

An Examination of the Impact of COVID-19 on Black, Latino and Asian New York City Residents and the Factors Associated with the Social Determinants of Health

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Abstract

New York City (NYC) has become the epicenter of the current coronavirus pandemic known as COVID-19. As the pandemic has progressed, the health disparities experienced by populations of color have become more prevalent. Secondary data sets were taken from the Centers for Disease Control and Prevention (CDC), the U.S. Census Bureau and the New York City Department of Health. Information from these sources regarding H1N1 flu, demographic information in NYC and COVID-19 data were used to highlight the populations' risk of being disproportionately affected by diseases not unique to the current pandemic. The preliminary results currently show that although Black and Hispanic communities make up 22% and 29% of the NYC population, they make up 28% and 34% of the total COVID-19 cases, respectively. Asians make up 14% and 7% of the total coronavirus cases seen in NYC. Prior pandemics and epidemics such as the swine flu pandemic of 2009 and the global HIV/AIDS epidemic have shown that when there is a health crisis because of factors such as health insurance, language, education and poverty, minority populations are continuously disproportionately affected. These disparities prevent patients from accessing healthcare and on a larger scale are negatively impacted by health crises.

Introduction

In December 2019, an atypical respiratory disease of unknown cause occurred in Wuhan, China and rapidly spread to other countries. This respiratory disease was soon discovered to be caused by a novel coronavirus named SARS-CoV-2 and the disease caused by the virus was called COVID-19 (1). As of April 13, 2020, the U.S. represented roughly 30.0% and 20.0% of the world's COVID-19 morbidity and mortality (2). An emerging trend that is seen amongst COVID-19 cases and deaths is that they are persons of color. Racial disparities seen in the U.S. are consistent with other developed countries such as the United Kingdom (UK) with its Black Caribbean population (2). Minorities in both the UK and the U.S. comprise a large proportion of essential workers in comparison to their White counterparts and are therefore more likely to be vulnerable to the economic impact of this pandemic (2). In major cities such as Chicago, African Americans comprising 30.1% of the total population but have 45.6% of the COVID-19 cases and 56.0% of deaths (3). NYC has emerged as an epicenter of this pandemic and the Black and Latino population have been disproportionately affected. Although Black and Hispanic communities make up 22.0% and 29.0% of the NYC population, they make up 28.0% and 34.0% of the total COVID-19 cases,

respectively. Asians make up 14.0% of the population and 7.0% of the total cases seen in NYC (5). There are factors that leave certain racial groups vulnerable and contribute to these disparities.

Health disparities are persistent differences in disease rates and health outcomes seen amongst people of different races, ethnicities, and socioeconomic statuses (6). These health disparities are also contributed to by social determinants of health. These social determinants of health are conditions in the environment that people are born, live, learn, work, play, worship, and age (7). These conditions affect a wide range of health, function, quality-of-life outcomes, and risks. Within the scope of social determinants of health, this study focuses on education, employment, language, literacy, and access to health care. The purpose of this study was to examine and to provide empirical evidence of how the social determinants of health and COVID-19 have impacted the health of Blacks, Latinos, and Asians living in NYC as well as making recommendations for public health intervention strategies.

Methods

In this study, secondary data sets were taken from three different sources. These websites include the Center for Disease Control and Prevention (CDC), the U.S. Census Bureau and the NYC Department of Health.

The Center for Disease Control and Prevention was used to obtain H1N1 flu related hospitalization broken down by race and ethnicity from April 15 to August 31, 2009, and from September 1, 2009, to January 26, 2010 (8). The U.S. Census Bureau provided yearly information about NYC and its five boroughs: Bronx, Brooklyn, Manhattan, Queens and Staten Island (9). Specifically, population estimates by race and ethnicity as of July 2019 were taken from this website. Other data values taken from topics such as income and poverty, education, health, families and living arrangements reflect information from 2015 to 2019. Next, the NYC Department of Health was used to look at NYC HIV/AIDS Annual Surveillance Statistics of 2018 across the five boroughs (10). The surveillance provided reported HIV diagnoses, AIDS diagnoses, the percent of individuals living with HIV and the percent of deaths related to HIV/AIDS in NYC as of December 31, 2018. This information was categorized by race and ethnicity. Finally, the NYC Department of Health website was used for COVID-19 data. Values such as case count and death rates broken down by boroughs, race and ethnicity were all provided through this website.

