the encouragement of families, friends, and peers. In this study, some participants were hesitant in receiving their vaccination due to the friends and relatives not wanting to take the vaccination. Interpersonal relationships will have a significant impact on an individual's decision to become vaccinated. Building sound trust from the government, the CDC, and other sources will assist families, friends, and peers to advocate for each other. Implementing behavioral change interventions and policy interventions will strengthen better decision-making processes. Additionally, encouraging families and friends to get involved with efforts in spreading the word about the vaccination could gain prominence in the community. Similarly, Latkin et. al. (2021) also encouraged the community to communicate COVID-19 mitigation strategies to enhance vaccine uptake.

The data in this study suggests the community should be provided clear and succinct communications to promote trust. Latkin et al. (2021), suggest different types of communications to the community when implementing strategies for vaccination outreach purposes. This would provide on the *community level* opportunities to engage schools, workplaces, and partnerships with healthcare organizations, and can assist with providing vaccinations and educational seminars using a variety of community-based groups. For example, healthcare organizations can set-up booths with healthcare providers to explain the benefits for obtaining vaccinations. Schools and workplaces can provide seminars and educational demonstrations as to why vaccinations are important. The SEM helps explain how community members' attitudes and behaviors are influenced from multiple levels (i.e., intrapersonal, interpersonal, and community),

and that changing those attitudes and behaviors will require bringing communities together through effective interventions and programs that comprehensively address all three components.

Conclusions

This article is one of two related research articles investigating various perspectives of vaccine hesitancy in minority communities. This study examined the role of trust, mistrust, and misinformation as related to vaccine hesitancy among African-American communities in Jackson, Mississippi. The focus of this research article identified three general themes emerged from the data collection activities: (1) lack of/poor/inaccurate information regarding the virus and vaccines; (2) lack of trust in government and medical organizations regarding the vaccine's effectiveness or intent; and (3) need for more education, training, and marketing to reduce vaccine hesitancy and increase vaccination rates. The major findings from this study indicate the issues of trust, mistrust, and misinformation play a significant role in determining the level of vaccine hesitancy that occurs. The unwillingness of the participants in this study to obtain COVID-19 vaccination will probably continue to be a concern in Jackson, Mississippi until specific measures are conducted that increase the trust level between community members, government, and medical organizations.

Recommendations

The goal of this study was to examine possible issues contributing to vaccine hesitancy in minority communities regarding taking the COVID-19 vaccination. Based upon this study's findings as related to trust, mistrust, and misinformation, the following recommendations are offered to help reduce the level of vaccine hesitancy and increase vaccination rates occurring in African-American communities such as those in Jackson, Mississippi, and other cities across the United States:

- Government should provide and deliver relevant information on COVID-19 vaccine;
- Educational forums, seminars, and workshops should be offered to minority communities;
- Public health messaging for COVID-19 vaccine should consider the distrust people have in vaccines, and the historical and ongoing mistreatment of many racial and ethnic minorities;
- Use trusted messenger platforms and offer recommendations provided by verified healthcare professionals (CDC, 2022b);
- Develop campaigns for public health specifically geared towards social media platforms and their users;
- Advocate for increased control over information spread and fact-checking for the social media companies themselves (Puri et al, 2020);
- Promote scientifically accurate messages that can increase acceptance of the COVID-19 vaccine and facilitate vaccine uptake (CDC, 2022b);
- Politicians, healthcare providers, the government, the Centers for Disease Control and Prevention, and faith-based organizations should work to provide trustworthy information on the COVID-19 vaccine;
- Develop and implement competent educational opportunities to build complete trust and vaccine confidence of the community;
- Ensure vaccination information and its mitigation strategies are clear and concise on social media, news, media outlets, and the internet;
- Rebuild trust among all populations especially those who experience systemic racism and discrimination. Analyze public health messaging on COVID-19 vaccine to ensure communities understand.

All of the above methods can help build vaccine acceptance, confidence, and acknowledgment among minority communities.

Study Limitations

There were several limitations that should be considered when interpreting this study's findings. One such limitation is that the study's sample size may not be generalizable to other

areas in Mississippi due to the limited number of participants and its focus almost exclusively on African-American communities in Jackson, Mississippi. Additionally, there were limited questions asked on trust, mistrust, and misinformation regarding vaccine hesitancy. Interviews were only conducted among African-Americans and not the Caucasian or Hispanic communities within Jackson, Mississippi.

In considering the above limitations, future research activities on COVID-19 vaccine hesitancy should include additional parents of children and adolescents to gauge their knowledge, attitudes, and beliefs regarding vaccine-related "trust issues." Given the considerable health, social, educational, and economic consequences potentially associated with having high rates of unvaccinated individuals in a community, policy interventions such as the ones listed in this study should be implemented to address the issues identified. Additionally, healthcare providers should be interviewed to gain reliable information on the COVID-19 vaccine for communities, and how to overcome issues related to trust that contribute to high levels of vaccine hesitancy.

