

Relationship Between Different Ethnic Groups and COVID-19

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Abstract. Current studies on COVID-19 do not sufficiently investigate the link between various racial and ethnic groups and the pandemic, despite growing awareness of disparities in race in the United States. However, the current research findings showed a heightened incidence of COVID-19 among Black individuals in this country, suggesting an increased prevalence of infection within this specific demographic. The relationship between different ethnic groups and COVID-19 is complex and influenced by various factors, including genetic composition, socioeconomic factors, pre-existing health gap, and immune reaction. Furthermore, those are the indirect factors related to stress that may contribute to increased vulnerability to COVID-19 in certain populations, including African-American/Black People, Hispanics, and other minority groups. It's important to address the fact that these factors are complex, multifaceted, and influenced by biological, social, economic, and psychological factors. It's urgent to address these underlying issues to reduce health disparities to improve the overall well-being of marginalized communities. Public health efforts should focus on promoting equity in access to healthcare, education, and economic opportunities to mitigate the impact of stress on health outcomes.

Keywords: Covid-19; Ethnicity; Race; Disparities.

1. Introduction

In the last month of 2019 in Wuhan, China, a new kind of infectious disease caused by acute respiratory syndrome 2 (SARS-CoV-2) broke out. In March 2020, the World Health Organization (WHO) classified it as coronavirus disease (COVID-19) that can cause severe respiratory infections stemming from this virus with its unprecedented global transmission.

The severity of COVID-19, coupled with the rapid global transmission and infection of the virus, necessitated widespread business closures and the nationwide enforcement of quarantine and isolation.

The world is currently facing its biggest crisis in public health in a decade, attributed to the ongoing COVID-19 pandemic. Public health is affected by bioaerosols containing harmful bacteria, a consequence of the highly contagious and infectious nature of SARS-CoV-2.

Cardiovascular or respiratory impediments are COVID-19's clinical symptoms. Pre-existing health conditions contribute to an elevated risk of contracting as well as experiencing more severe complications from this infectious disease. For example, diabetic individuals are more likely to progress into severe pneumonia with an advanced proinflammatory and prothrombotic condition. Another clinical study has shown that cardiovascular disease also serves as a risk factor for the development and diagnosis of this disease, potentially leading to severe pneumonia. In addition, the release of enzymes associated with tissue damage increases the likelihood of cytokine-induced hypercoagulability in infected patients [1].

In the United States, health disparities, which are most noticeable in socially disadvantaged communities, are preventable in the frequency of diseases, injuries, violence, or access to opportunities for achieving better health, which are extensively documented. Although there is ample evidence of healthcare disparities, COVID-19 affects racial minorities disproportionately, revealing systemic injustices that have long existed.

Clinical research has historically overlooked the inclusion of racial and ethnic data. There is currently a lack of comprehensive statistics on the extent of reporting race and ethnicity data for COVID-19, despite efforts to enhance such reporting. The statistics that are available show that there are substantial ethnic and racial differences in the prevalence of the pandemic, despite potential obstacles like the lack of stratification by racial or ethnic group in reported COVID-19 cases across

all U.S. counties or potential incompleteness due to missing information. These gaps are consistent with established patterns observed in other disease processes.

This study sought to recognize incomplete reporting on the assessment of disparities in COVID-19 research and to evaluate various factors of the causes, including genetic composition, socioeconomic status, pre-existing health disparities, and immune response. It additionally furnishes modalities for the prevention and medical care of this disease.

2. Race Groups and Factors

The health impacts resulting from the transmission of the virus and the pandemic have displayed uneven patterns of distribution across the United States. Infections, hospitalizations, and mortality rates have shown distinct variations among different regions and communities, prompting researchers to investigate the identification of populations at heightened risk and the underlying factors contributing to these disparities.

According to a study, communities of African-American/Black and Hispanic descent are more prone to COVID-19-related death and a disproportionate burden of SARS-CoV-2 infections. It is noteworthy though that these groups do not regularly exhibit greater case-fatality rates, which are primarily characterized as in-hospital death [2].