As the pandemic is still ongoing, the data is continually changing. All COVID-19 values are current as of December 13, 2020. As the pandemic is still ongoing, these numbers are subject to change.

Results

Table 1 shows the demographic data taken from the U.S. Census bureau. It shows the race & Hispanic origin of individuals, the percent of persons without health insurance, languages other than English spoken at home, education level and poverty level across the five boroughs of NYC. From the table, the largest percentage of Hispanics or Latinos and Black or African American live in the Bronx, the highest percentage of Asians live in Queens, and the highest percentage of white reside in Staten Island. It should be noted that in the Bronx, there is also the largest percentage of individuals above the age of five who speak a language other than English at home, the largest percentage of persons in poverty and the lowest education percentages for people who have a high school degree or a bachelor's degree or higher.

After gathering the demographic information, information for prior pandemics and epidemics such as H1N1 influenza and HIV/AIDS were taken from the NYC Department of Health and Centers for Disease Control and Prevention as shown in Figures 1 and 2. In Figure 1, the age-adjusted 2009 H1N1 related hospitalizations rates by race and ethnicity from the Centers for Disease Control and Prevention is represented as a bar graph. Hispanic and Blacks have the highest hospitalization rates compared to their white and Asian counterparts. Next in Figure 2, data from the NYC HIV/AIDS Annual Surveillance Statistics 2018 is shown, which represents the reported HIV diagnoses, concurrent AIDS diagnoses, new AIDS diagnosis, and people living with HIV (PLWH). The highest percentage of diagnoses, death and those living with HIV are in the Black community. The second highest is followed by Hispanics and Latinos.

Finally, the New York Department of Health was used to look at the current coronavirus pandemic percentage of cases and deaths distributed across boroughs by race and ethnicity as of December 13, 2020. The percentages are represented in Figure 3 and Figure 4. In Brooklyn, the Bronx, Manhattan, and Queens, Hispanic/Latino and Black/African American represent the highest percentage of cases and deaths. In Staten Island, Hispanic/Latino once again represent the highest percentage of cases and deaths, but whites are third highest. In all five boroughs, Hispanic/Latino lead in percentage of coronavirus cases and Hispanic/Latino also lead in percentage of coronavirus-related deaths in Brooklyn and Queens. For the Bronx, Manhattan, and Staten Island, Black/African Americans have the highest percentage of coronavirus-related deaths.

	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Race & Hispanic Origin					
White alone	44.7	49.8	64.6	47.8	74.5
Black or African American Alone	43.6	33.8	17.8	20.7	11.6
Asian Alone	4.6	12.7	12.8	26.9	10.9
Hispanic or Latino	56.4	18.9	25.6	28.2	18.6
Health Insurance					
Persons Without Health Insurance	8.7	7.8	6.1	10.1	5.3
Language					
Language other than English spoken at home	59.3	45.4	39.7	55.8	31.9
Education					
High school graduate or higher	72.0	81.6	87.0	81.5	88.5
Bachelor's degree or higher	19.8	36.5	60.8	31.5	33.0
Poverty					
Persons in poverty	27.3	18.9	15.6	11.6	11.7

Table 1. Demographics of NYC as of July 2019 from U.S. Census Bureau given as percentages. For health insurance, only individuals under the age of 65 years old was provided. For language, this applies to individuals older than the age of 5 from 2015 to 2019. For education, both categories applied to individuals greater than the age of 25 years old from 2015 to 2019.

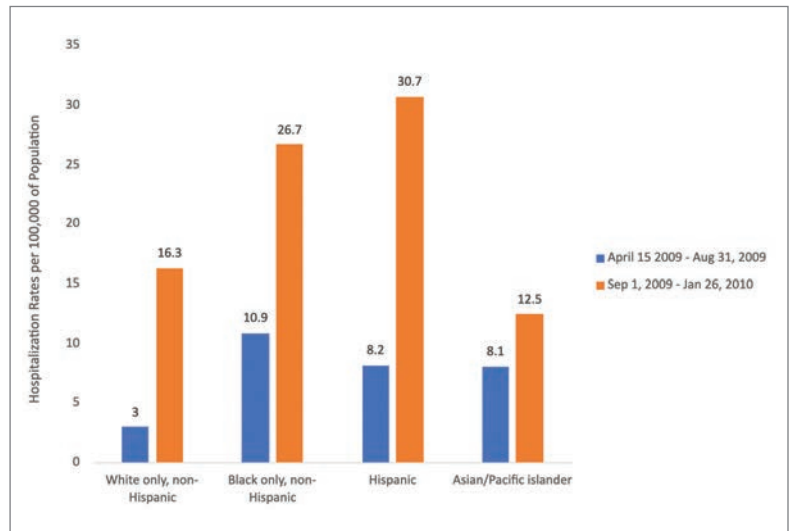


Figure 1. Age-adjusted 2009 H1N1 related hospitalization rates by race and ethnicity from Centers for Disease Control and Prevention