References

Al-Jayyousi, G. F., Sherbash, M. A. M., Ali, L. A. M., El-Heneidy, A., Alhussaini, N. W. Z., Elhassan, M. E. A., & Nazzal, M. A. (2021). Factors influencing public attitudes towards COVID-19 vaccination: A scoping review informed by the social-ecological model. *Vaccines, 9(*548), 2-27. https://doi.org/10.3390/vaccines9060548

Artiga, S., Garfield, R., & Orgera, K. (2020). *Communities of color at higher risk for health and economic challenges due to COVID-19*. Kaiser Family Foundation. https://www.kff.org/coronavirus-COVID-19/issue-brief/communities-of-color-at-higher-risk-for-health-and-economic-challenges-due-to-COVID-19/

Bogart, L. M., Ojikutu, B. O., Tyagi, K., Klein, D. J., Mutchler, M. G., Dong, L., Lawrence, S. J., Thomas, D., R., & Kellman, S. (2021). COVID-19 related medical mistrust, health impacts, and potential vaccine hesitancy among black Americans living with HIV. *Journal of Acquired Immune Deficiency Syndromes, 2*(86), 200-207.

Bronfenbrenner, U. (1994). Ecological models of human development. Reprinted in M. Gauvain & M. Cole (Eds.), *Readings on the development of children* (2nd ed., pp. 37-43). New York: Freeman.

Caperon, L., Saville, F., & Ahern, S. (2022). Developing a socio-ecological model for community engagement in a health programme in an underserved urban area. *PLoS One, 17*(9), 1-18. https://doi.org/10.1371/journal.pone.0275092

Center for Disease Control and Prevention. (2022a). *CDC COVID-19 data tracker*. Retrieved June 25, 2022 from https://www.COVID.cdc.gov/COVID-data-tracker/#datatracker-home

Centers for Disease Control and Prevention. (2022b). *Trusted messengers: Building confidence in COVID-19 vaccines through art*. Retrieved June 25, 2022, from https://www.cdc.gov/museum/exhibits/trusted.html

Centers for Disease Control and Prevention. (2021). *How to address COVID-19 vaccine misinformation*. https://www.cdc.gov/vaccines/COVID-19/health-departments/addressing-vaccine-misinformation.html

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology, 11*(100), 1-9.

Govere-Hwenje, S., Jarolimova, J., Yan, J., Khumalo, A., Zondi, G., Ngcobo, M., Wara, N. J., Zionts, D., Bogart, L. M., Parker, R. A., & Bassett, I. V. (2022). Willingness to accept COVID-19 vaccination among people living with HIV in a high HIV prevalence community. *BMC Public Health, 22*(1239). https://doi.org/10.1186/s12889-022-13623-w

Jennings, W., Stoker, G., Bunting, H., Valgarosson, V. O., Gaskell, J., Devine, D., McKay, L., & Mills, M. (2021). Lack of trust, conspiracy beliefs, and social media use predict COVID-19 vaccine hesitancy. *Vaccines, 9*(593), 1-14. https://doi.org/10.3390/vaccines9060593

Kaiser Family Foundation. (2022). *COVID-19 deaths and race by ethnicity*. Retrieved on April 18, 2022, from https://www.kff.org/other/state-indicator/COVID-19-deaths-by-race-ethnicity/

Kalichman, S. C., Shkembi, B., Kalichman, M. O., & Eaton, L. A. (2021). Trust in health information sources and its associations with COVID-19 disruptions to social relationships and health services among people living with HIV. *BMC Public Health, 21*(817), 1-12. https://doi.org/10.1186/s12889-021-10856-z

Latkin, C., Dayton, L. A., Yi, G., Konstantopoulos, A., Park, J., Maulsby, C. & Kong, X. (2021). COVID-19 vaccine intention in the United States: A socio-ecological framework. *Vaccine, 39*(16), 2288-2294.

Machingaidze, S., & Wiysonge, C. S. (2021). Understanding COVID-19 vaccine hesitancy. *Nature Medicine, 27*, 1338-1344. https://doi.org/10.1038/s41591-021-01459-7

Mississippi State Department of Health. (2022a). *Coronavirus disease 2019 (COVID-19)*. Retrieved June 25, 2022, from https://msdh.ms.gov/msdhsite/_static/14,0,420.html#Mississippi

Mississippi State Department of Health. (2022b). *COVID-19 cases by county, race, and ethnicity*. Retrieved on June 25, 2022, from https://msdh.ms.gov/page/14,0,420.html

Mississippi State Department of Health. (2022c). *Mississippi State Department of Health COVID-19 vaccination reporting.* Retrieved June 25, 2022, from https://msdh.ms.gov/msdhsite/_static/resources/12130.pdf

