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The Racial Divide: A Follow Up Study on Racial Disparity Amongst COVID-19 Survivors in an Urban Community

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Cover Page Footnote

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The Racial Divide: A Follow Up Study on Racial Disparity Amongst COVID-19 Survivors in an Urban Community

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Abstract

Background: Studies have shown that COVID-19 has had a disproportionate effect on minority groups in both the clinical and social settings in America. We conducted a follow up study on patients previously diagnosed with COVID-19 one year ago in an urban community in New Jersey. The purpose of the study was to evaluate the socioeconomic impact of COVID-19 as well as assess for receptiveness towards COVID-19 vaccination amongst various ethnic groups.

Methods: This was a prospective cohort study consisting of patients who had recovered from COVID-19 one year prior. The patients included in the study had a confirmed COVID-19 diagnosis in the months of March and April of 2020. This was a single institutional study conducted at St. Joseph's University Medical Center in Paterson, NJ from the months of March to April of 2021. Patients included in the study were either male or female aged 18 years or older. Patients who met criteria for inclusion were contacted by telephone to participate in a telephone survey. After informed consent was obtained, the patients completed a survey which obtained sociodemographic information pertaining to their diagnosis with COVID-19. Statistical analysis was performed using chi-square testing and multivariable logistic regression analysis.

Results: Of the 170 patients enrolled in the study, the most common ethnicity was Hispanic (79/170 [46.47%]), followed by African American (46/170 [27.05%]). The gender distribution was 83 male (83/170 [48.82%]) and 87 female (87/170 [51.18%]) with a mean age of 51.5. Caucasians were the most willing to receive a COVID-19 vaccine (28/30 [93.3%]), followed by Asians (13/14 [92.8%]), Hispanics (63/78 [80.7%]) and African Americans (29/46 [63.0%]). Hispanics had the highest rate of job loss (31/79 [39.24%]), followed by of African Americans (16/46 [34.7%]). Hispanics were found to be in the most financial distress (31/79 [39.2%]), followed by African Americans (17/46 [36.9%]). Chi square analysis revealed Hispanics and African Americans were more likely to lose their jobs after being diagnosed with COVID-19 ($p: 0.04$). Hispanics and African Americans were also more likely to refuse vaccination with any of the available COVID-19 vaccines ($p: 0.02$). Multivariable Logistic regression analysis was then performed comparing both Hispanics and African Americans to Caucasians. Hispanics were more likely to lose their jobs compared to Caucasians (odds ratio, 4.456; 95% CI, 1.387 to 14.312; $p: 0.0121$). African Americans were also more likely to lose their jobs when compared to Caucasians (odds ratio, 4.465; 95% CI, 1.266 to 15.747; $p: 0.0200$).

Discussion: Overall Hispanics reported the highest rates of financial distress after their diagnosis with COVID-19. Nearly 40% of the Hispanic lost their jobs following their diagnosis with COVID-19 which was the highest in our study group. African Americans were similarly affected with about 37% of all patients experiencing job loss and financial distress following diagnosis with COVID-19. Hispanics and african americans were the two ethnic groups who were least willing to receive COVID-19 vaccination. Only 63% of African Americans were willing to receive the vaccine, with 80.7% of Hispanics willing to become vaccinated. The most common reason for not receiving any of the COVID-19 vaccines

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was due to lack of trust in the vaccine. Both Hispanics and African Americans were more statistically likely to lose their jobs as well as refuse COVID-19 vaccination following diagnosis with COVID-19.

Keywords: COVID-19, Racial disparity in healthcare, Public health

1. Introduction

The COVID-19 pandemic began over a year ago, and the United States now appears to be shifting back to normalcy as rates of new positive COVID-19 cases decrease and more Americans receive COVID-19 vaccination. While the pandemic has had a devastating impact on the medical community, it exposed a major problem in America; racial disparity in healthcare. Disparity in health care amongst minority groups is not a new issue in the United States and has existed for centuries.⁹ This disparity in healthcare led to worse outcomes amongst Hispanics, African Americans and Native Americans who were diagnosed with COVID-19.¹⁰ Certain ethnic groups including African Americans and Hispanics have shown hesitancy towards being vaccinated for COVID-19, which is in part due to a deep rooted mistrust in the healthcare system.^{4,6}

Saint Joseph's University Hospital is located in Paterson, New Jersey, one of the largest and most densely populated cities in the entirety of New Jersey. Behind New York City, San Francisco and Jersey City, Paterson had the fourth-highest density of any U.S. city, with a population density of 17,317 residents per square mile of land in 2013.² Being 20 min from NYC and within close proximity to one of the busiest international airports in the world, Paterson is a major hub of diversity with estimates of 52 distinct ethnic groups in 2014.⁷ The community in Paterson is one of the communities with the lowest socioeconomic status in the state, with 26.6% of the inhabitants living below the poverty line, which is higher than the nationwide average of 13.1%.¹ Our hospital was the 3rd most affected hospital in the state of New Jersey, with over 1800 patients admitted to the hospital in March and April. More than 1100 Passaic County inhabitants died and about 18,500 tested positive for COVID-19 in the first six months of the pandemic. We evaluated patients diagnosed with COVID-19 one year ago at Saint Joseph's University Hospital in Paterson, New Jersey to investigate the socioeconomic impact of COVID-19, as well as COVID-19 vaccine receptiveness amongst various ethnic groups.