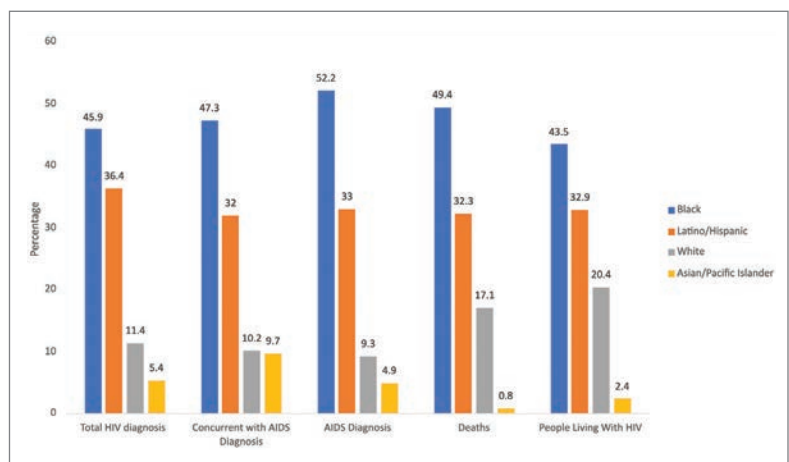


Figure 2. Reported HIV/AIDS diagnoses and deaths in 2018 and reported persons living with HIV (PLWH) as of December 31, 2018, in NYC according to race and ethnicity. Taken from NYC HIV/AIDS Annual Surveillance Statistics 2018

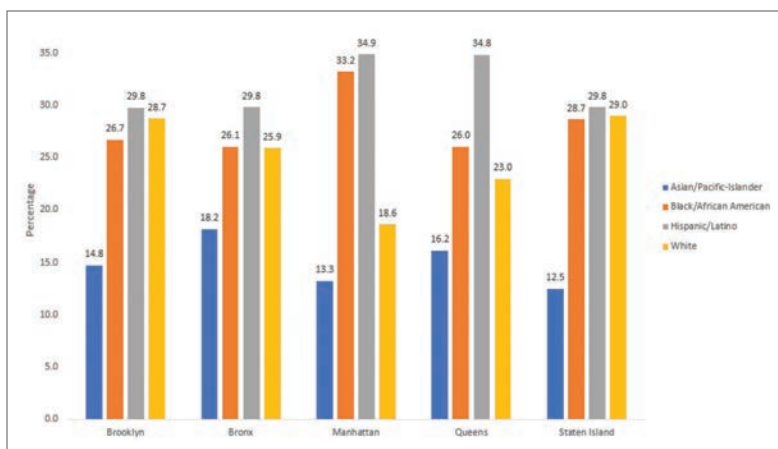


Figure 3. Percentage of coronavirus cases distribution by race and ethnicity and borough of residence as of December 13, 2020, taken from NYC Department of Health

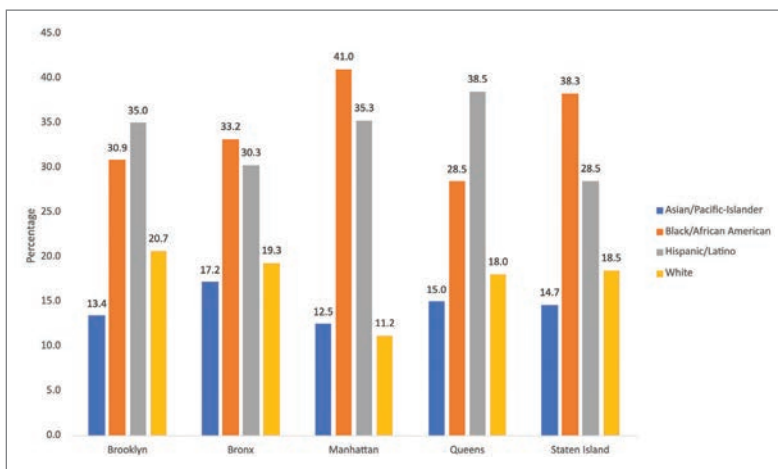


Figure 4. Percentage of coronavirus death distribution by race and ethnicity and borough of residence as of December 13, 2020, taken from NYC Department of Health