Pan-American Health Organization. (2020). *Understanding the infodemic and misinformation in the fight against COVID: Digital transformation toolkit*. https://iris.paho.org/bitstream/handle/10665.2/52052/Factsheet-infodemic_eng.pdf

Pal, S., Shekhar, R., Kottewar, S., Upadhyay, S., Singh, M., Pathak, D., Kapuria, D., Barrett, E., & Sheikh, A. B. (2021). COVID-19 vaccine hesitancy and attitude toward booster doses among US healthcare workers. *Vaccines*, *9*(1358), 1-11. https://doi.org/10.3390/vaccines9111358

Puri, N., Coomes, E.A., Haghbayan, H. & Gunaratne, K. (2020). Social media and vaccine hesitancy: New updates for the era of COVID-19 and globalized infectious diseases. *Human Vaccines & Immunotherapeutic*, *16*(11), 2586-2593. doi: 10.1080/21645515.2020.1780846

Razai, M. S., Osama, T., McKechnie, D. G. J., & Majeed, A. (2021). COVID-19 vaccine hesitancy among ethnic minority groups. *British Medical Journal*, *372*(513), 1-2. https://doi.org/10.1136/bmj.n513

Tai, D. B. G., Shah, A., Doubeni, C. A., Sia, I. G., & Wieland, M. L. (2020). The disproportionate impact on COVID-19 on racial and ethnic minorities in the United States. *Clinical Infectious Diseases*, *72*(4), 703-706. https://doi.org/10.1093/cid/ciaa815

Willis, D. E., Andersen, J. A., Bryant-Moore, K., Selig, J. P., Long, C. R., Felix, H. C., Curran, G. M., & McElfish, P.A. (2021). COVID-19 vaccine hesitancy: Race/ethnicity, trust, and fear. *Clinical and Translational Science*, *14*, 2200-2207. https://doi.org/10.1111/cts.13077

World Health Organization. (2022). *Coronavirus disease (COVID-19) pandemic*. Retrieved June 25, 2022, from https://www.who.int/emergencies/diseases/novel-coronavirus-2019

My Personal Experience with COVID-19: A Student's Research Commentary

"It was so bad that I felt like giving up on life. If I did not have the support from family and friends, pushing me to overcome the virus, I am not sure that I would have made it."

Author:

Aleka Mitchell, BS, MSW, Jackson State University, Social Work Department
Student Intern with the Mississippi Urban Research Center

Abstract

This commentary provides insight on how COVID-19 impacted a graduate student's life from a personal, family, and academic perspective. The impact of COVID-19 has often been discussed and examined from a third-party perspective. This commentary provides a first-hand, personal experience of how the virus can impact not only a person's health, but also other aspects such as family, school, employment, and mental health. This commentary links personal testimony with research findings to provide unique insight on how COVID-19 has actually impacted the health, plans, hopes, and dreams of one person who is a mother, caregiver, and graduate student. The goal of this commentary is to personalize the COVID-19 experience beyond the presenting of research findings, and to inform and comfort other parents, caregivers, and students experiencing the pain and disruption resulting from COVID-19.

Keywords: COVID-19, mother, parenting, school, mental health, personal experience

Introduction

There are many things that happen to a person who has contracted COVID-19. The most common symptoms of this viral infection are fever, cold, cough, bone pain, and breathing problems, with some symptoms ultimately leading to pneumonia (Haleem et al., 2020). In my experience, the effects of COVID-19 last far longer than the virus itself. A person battling with the COVID-19 virus not only has to deal with the stress and pressures of the virus at that time, but also has to think about the other lasting effects, including the effects on their mental health. As of December 2021, there were 4,685 total reported cases of COVID-19 in Scott County, Mississippi, with 96 reported deaths (Center for Disease Control and Prevention [CDC], 2022). During that same time period in the state of Mississippi, there were 493,670 reported cases of

COVID-19, with 9,778 deaths (CDC, 2022). Not all individuals are affected the same by the COVID-19 virus. Black and Hispanic adults have been more likely than White adults to report symptoms of anxiety and/or depressive disorder during the pandemic (Wylie, 2021).

Research during the pandemic highlights a multiplicity of concerns including poor mental health and well-being for children and their parents. For example, many parents with school-aged children are now more concerned about their children's emotional well-being than prior to the pandemic (Abbott, 2021; Panchal et al., 2021). Both parents and their children have experienced worsening mental health since the start of the pandemic, and women with children are more likely than their male counterparts to report worsening mental health (Panchal et al., 2021). Essential workers during the COVID-19 pandemic, such as health care workers, grocery store employees, and mail and package delivery personnel, have also shown high rates of poor mental health outcomes (Abbott, 2021). Many individuals may experience mental distress during the pandemic due to disruption in routines, loss of social contact, or stress in the household.