2. Methods

2.1. Study design

This was a prospective cohort study consisting of patients who had recovered from COVID-19 one year prior. The patients included in the study had a confirmed COVID-19 diagnosis in the months of March and April of 2020. The study received Institutional Review Board (IRB) approval, # 21-007, by the IRB of St. Joseph's University Medical Center in Paterson, New Jersey.

2.2. Study population

This was a single institutional study conducted at St. Joseph's University Medical Center in Paterson, NJ from the months of March to April of 2021. The patients who were enrolled in the study had received a positive COVID-19 test in the months of March and April of 2020 within the Saint Joseph's Health network. Patients either male or female aged 18 years or older with a confirmed positive COVID-19 test by PCR were eligible to participate in the study. Patients who did not speak English, who had cognitive impairment, or were pregnant were excluded from the study.

2.3. Study procedures

The planned sample size for follow-up data collection was approximately 500 participants. The medical records department from St. Joseph's Health provided a list containing all patients who had a diagnosis of COVID-19 between March and April of 2020. During the months of March and April of 2021, patients who met criteria for inclusion to the study were contacted by telephone to participate in a telephone survey. The patients were contacted using the home phone numbers listed in their electronic medical records. After informed consent was obtained, the patients completed a survey which obtained sociodemographic information pertaining to their diagnosis with COVID-19. Statistical analysis was performed using chi-square testing and multivariable logistic regression analysis.

3. Results

500 patients were contacted via telephone, with 170 patients agreeing to take part in the survey. Out of the 170 participants, 89 were hospitalized with moderate to severe COVID-19 (89/170 [52.4%]) and 81 were treated in the outpatient setting (81/170 [47.6%]). The gender distribution was 83 male (83/170 [48.82%]) and 87 female (87/170 [51.18%]) with a mean age of 51.5 years old with a standard deviation of 15.03 years. The most common ethnicity was Hispanic (79/170 [46.47%]), followed by African American (46/170 [27.05%]), Caucasians (31/170 [18.23%]) and Asians (14/170 [8.23%]). When asked about the willingness to receive any of the available COVID-19 vaccines, overall 78.2% of patients (133/170) were willing to receive the vaccine. The most willing to be vaccinated were Caucasians (28/30 [93.3%]), followed by Asians (13/14 [92.8%]), Hispanics (63/78 [80.7%]) and African Americans (29/46 [63.0%]) (Fig. 1). One Hispanic patient and one Caucasian patient did not answer the question. Amongst all ethnicities, the most common reason for not receiving any of the COVID-19 vaccines was due to lack of trust in the vaccine (Fig. 2). Overall 31.7% of all patients (54/170), lost their jobs following diagnosis with COVID-19. Hispanics had the highest rate of job loss (31/79 [39.24%]), followed by of African Americans (16/46 [34.7%]), Asians (3/14 [21.4%]), and Caucasians (4/31 [12.9%]) (Fig. 3). Two African American patients did not respond to the question. When asked if patients were currently experiencing financial distress directly due to their prior diagnosis with COVID-19, 32.3% of all patients responded yes. Hispanics were found to be in the most financial distress (31/79 [39.2%]), followed by African Americans (17/46 [36.9%]), Asians (3/14 [21.4%]) and Caucasians (4/31 [12.9%]) (Fig. 4).

Chi square analysis was performed which showed that Hispanics and African Americans were more likely to lose their jobs after being diagnosed with COVID-19 ($p: 0.04$). Hispanics and African Americans were also more likely to refuse vaccination with any of the available COVID-19 vaccines ($p: 0.02$). Multivariable Logistic regression analysis was then performed comparing both Hispanics and African Americans to Caucasians. Hispanics were more likely to lose their jobs compared to Caucasians (odds ratio, 4.456; 95% CI, 1.387 to 14.312; $p: 0.0121$). African Americans were also more likely to lose their jobs when compared to Caucasians (odds ratio, 4.465; 95% CI, 1.266 to 15.747; $p: 0.0200$). When comparing Asians to Caucasians there was no statistically significant difference (odds ratio, 2.013; 95% CI, 0.370 to 10.950; $p: 0.4182$).