Not only do African-American/Black, Hispanic, and disadvantaged populations have higher infection rates, but the severity of the problems and outcomes that follow COVID-19 infections has also significantly increased. The United States National Public Health Agency states that these groups have a hospitalization rate following COVID-19 infection that is more than three times greater compared to White people, according to the Centers for Disease Control and Prevention [3]. This disparity is particularly notable in rural Black communities. African American individuals in Louisiana account for more than seventy percent of the total deaths among confirmed coronavirus cases in the state, despite constituting one-third of the population [4].

There are several potential reasons for the ethnic differences in this pandemic. They come from both genetic and social variations. According to a study on the underreporting of race and ethnicity in COVID-19, people who identified as black or Hispanic have a greater probability of obesity, asthma, heart disease, as well as other high-risk complications. They also face higher rates of unemployment and household composition hazards [5].

2.1. Genetic Considerations

The contribution of genetic variables to the vulnerability to severe COVID-19 outcomes has been studied in some depth. Transmembrane serine protease 2 (TMPRSS2) aids airway contact, which is the route by which SARS-CoV-2 is transmitted. The spike protein in SARS-CoV-2 must be initiated by the host's identification of Transmembrane serine protease 2 on the epithelium in nasal and bronchial. Next, comes the cleavage of the angiotensin-converting enzyme 2 receptor (ACE2), which is the site where the viral binds, allowing the virus to enter the host's body. Black people showed noticeably higher levels of TMPRSS2 expression than those from other self-identified racial or ethnic groups in clinical research of gene expression in nasal epithelial cells among a heterogeneous cohort of different racial and ethnic origins [6].

In conclusion, a much greater risk for prostate cancer in Black men than in White men has been related to differences in the activity of the TMPRSS2 gene in prostate tissue based on racial/ethnic variables.

However, the influence of genetics on COVID-19 outcomes is still under investigation, and the overall impact is not yet fully understood.

2.2. Social Causal Factors

The differences between ethnicity shown in COVID-19 can be attributed to socioeconomic factors. Certain ethnic groups may be disproportionately impacted by socioeconomic issues such as cramped living arrangements, high-risk yet essential occupations, and restricted access to healthcare.

It can be concluded in three social causal factors, which can be delineated into three fundamental causes: quality of healthcare, community dynamics and living environment, academic attainment and financial security.

2.2.1 Quality of healthcare

Healthcare and quality encompass elements such as the accessibility of healthcare services, the availability of primary health care, medical insurance, as well as knowledge of health. Individuals without sufficient medical knowledge may struggle to comprehend medications or suggestions from doctors and navigate the complicated healthcare system. Long-term conditions including cancer, diabetes, asthma, and coronary artery disease are more challenging to identify and treat as individuals who lack medical insurance are more reluctant to use medical services. Some of them might not even have any recourses. Because of the larger unemployment groups and inadequate portions of groups in well-paying occupations that offer medical coverage that is supposed to come with their job benefits, Black Americans and other minorities have limited access to healthcare. Different ethnic groups may experience and respond to COVID-19 differently depending on disparities in their access to healthcare, including diagnosis, treatment, and immunization. Delays in diagnosis and treatment may arise from a lack of timely and high-quality healthcare access. Consequently, it may raise the number of Black individuals who contract COVID-19, are hospitalized, or die from the virus [7].

2.2.2 Community dynamics and living environment

This has to do with the environments surrounding where people reside, work, as well as study. This component includes encounters with discrimination and involvement in the community. Lower death rates are correlated with higher levels of social and communal cohesiveness and support.

This encompasses factors such as housing, community characteristics, commute, availability of nutritious foods, access to clean water, air quality, and the availability of green spaces.