Throughout the pandemic, anxiety, depression, sleep disruptions, and thoughts of suicide have increased for many young adults because of changes including university closures, transitioning to remote work, and loss of income or employment (Panchal et al., 2021). Studies and surveys conducted so far in the pandemic consistently show that young people, rather than older people, are most vulnerable to increased psychological distress, perhaps because their need for social interactions are stronger (Abbott, 2021; Panchal et al., 2021). Data also suggests that young women are more vulnerable than young men, and people with young children, or a previously diagnosed psychiatric disorder, are at particularly high risk for mental-health problems (Abbott, 2021; Panchal et al., 2021). Globally, at least one in seven children have been directly affected by lockdowns, while more than 1.6 billion children have suffered some loss of

education (Abbott, 2021). The disruption to routines, education, and recreation, as well as concern for family income and health, has left many young people feeling afraid, angry, and concerned for their future (Abbott, 2021).

A Kaiser Family Foundation (KFF) Health Tracking Poll from July 2020 also found that many adults are reporting specific negative impacts on their mental health and well-being, such as difficulty sleeping (36%) or eating (32%), increases in alcohol consumption or substance use (12%), and worsening chronic conditions (12%) due to worry and stress over COVID-19 (Panchal et al., 2021). For a person with COVID-19, not only is there stress related to the fear of contracting COVID-19, there also comes a fear of what happens afterwards.

My COVID-19 Experience

I contracted COVID-19 but have recently overcome it. I have four school-aged children, ranging in age from nine to 15 years, so I felt that catching the virus was something that was ultimately going to happen. My children did very well with the virus, with little to no complications. My oldest son was one of the first in my family to catch the virus. This occurred two months prior to myself and my daughters. My son went to a basketball game at his high school, where not only a coach, but also a player on the team unknowingly had the virus, and my son caught it there. When my son contracted the virus, no one else in our household got it. My daughters are more affectionate than my son and like to be around me more than my son, and I feel this may be how I caught the virus. Shortly afterwards, my youngest daughter acquired a headache and fever, and my middle daughter felt bad at school with a high fever, so I was called to pick her up. My oldest daughter had no symptoms the entire time. After the first day of fevers, my daughters had no other symptoms of COVID-19. After the first day of my daughters being sick, I began to develop cold-like symptoms, so I was re-tested. I was first tested at the time of

my daughters being tested, but the results were negative. After being re-tested and testing positive, it seems as though this was the beginning of an uphill battle for myself.

Health Complications

I have underlying health issues that include asthma, high blood pressure, and an issue with my intestines that we have not quite figured out yet, but all of these issues were amplified with COVID-19. The main concern for my doctor was the issue with my asthma and breathing while having COVID-19. I think this is the issue that everyone was concerned about the most because of the effects of COVID-19 on breathing, but this was not my biggest problem. The unknown problems with my intestines and stomach became the biggest dilemma with my underlying health issues. The problems with my intestines made COVID-19 ten times worse. As experienced by many others who contracted COVID-19, I could not eat, so my body became very weak. I later came to the point of not being able to eat or drink, which is when I had to make the drastic decision to go to the Emergency Room. At the Emergency Room, I received the infusion for COVID-19 and I was given fluids through an IV, given that I could not eat or drink anything. This was the beginning of my recovery process.

Family Experience with COVID-19

The COVID-19 pandemic has affected my family more than once since the beginning of the pandemic. As stated earlier in this commentary, last year during basketball season was the first encounter with COVID-19 for my family. My oldest son, 15 years of age, attended a basketball game with several friends, and we later received information that a coach along with at least one player both contracted COVID-19. After receiving the information, the school informed everyone of the incident and recommended anyone with any flu-like symptoms to immediately be tested for COVID-19. Two days went by, and on the first day a friend of my son

who also attended the basketball game became ill with a cough and sore throat. This friend was tested and sure enough his test results indicated a positive result for COVID-19. Another day passed and another friend of my son developed symptoms and his parents checked him out of school to have him tested for the virus. My son received a phone call from his friend after being tested, indicating this friend was also positive. My son had not shown any symptoms at this point, so he was not allowed to quarantine, even after being in contact with multiple individuals who tested positive for COVID-19. Another day passed, and I received a call from my son's school; my son had a cough, sore throat, and a fever of 103.1 degrees. I had to immediately remove my son from the school premises. After checking my son out of school, we went straight to a COVID-19 testing center to get him tested, and after 15 minutes passed, we received the results which read positive for the virus.