Discussion

With over 16 million cases and more than 300,000 deaths in less than a year, the ongoing coronavirus pandemic has had devastating impacts across the U.S. (2). NYC became the epicenter of the pandemic in the early months but has since transitioned and is no longer the state with the greatest number of cases. However, in a city with over 8 million people, there have been over 300,000 cases and the results show that there are certain groups of people who have been adversely affected by the virus than others, specifically the Black and Hispanic/Latino communities.

For the current pandemic, in Brooklyn where Hispanic/Latino population is 18.9%, they made up 29.8% of the coronavirus cases and 35% of the deaths compared to their white counterparts who make up nearly half of the population, but only 28.7% of the cases and 20.7% of the deaths. This is not the only borough to show this disparity. In Manhattan, where whites alone make up 64.6% of the population and Blacks make up 17.8% of the population, they represent 18.6% of cases and 33.2% of cases and 11.2% and 41% of deaths respectively (12).

In a borough where they make up less than a fifth of the population, they account for nearly half the number of deaths. These statistics demonstrate that while the virus may not discriminate in who gets it, there is something else that is affecting treatment and recovery.

Unfortunately, the coronavirus is not the first pandemic to show that communities of color are adversely impacted more affected by a disease than their white counterparts. In the 2009–2010 H1N1 pandemic, Blacks and Hispanics made up the majority of hospitalizations at 26.7% and 30.7% from September 2009 to January 2010 compared to 16.3% for whites and 12.5% for Asian/Pacific Islanders (13). While not specific to NYC, this data shows that Blacks and Hispanics are not only impacted in a single city or state alone, but across the U.S. as a whole. One would imagine that there might be discrepancy on a smaller scale, but even on a larger scale, the story does not change.

Studies continue to show that minorities tend to have higher morbidity and mortality from both acute and chronic illnesses (14). Even end-of-life care has differences among different racial and ethnic groups. In fact, a study conducted in Seattle with 2,850 participants and 1,290 family member surveys concluded that minority race/ethnicity of families were associated with lower family ratings of quality of dying in the ICU (15). These researchers hypothesized that lack of communication for these patients may have contributed to the decision making in the health care setting but there was no association between educational attainment and a family's quality of end-of-life ratings (16).

Due to these disparities, patients have less trust of health care providers which in turn leads to a breakdown in communication between the patients and the providers. This was depicted in a study that hypothesized that Black and Latino

communities did not have access to HIV testing and that was the reason for the lack of testing. The researchers discovered that there were in fact many readily available facilities for patients to access but there was still a lack of testing (17). The study concluded that medical mistrust may have contributed to that lack of communication and testing (17). However, even with the lack of testing, from the HIV/AIDS Surveillance of 2018, Black communities make up the largest percentage of total HIV diagnosis, concurrent AIDS diagnosis, AIDS diagnosis, deaths and people living with HIV (10). The statistics show that the Black community contribute to nearly half of the total cases for each category while Hispanics/Latinos trail second in each category (10). Currently, Black and Latino communities have been disproportionately affected by COVID-19, with more than half the cases in NYC associated with these two groups. However, the story is different for Asians. Asian Americans consistently report the lowest percentage in each category, except for HIV diagnosis where the percent increased by 36% from 2010 to 2014 (18). While Asians have a low HIV prevalence, data has shown that they represent a majority of

those who are undiagnosed and slip under the radar when it comes to targeted prevention efforts. According to the CDC, approximately 22% of Asians living in the U.S. are unaware of their HIV diagnosis (18). While the current statistics do not support the impact of HIV/AIDS on the Asian American community, it does not mean they are affected any less. There is limited data collection regarding the health of Asians in the U.S. as well as incomplete race reporting overall and without proper data, disparities will continue to exist. Several studies that covered previous pandemics and epidemics describe how minorities have suffered at the hands of racial and ethnic disparities in health care, yet little has changed (13, 14, 19, 20). The data shared here could be used to inform policy makers so a public health intervention can be enacted.