There exists a correlation between marginalized communities and their living geographical locations. Black People/Latinos are more prone to residing in areas characterized by close to airborne particle contamination, including chlorine, aluminum, and carbon. This is because lower-income communities predominantly inhabited by Black People/Latinos cans are often situated near industrial facilities, refineries, and landfills that release pollutants into the air. Additionally, for a significant portion of the American population, groundwater serves as the primary source of drinking water. Groundwater in the vicinity of refining facilities, factory emissions, and sanitary landfills is more likely to be contaminated with toxic byproducts. In addition, there is established evidence linking air pollution to the occurrence of new cases of asthma. Moreover, CDC has verified that individuals who have asthma face an elevated chance of getting sick due to the coronavirus [8].

The availability of green space, essential for activities such as walking and exercising, is also a concern in minority neighborhoods. The limited green spaces, coupled with overcrowding, pose challenges for residents. Social distancing is crucial for reducing COVID-19 transmission. However, in densely populated neighborhoods, implementing effective social distancing measures may prove challenging. This elevated difficulty in maintaining adequate social distance places individuals residing in crowded areas at a heightened likelihood of getting the virus, thereby contributing to an increased rate of virus transmission of COVID-19 within such communities.

2.2.3 Academic attainment and financial security

This comprises aspects such as education degree, continuing education, and language and knowledge skills. There exists a positive correlation between one's level of education and life expectancy, with higher levels of education generally associated with increased life expectancy.[9] In addition, education significantly influences economic stability. Individuals with higher levels of

education often have access to better job opportunities, which can lead to increased income and financial security.

Jobs, wealth, food supply, and stable living environments are all parts of economic stability. A noteworthy correlation has been shown between rising rates of poverty and an increased proportion of persons 25 years of age and older who suffer from chronic illnesses that impair their ability to engage in physical exercise. A person's health is impacted by unemployment in many different ways; it can exacerbate conditions including depression, domestic violence, drug misuse, and physical sickness [9].

The degree of education a person receives has a big impact on their salary, career prospects, and ability to get benefits like paid time off for illness and parental leave. There are also noticeable racial differences in the workplace: minorities have jobs more commonly in blue-collar service, whereas white people are more likely to work in white-collar clerical roles. Discrimination at work can make people more stressed, anxious, depressed, and other harmful health effects. People without jobs are vulnerable to illnesses easily, such as diabetes, hypertension, and cardiovascular disease, which are pre-cursor of coronavirus. Furthermore, those minority groups have higher chances to get high-risk jobs and encounter difficulties when working remotely, which makes them more susceptible to COVID-19.

These three social casual factors are interconnected and have exhibited a significant role during the pandemic. All of the above disparities in social casual factors can lead to a greater possibility of getting this virus as well as poorer complications of COVID-19. For instance, an individual's education level can influence their occupation, subsequently affecting people's socioeconomic status. This economic status, furthermore, can determine what kind of medical services are available to them and the neighborhood they reside in, influencing the social and community context surrounding them. These factors affect the ongoing pandemic. Hence, it is reasonable to infer that socioeconomic factors are key contributors to infection and mortality rates [10].

Communities should be strengthened by policymakers through the implementation of initiatives related to housing, education, job creation, and crime reduction. It is critical to secure political and popular support for comprehensive community redevelopment programs and to advance immigration reform. The primary goals of additional work should be to restructure the criminal justice system and provide support systems for those who are looking for employment after jail. Furthermore, legislators must prioritize ensuring that communities have access to clear and accurate information.

Rather than existing as separate entities, the three determinants might be understood as a cycle of interrelated occurrences that mutually impact one another. This dynamic interaction is still apparent in light of the COVID-19 epidemic at the moment.

3. Pre-existing Health Gaps

Pre-existing health disparities can contribute to variations in COVID-19 outcomes among different ethnic groups. Conditions such as diabetes, cardiovascular disease, and obesity are more commonly seen in some ethnic groups, which leads to a greater possibility of COVID-19.