My son was prescribed medication to help with the cough and sore throat and was given a fever reducer for his fever. The next day my son showed no symptoms and was pretty much back to normal. Later that evening, I received a call from the Mississippi Department of Health, asking if I could answer a few questions as it relates to my son contracting COVID-19 and where he contracted it. The questions were simple, such as the number of family members in my house, who contracted the virus in my household other than my son, personal information about where we reside which will be used in the canvas data, and where my son contracted the virus.

After speaking with the representative, I was informed that multiple children in our county, Scott County, tested positive for COVID-19, and almost all of the positive cases were individuals that attended that same basketball game. The representative then knew exactly where my son contracted the virus because there were so many other positive cases of COVID-19 linked to this particular basketball game. I feel that this was a major health issue that could have

been avoided with better precautions on the part of the school's faculty. After receiving the news of my son's positive COVID-19 results, I knew in my heart that myself, along with my other children, would also have the virus. Luckily my son recovered from the virus with only him contracting it at that time.

The second encounter with COVID-19 for my family was a little more severe, and took place in early fall 2021. My daughter called home from school with a headache, cough, and a fever of 102.1. I hurried to the school in order to take her to be tested for the virus. After reviewing the positive results from the doctor and listening to her symptoms, I remembered that just the previous night my youngest daughter complained of a headache and slept the remainder of the day after returning home from school. I checked this daughter out of school to also be tested for COVID-19.

At this point, I had one daughter that tested positive for COVID-19, and another daughter that showed symptoms. Knowing this information, the assistant in the principal's office advised that I have my oldest daughter screened for COVID-19 also, even though she showed zero symptoms. After taking all three of my daughters to the doctor, and upon receiving the results, all three tested positive for COVID-19. At this point I began to panic. The only thoughts that ran through my mind at this time were me wondering if I could have possibly contracted the virus also, and if I did not have the virus how would I take care of my daughters while also distancing myself from them in order to not contract the virus?

Before leaving the doctor's office to retrieve the required medications for my daughters, I was advised by our physician to be tested for COVID-19 also, just to be safe. I was tested for the virus and received negative test results. I felt relieved, but reality also set in that I now had to take care of three daughters who tested positive for the virus in the same household with myself.

In considering that I have two underlying health conditions, hypertension and asthma, I felt afraid. I feared that if I was not careful enough, I could contract the virus while caring for my children. I wondered to myself, "*Will I recover if I do contract the virus*?" I asked myself "*What can I do*?" and "*How can I care for my children without putting my own life in jeopardy*?" I knew I could not send my children to their Dad because then I would be putting another household at risk.

The next day around lunch time I began to feel ill. My head began to pound, my throat began to ache, and I gained a terrible headache that made me feel nauseated. My mother recommended that I get tested again as these were all symptoms of COVID-19. Reluctantly, I went and received testing again, but this time, things were different. Just a day later I tested positive for COVID-19. This was a shock to me as I had already taken both doses of the Moderna COVID-19 vaccine and just received a negative test result the previous day. This is when even more fear set in. The only thoughts that ran through my brain at that moment was "*Will I live through this virus*?"

After receiving the positive test results for COVID-19, I drove to the pharmacy and the technicians brought my required medications out to my car and recommended lots of water and rest. After receiving the medications and recommendations from my physician and the pharmacy technicians, I went home to rest. The first few days of having the virus were rough, but bearable. My children took their medications every day and continued with their normal routine, with the exception of having their school assignments given to them all at once to complete online and submit to their teachers.

Parenting and COVID-19

When one becomes a mother, that person can no longer fully think about themselves first. A parent not only has the added stress of COVID-19, but also the stress of finding childcare in order to keep their job. Many individuals have lost their jobs due to the COVID-19 pandemic, but those that do still work and have very young children, have childcare strains added to their already stressful lives. A parent cannot send their child to daycare sick, just as a parent would not send their child to school sick. I have always put my children before myself, even before COVID-19. During the COVID-19 pandemic, considering decisions regarding school and the safest options that are beneficial for my children has become more difficult. I had to stop and think about all the positive and negative effects of letting my children continue their traditional education during the COVID-19 pandemic. Being a mother, this is something that has scared me more than anything. I did not want to keep my children from their learning experiences if this virus was something that will never go away.

Since the virus is something that we will all have to continue to live with, I finally made the decision to let my children attend traditional classes. This decision was not my first decision as virtual options were a priority to me, so that I could continue to keep my children safe. The virtual option did not work out for my children as we lived in a rural area with terrible internet connections. I had three children participating in online schooling at the same time, and our internet could not handle it. Before this, I thought our internet service was great for the most part. Not only were there issues with the internet connection, my children could not focus due to being in the comfort of their own home. My children began to slack greatly in their school work and their grades reflected it. I tried my best to ensure that each child did the required assignments for

school, but that gets difficult with multiple children especially if they do not remember to tell you about every assignment that is due.