It is well documented that although there have been improvements in disease prevention, and medical care overall, health disparities still exist (15, 21, 22). Economically disadvantaged racial and ethnic minorities as well as persons with low socioeconomic status experience these disparities.

Health insurance

Individuals with a lack of health insurance have multiple barriers to health services which lead to a myriad of issues. Without health insurance, people are faced with the burden of the high cost of health care, which can lead to financial burdens. The fear of this financial burden can lead individuals to delay seeking out services and may be faced with preventable hospitalizations due to this lack of preventive services. This gap demonstrates the dangers of being without health care because individuals who delay seeking out care due to the lack of insurance are less likely to receive the care they need, are more likely to be diagnosed with illnesses much later and are more likely to die prematurely.

Poverty

Individuals who live in poverty are especially vulnerable not only during this pandemic but any other pandemic that can occur. Persons in poverty do not have the privilege to quarantine because they most likely make up the essential worker demographic. In addition to having to report to work every day for fear of being fired or not being able to provide for themselves or their family, they are not able to stay off public transportation. When living in an urban area like NYC, public transportation is not only the easiest, but often the only option for people to commute to work, which significantly exposes them to encountering the coronavirus. People living in poverty also do not have access to healthy foods, and the areas these individuals live in are often food deserts. Without access to nutritious foods, individuals have higher rates of comorbidities such as hypertension and diabetes, making them even more susceptible to dying from COVID-19.

The determination of who meets the threshold for poverty is based on total family income and how many individuals make up that household. If a total family income is less than that threshold set up by the Census Bureau, all the individuals in that household are living in poverty. If the household income is equal to or greater than the poverty threshold, the family is not considered to be living in poverty. If a family of five makes \$32,000 but the threshold is \$31,275, that \$725 difference means this family is not considered to be in poverty (23). The

family does not meet the criteria for being in poverty, which means they do not meet the criteria for receiving federal aid, including assistance with access to food and health care. The sheer lack of resources available to persons in poverty not only makes them vulnerable to contracting the virus but dying from it as well (24).

Language

Health literacy is the ability for individuals to understand, find and use information provided to them so that they can make informed decisions about their health care. For people to do this, information must be provided to them in a language they can understand. For those who do speak English, this is still a challenging task. Not everyone is educated in the same way. A medical student can differentiate a bacterial infection versus a viral one, but to the average individual, that is a foreign concept. How do we begin to explain that the coronavirus is a RNA virus instead of a DNA virus? How do we tell people that viruses are not able to be treated with antibiotics? Do people know what antibiotics are? These are all questions we must consider for English speakers. Difficulties are presented when the person is not an English speaker.

In NYC, the Bronx has the highest percentage of those who speak a language other than English at home and Hispanics and Latinos make up 56.4% of the borough's population (24). Hispanics and Latinos also make up the largest percentage of COVID-19 cases in the Bronx. We must consider: Is this because they are not aware of the information provided by the CDC on how to protect themselves against the virus? Are pamphlets provided in languages to educate the community on how to stop the spread, on how to wash their hands properly or how to get tested for the virus? It should be important to note that Spanish is the second most spoken language in NYC, yet Hispanics and Latinos who mostly speak Spanish are still affected. Most signs that are in a different language are usually in Spanish but are those translations accurate and in a simple enough language that the average person can understand. These are all considerations that need to be considered because if not, we are contributing to health disparities and widening the gap to health care. To truly provide good health care, it is important to make information readily available to those who need it and in a language they can understand.

Education

Education is also an important social determinant of health. Those who are not well educated, have fewer opportunities to obtain a job that would allow them access to good health insurance when they are sick and the ability to work from home during quarantine. As many know, the best way to avoid becoming ill is to stay at home and reduce interactions with the public, but those who are essential workers are not afforded this luxury. Essential workers such as those who work in restaurants, grocery stores and transportation are potentially exposed to those who have the virus daily. Many times, those who are exposed and might have the virus are not able to take the day off to go receive a COVID-19 test or take time off to recover because they might be the sole provider of their family. Difference in education status can lead to a plethora of problems that one has to consider.