4. Discussion

In our study, the two ethnic groups that seemed to be at a disadvantage compared to the counterparts were Hispanics and African Americans. Overall Hispanics reported the highest rates of financial distress after their diagnosis with COVID-19. Nearly 40% of the Hispanic lost their jobs following their diagnosis with COVID-19 which was the highest in our study group. African Americans were similarly affected with about 37% of all patients experiencing job loss and financial distress following diagnosis with COVID-19. When compared to Caucasians, Hispanics and African Americans were statistically more likely to lose their jobs following infection with COVID-19. Only 63% of African Americans and 80.7% of Hispanics were willing to become vaccinated for COVID-19. The most common reason for not receiving any of the COVID-19 vaccines was due to lack of trust in the vaccine. Both Hispanics and African Americans were also statistically more likely to refuse COVID-19 vaccination.

Despite significant advances in medical care over the years, ethnic disparity in health care remains a major problem.^{9,10} While disparity in health care still exists due to various reasons, two major factors include education and income. A study by Hahn et al. suggested that education and income are interlinked in their influence on healthcare decisions.⁵ The 2015 report by the US Census Bureau, showed that Hispanics and African American were less likely to hold bachelor degrees compared to their Asian and Caucasian counterparts.⁸ Educational level is thought to be one of the determining factors towards overall health and making health care related decisions as well as their overall health amongst low income individuals.^{5,11} Recent public records showed African American and Hispanic households' incomes were much lower than white and Asian households.³ In regards to vaccine hesitancy, institutional racism as well major public health controversies such as the Tuskegee trial have led to mistrust in the healthcare system amongst several minority groups including African Americans.⁴ Ongoing efforts to minimize the racial inequity among healthcare groups and fix under-representation of minorities in health care administration must be prioritized to ensure that all ethnic groups feel comfortable in placing their trust in healthcare.

Study limitations included a single center study, a small sample size, potential bias in regards to defining financial distress during the follow up phone call. The small sample size was due to the inability to reach many patients via phone call and patient unwillingness to participate in the study.

Author contributions

Concept and design: Christopher Millet, Emily Racoosin.

Acquisition, analysis, or interpretation of data: Christopher Millet, Spandana Narvaneni, Yezin Shamoan, Arslan Chaudhry, Sherif Roman, Sohail Chaudhry, George Horani, Alisa Farokhian.

Drafting of the manuscript: Christopher Millet, Emily Racoosin, Spandana Narvaneni, Yezin Shamoan, George Horani, Sherif Roman, Arslan Chaudhry.

Statistical analysis: Humberto Jimenez.

Supervision: Jin Suh, Patrick Michael.

Ethical standards

All authors gave their informed consent before their inclusion in the study.

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None.

Conflict of interest

None of the authors have any conflicts of interest to declare.

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Appendix

Ethnicity	Reason for not wanting vaccine		
	Does not trust vaccine	No reason to/believes immune	No access to vaccine
African American	9	3	1
Caucasian/White	2	1	0
Hispanic	8	5	1
Asian	1	0	0

Fig. 2. Reasons for refusing COVID-19 amongst COVID-19 survivors based on Ethnicity.

Ethnicity	Did you lose your job due to your COVID illness?			
	Total	Yes	No	No Response
African American	46	16	28	2
Caucasian/White	31	4	27	0
Hispanic	79	31	48	0
Asian	14	3	11	0
Total	170	54	114	2

Fig. 3. Patients who lost their jobs following diagnosis with COVID-19 based on ethnicity.

Ethnicity	Willingness to get COVID Vaccine				
	Total	Yes (%)	No (%)	Undecided (%)	No Response
African American	46	29	11	6	0
Caucasian/White	31	28	2	0	1
Hispanic	79	63	13	2	1
Asian	14	13	1	0	0
Total	170	133	27	8	2

Fig. 1. Willingness amongst COVID-19 survivors to get vaccinated based on ethnicity.

Ethnicity	Are you now in financial distress due to your COVID illness?			
	Total	Yes (%)	No (%)	No Response
African American	46	17	29	0
Caucasian/White	31	4	27	0
Hispanic	79	31	48	0
Asian	14	3	11	0
Total	170	55	115	0

Fig. 4. Patients who are experiencing financial distress following diagnosis with COVID-19 based on ethnicity.

	Unadjusted OR _{a,b}	(95% CI) _c	P value
African Americans	4.465	(1.266- 15.747)	0.0200
Hispanics	4.456	(1.387-14.312)	0.0121
Asians	2.013	(0.370-10.950)	p: 0.4182

Fig. 5. The odds of specific ethnic groups losing their jobs following diagnosis with COVID-19 compared to Caucasians.

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