After I contracted the virus, being a caring mother to my children was very difficult. At this time my children were all quarantined with me because each one had the virus also, but my children pretty much had to fend for themselves. I was so weak with COVID-19 that I could barely get out of bed. My children ultimately had to take up the caregiver role for not only themselves, but for me also. I had to call on my children for every need. I could not get out of bed to feed myself or do anything for that matter. My children are all older, so each child did a great job of being responsible for not only themselves, but for caring for me also.

COVID-19 and School

The COVID-19 pandemic has affected many individuals' personal lives, and has also affected the way many things work in the world today, including educational activities. The COVID-19 pandemic has affected how school systems operate with many schools turning to completely virtual options, while others choose to keep some sort of normalcy and alternate with hybrid scheduling. The COVID-19 pandemic has made some learning experiences more complicated than ever, with some schools eliminating traditional courses completely (Lopes et al., 2021).

According to one study, 36% of parents said their child fell behind in their social and emotional development and about 29% said their child experienced mental health or behavioral problems due to the pandemic (Lopes et al., 2021). Many students, along with faculty members, have never used online schooling as an option, and having it forced upon them has been a challenge. As found by Lopes et al. (2021), approximately 42% of parents surveyed reported that their children experienced at least one new mental health symptom in the past 12 months that

they had not been experiencing before the pandemic; 27% reported difficulty concentrating on schoolwork; 19% reported problems with nervousness or being easily scared or worried; 18% reported trouble sleeping; 15% reported poor appetite or overeating; 11% reported frequent headaches or stomach aches; and over 39% of parents reported their children fell behind academically. In terms of my educational activities, I have taken many online courses before, so the change to online courses due to face-to-face classes being canceled was nothing new to me. There have been times that I did feel the need for a face-to-face encounter, but as with many others going through the pandemic, I had to make the best of the situation for the safety of not only myself, but for other students and faculty.

My internship with the JSU Mississippi Urban Research Center (MURC) has been a remote experience for the most part due mainly to the pandemic. I had the opportunity to meet Dr. Todd, the field liaison, in person along with a tour of the MURC research building. The tour was more than what I expected, even with the experience of having little to no contact with others. I had the opportunity to view poster presentations from other individuals to help with ideas for my own poster presentation in the upcoming months. The posters I viewed discussed the COVID-19 pandemic and the effects that it had on single mothers, the educational system, and the incarcerated. Even with the internship being a little different due to current circumstances, there have been other alternatives to help make this process smoother while still allowing a great educational experience.

The Zoom video platform has been a great tool to help produce effective communication between Dr. Todd (the field liaison), Dr. Ratliff (the field instructor), and myself (the student). The use of technology has helped tremendously during this process. I have learned to communicate more via email and phone calls, instead of what most individuals my age use now,

which would be text messaging. I have learned to better communicate via email with the proper greetings and salutations. I have not been allowed the opportunity to get out into the community as Dr. Todd encouraged, but it is recommended for the safety of everyone to not do so. I do understand the internship would have been more hands-on if the circumstances were different, but we have all learned to make the best of things.

The COVID-19 pandemic affected the number of social work hours I gained while performing my internship. After contracting the virus just a few weeks after school began, I had to quarantine which caused two weeks of absence from my assignments. This caused me to be at least two weeks behind on not only my assignments, but also my hours that are needed to complete the internship. Even after my return, it took at least a week to get back into a normal routine, which set me back even further on my assignments and hours for completion. I hoped that I could overcome this hurdle and complete the internship with the required number of hours in order to graduate this semester, but I had prepared myself just in case I did not reach the required number of hours.

I will admit, I was extremely stressed while in quarantine because I am adamant about my schoolwork and my grades and I did not want to miss any assignments, nor any class time. I even tried to attend a scheduled Zoom meeting, but after seeing me via Zoom, my instructor knew immediately that I was not well and should not be attending the meeting. It took a while to set in, but I had to face the reality of me possibly not completing the internship in the amount of time designated, and that it could possibly stop me from graduating this semester. This was something that was hard to swallow; it took some time, but I have now accepted it, and I am fine with it. I learned that I have to make sure that I am healthy, and that I have to take care of

myself. I also learned that the time off during quarantine was needed in order to heal, and even if I had to graduate at a later time, it is still an accomplishment.

Recovering from COVID-19

Speaking with other individuals that have recovered from COVID-19, I noticed that some had very similar experiences to mine. COVID-19 not only affects a person physically, but it also affects a person emotionally and psychologically. COVID-19 takes a major toll on a person mentally, even causing some individuals to feel like giving up. Studies have shown that some individuals have begun to show more suicidal thoughts after contracting COVID-19 (Abbot, 2021; Brennan, et al., 2020; Haleem, et al., 2020; Wylie, 2021).