There is also a bias in our society toward those who are not well educated. For example, those who are in a respected profession such as the medical field, corporate business, or law are more likely to be taken seriously when they bring up a concern compared to those who work a menial job that does not require a degree. Simply because people assume that if you are well educated, what you are saying must be fact. The MD or PhD that comes after your name automatically makes you more credible than someone who doesn't have the title. It is easy to disregard a comment from someone who cooks for a living simply because you think they don't understand what is happening. There is the presumption that your education defines how truthful and believable you are. This might explain why in Manhattan, where 60.8% of individuals who have a bachelor's degree or higher have fewer deaths from COVID-19 than the Bronx where only 19.8% of individuals have a bachelor's degree or higher (5). It is possible that those who are coming for treatment in Manhattan are being taken more seriously and treated better than those in the Bronx. In order to provide equal treatment, one has to be aware of this potential bias and of this factor that can contribute to a disproportionate number of cases.

A possible way to try and overcome this is to increase public engagement. Using community-based participatory research allows community members to not be treated as objects of policy but as individuals taking part in the governance of their own society (25). This can be done by identifying a community partner, identify decisions requiring community input, preparing content for panel deliberation, and facilitating panels involving the community. This ensures that the research is relevant for and supported by the community members as well as strengthening the feasibility and effectiveness of the study (26). For example, a study found that Pacific Islander adults reported three times the national rate of major depression, yet rarely seek mental health services due to the incompatibility with their cultural conceptions of mental illness. To address this unmet need in this population, researchers in partnership with the community decided that storytelling would be crucial to the intervention process (27). Interventions that are specific and culturally relevant to the population that is most in need is important in addressing health disparities. The goal here was to identify targeted strategies to improve health equity, so engaging the community being affected by these disparities may be a way to remedy that.

Another strategy could be to incorporate "big data" science to address minority health disparities. Big data is data that is generated in high volume and variety that accumulates quickly. For example, patient records can be considered a big data problem because it contains millions of records (27). The volume, variety, variability of big data can bring benefits to health and health care as it has with sectors of the economy. With this large pool of data, a guided extraction of information and knowledge can be gained (27). A major opportunity here is to incorporate a standardized collection and input of race/ethnicity, SES, access to health care, education, and other social determinants of health measures in the database systems (28). Standardizing the way this data is collected will allow all groups to be included, ensuring that no groups are excluded and ensures targeted ways to improve quality care.

A recommendation when using big data is it is important to build trust with the community (27). Medical mistrust exists due to the history of brutality against minorities in research. Serving minority populations need to be done in a respectful and beneficial way, which can be potentially done through a collaboration between minority-serving institutions and research-intensive institutions (30). More importantly, ensuring that researchers report back to the communities to provide results and next steps. Transparency and a continuity in partnership with community members should be a common practice.

Limitations

In this study, we examined the impact of COVID-19 on the social determinants of health of Blacks, Latinos, and Asians living in NYC to provide some racial and culturally relevant recommendations. As the coronavirus is still an ongoing pandemic, the data is changing every day, making it difficult to say definitively what the difference in case totals and deaths are for each race and ethnicity. Additionally, the statistics that are provided only include those who have been tested. It does not include those who may have gotten the virus but were asymptomatic and did not receive a test. There is also an inconsistency between definitions when retrieving secondary data. For example, for the U.S. Census bureau, Asian Americans and Pacific Islanders were separated into two different categories whereas for the NYC Department of Health, Pacific Islanders were grouped with Asian Americans, which leads to an inaccurate representation of how COVID-19 has impacted different races and ethnicities (19, 24). Finally, in terms of CBPR, there are few studies that follow up to see how effective public health interventions are (26, 27). It is important not only to make suggestions, but to see, whether the suggestions have a positive effect in the community. These limitations all impact our analysis, but with more research and better parameters, it is possible to eliminate them.

Conclusion

Time and time again, history tends to repeat itself. Whether it be the H1N1 pandemic, HIV/AIDS epidemic or COVID-19, minority populations are constantly the victims of a health crisis due to the social determinants of health. From their education to their poverty level and even their language barriers, they are disproportionately affected and are dying because health disparities that lead to inadequate care are not being highlighted. We need to step back and see the bigger picture before we can begin to tackle the gap in health care. In order to decrease health disparities, research studies and policies must be inclusive and nonbiased. Through the implementation of our suggested strategies, there can be success in expanding the foundation necessary to achieve health equity.

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Disclosures

We have no disclosures to address.

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