Many individuals recover from COVID-19 completely within a few weeks, but even in mild versions of the disease, individuals may continue to experience symptoms long after their initial recovery. Some individuals have been called “long haulers” with lasting conditions of COVID-19 that generally continue for more than four weeks after a person has been diagnosed with COVID-19 (Mayo Clinic Staff, 2022). The elderly population and individuals that already have serious medical conditions are at the highest risk of experiencing the lingering post-COVID-19 symptoms. However, younger and otherwise healthy populations are also at risk of being unwell for weeks to months after being diagnosed with COVID-19 (Brennan, et al., 2020). Common signs and symptoms of COVID-19 that tend to linger include fatigue, shortness of breath or difficulty breathing, cough, chest pain, memory concentration or sleep problems, headache, muscle pain, loss of smell or taste, depression, anxiety, or fever (Mayo Clinic Staff, 2022). COVID-19 has been primarily known to affect a person’s lungs, but it can also damage other organs including the heart, kidneys, and the brain. Damage to these vital organs can sometimes cause lasting effects such as long-term breathing problems, heart complications,

chronic kidney impairment, stroke, and Guillain-Barre syndrome which is a condition that temporarily causes paralysis (Mayo Clinic Staff, 2022).

Need for Support

There are a variety of ways the pandemic has affected mental health, particularly with widespread social isolation resulting from necessary safety measures. I feel that it is important to have some type of support system for anyone that has contracted COVID-19. During this time of sickness, especially with having to quarantine for up to two weeks alone, a person needs some type of support. I feel that having people that checked on me daily, asking to see if I needed anything, or just reaching out to me in general played a huge role in my recovery. My body went through so many changes with the virus that took a major toll on me mentally. It was so bad that I felt like giving up on life. If I did not have the support from family and friends, pushing me to overcome the virus, I am not sure that I would have made it.

Conclusion and Future Research

This commentary provides insight on how COVID-19 impacted my life from multiple perspectives that include health, personal, family, academic, and mental health. From a research standpoint, the impact of COVID-19 is often discussed and examined from a third-party perspective. The goal of this commentary is to link research findings with my real-life, personalized experience with COVID-19. By doing so, I hope to inform and comfort other parents, caregivers, and students who feel they are the only ones experiencing the pain and disruption resulting from COVID-19.

In terms of future research activities, I hope to learn more about problems affecting those in the community that include more than issues related to COVID-19. I plan to continue conducting research and identifying opportunities that could possibly help get more individuals

vaccinated and stop the spread of COVID-19. I also hope to spread awareness of the effects of COVID-19 to individuals that do not believe it is real, or doubt how seriously the virus can negatively impact a person's life in so many different areas.

References

Abbott, A. (2021, February 3). COVID's mental-health toll: How scientists are tracking a surge in depression. *Nature*. https://www.nature.com/articles/d41586-021-00175-z

Brennan, J., Reilly, P., Cuskelly, K., & Donnelly, S. (2020). Social Work, mental health, older people and COVID-19. *International Psychogeriatrics, 32*(10), 1205-1209. doi: 10.1017/S1041610220000873

Center for Disease Control and Prevention. (2022). *CDC COVID-19 data tracker*. https://www.COVID.cdc.gov/COVID-data- tracker/#datatracker-home

Gadermann, A. C., Thomson, K. C., Richardson, C. G., Gagné, M., McAuliffe, C., Hirani, S., & Jenkins, E. (2021). Examining the impacts of the COVID-19 pandemic on family mental health in Canada: Findings from a national cross-sectional study. *British Medical Journal, 11*, 1-11. doi: 10.1136/bmjopen-2020-042871

Haleem, A., Javaid, M., & Vaishya, R. (2020). Effects of COVID-19 pandemic in daily life. *Current Medicine Research and Practice, 10*, 78-79. doi: 10.1016/j.cmrp.2020.03.011

Lopes, L., Kirzinger, A., Hamel, L., Sparks, G., Kearney, A., Stokes, M., & Brodie, M. (2021, August 19). *KFF COVID-19 Vaccine Monitor: The impact of the coronavirus pandemic on the wellbeing of parents and children*. Kaiser Family Foundation. https://www.kff.org/coronavirus-COVID-19/poll-finding/kff-COVID-19-vaccine-monitor-the-impact-of-the-coronavirus-pandemic-on-the-wellbeing-of-parents-and-children/

Mayo Clinic Staff. (2022, June 28). *COVID-19 (coronavirus): Long-term effects*. Mayo Clinic. Retrieved December 20, 2021, from https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-long-term-effects/art-20490351

Panchal, Nirmita, Kamal, R., & Cox, C. (2021, February 10). *The implications of COVID-19 for mental health and substance use.* Kaiser Family Foundation. https://www.kff.org/coronavirus-COVID-19/issue-brief/the-implications-of-COVID-19-for-mental-health-and-substance-use/

Wylie, H. (2021, October 4). *Impact of COVID-19 on poor mental health in children and young people 'tip of the iceberg.'* UNICEF. https://www.unicef.org/press-releases/impact-COVID-19-poor-mental-health-children-and-young-people-tip-iceberg

Epilogue

As documented throughout this journal, the Coronavirus (COVID-19) pandemic has created historic public health, economic, and social challenges at the global and local levels. The virus' initial outbreak led to massive levels of illnesses and deaths; economic hardships; educational and learning setbacks; mental health crises; and other forms of social, political, and health-related dysfunction. While the initial, and hopefully the worst phase of the pandemic has passed, COVID-19 is still active and has since morphed into several additional virus strains (e.g., Omicron, Delta, and Alpha). Although not generating the media coverage of the initial virus strain, the subsequent variants are still causing changes, disruptions, and uncertainties in society today.

This special edition of the *MURC Online Journal of Rural and Urban Research (OJRUR)* featured several articles that highlighted many of the challenges and disruptions encountered by organizations, policymakers, health officials, individuals, and families during the pandemic. A key distinguishing feature of the *OJRUR* is its emphasis on requiring authors to present recommendations based upon their research findings. As related to this journal edition, some of those key recommendations included: utilizing innovative service delivery methods such as more virtual technology; addressing cultural and language barriers that exist in some non-English speaking communities; addressing issues preventing and/or restricting access to services; addressing issues contributing to poor and/or inaccurate information being shared regarding the virus and available treatment services; overcoming a lack of trust in medical information and services, especially in minority and marginalized communities; and developing and implementing flexible educational and occupational schedules for individuals and families personally affected by COVID-19.

A major commonality linking all of the journal articles is the recognition that some underserved communities often face additional challenges and have special needs when responding to health-related crises such as the COVID-19 pandemic. The recommendations presented by the authors are intended to help policymakers, health officials, community organizations, and others better understand the current crisis, and develop improved plans for managing future crises.

The publisher of this special edition would like to thank all authors for their efforts to provide insight, knowledge, and recommendations that can help organizations and individuals improve their ability to effectively deal with the COVID-19 crisis. In closing, please know that your research and service contributions are greatly appreciated.

Journal Publisher Information

About the Journal

The primary focus of the *Online Journal of Rural and Urban Research (OJRUR)*, published by the Mississippi Urban Research Center, is to gather and disseminate high quality research that can help improve the quality of life in urban areas. The *OJRUR* periodically issues general and "special topic" call-for-papers that enable the publication of timely research from scholars and practitioners in a variety of disciplines. In keeping with the mission of the Mississippi Urban Research Center, articles appearing in this journal utilize basic and applied research to yield practical solutions to pressing urban problems. The *OJRUR* is an open access journal that strongly encourages the dissemination of its research to public, private, and nonprofit organizations as well as private citizens. When utilizing *OJRUR* research, please be sure to give proper attribution (acknowledgement) to the authors who produce the articles.

Below is the suggested citation format:

Author's (or authors') last name, first name. Year of publication. Article title. Journal title (in italics). Issue of journal (no italics). Page range of article. DOI or URL.

Example:

Smith, John. (2023). Title of Article. *COVID-19 Special Edition: Online Journal of Rural and Urban Research*. Spring Edition. p. XX-XX. https://www.jsums.edu/murc/publications

Mississippi Urban Research Center

The Mississippi Urban Research Center (MURC) at Jackson State University was authorized through Mississippi Senate Bill 2720, Chapter 512, Section 1, cited as the "Universities Research Institutes Act of 1983" (MS Code § 57-55-17 (2019). That enabling legislation states it shall be the function of MURC to conduct basic and applied research into urban problems and public policy, and to make available the results of this research to private groups, public bodies, and public officials. MURC enacts its mission through a wide array of services that include basic and applied research; distributing research through various types of publications; conducting policy analysis and program evaluation services; providing consultation and general advisory services; Census data research and training; providing focus group facilitation services; providing survey development and implementation services; conducting statistical analysis and needs assessment services; offering instructional programs, forums, conferences, workshops; and providing technical assistance addressing urban-based issues.

Jackson State University

The mission of Jackson State University (JSU), a Historically Black College and University (HBCU) and comprehensive urban research public university, is to provide quality teaching, research, and service at the baccalaureate, masters, specialist, and doctoral levels to

diverse populations of students and communities using various modalities to ensure that they are technologically-advanced, ethical, global leaders who think critically and can address societal problems and compete effectively. JSU is accredited by the Commission of the Southern Association of Colleges and Schools to award the bachelors', masters', education specialist, Doctor of Education, and Doctor of Philosophy degrees. JSU now offers 45 bachelors', 34 masters', one specialist-in-education, and 13 doctoral degrees.