Those health conditions that elevate the susceptibility to unfavorable outcomes in the context of COVID-19 are precisely those that are already prevalent at higher rates within Black populations. Conditions such as hypertension, cardiovascular disease, diabetes, chronic respiratory disease, liver disease, and autoimmune disorders are examples of underlying health issues that disproportionately impact Black individuals [11].

Pre-existing disparities are also affected by the previous social casual factors, all of which play a significant role in shaping the impact of the COVID-19 virus on different ethnic groups. It's important to understand and address those pre-existing health disparities to develop effective and comprehensive disparities to mitigate the disproportionate effects of COVID-19 on various ethnic groups.

4. Immune Response

4.1. Psychological Stress

Immune function changes as psychological stress changes. According to a study, those who live in impoverished districts have been found to have higher levels of stress in comparison to people who live in non-deprived regions. Some stresses faced by residents of impoverished communities are congestion, elevated crime rates, perceived safety concerns, inadequate transportation, substandard housing, deterioration, restricted services, inadequate infrastructure, and a deficiency in social support [12].

People with lower socioeconomic status may be more psychologically affected by societal stresses than those with better socioeconomic status, even when they happen to be exposed to the virus at the same level. This can be explained by the fact that Black and Hispanic individuals have fewer chances of having supportive social and personal resources that are meant to help them deal with these pressures. As a result, Black and Hispanic people may be disproportionately impacted by the social stresses that the epidemic intensifies or causes. This is caused by the fact that they are often more prone to acute and chronic stresses, have a lower socioeconomic status, and confront more social and economic barriers in the United States than other ethnicities. Chronic stress can weaken the immune system over time, making Black and Hispanic minorities more susceptible to infections, in this case, COVID-19.

4.2. Air Pollution

Scientists proposed that breathing in air pollution might make one more susceptible to COVID-19. Their logic is based on the theory that air pollution serves as a virus's vector, making it simpler for people to contract. The body's capacity to fight infections is diminished by air pollution, which lowers the ability of the immune system and holds an important position in the epidemic, according to research. It also points out that there is a possibility that the spread of COVID-19 may be impacted by an increase in pollution particle size, or PM2.5. The results showed that an eight percent increase in COVID-19-related mortality was connected with a modest one microgram per cubic meter increase [13].

Variations in immune responses among different ethnic groups could also contribute to the intensity of COVID-19. Genetic and environmental factors may contribute to differences in how individuals respond to the virus.

4.3. Vaccine Hesitancy and Resistance

WHO defines vaccine hesitancy as the unwillingness or refusal to get vaccinated despite the presence of available vaccines. This phenomenon holds against global health and become a top priority for both the WHO and the United States.

Previous studies suggest that minorities especially African Americans, have shown increased hesitation and opposition toward COVID-19 vaccination. Numerous variables, such as mistrust of the government and vaccine producers, in addition to other sociodemographic and health-related issues, might be responsible for this phenomenon. In addition, the study shows that in comparison to other racial and ethnic groups, Black and Hispanic Americans perceived greater risk from COVID-19 and reported lower levels of education, household income, and faith in the procedures involved in the development and licensing of safe vaccinations. Compared to other groups, Black Americans in particular reported a higher number of health issues and were less likely to be married or working. Asian Americans and Pacific Islanders, on the other hand, perceived the lowest risk from COVID-19, and tend to have the highest degrees of education, household income, as well as confidence in the vaccine development and approval procedures [14].

These results show that more work has to be done to boost trust in COVID-19 immunization, especially among the disproportionately afflicted Black and Hispanic/Latino populations. To improve vaccine acceptance among minority groups, simple strategies like creating messaging that emphasizes

the benefits of vaccination for the individual, family, and community and maintaining transparency about the safety profile of COVID-19 vaccines can be quickly distributed throughout healthcare systems.

5. Conclusion

The debate over whether sociocultural factors or biological differences are more relevant to the impact of coronavirus on different races and ethnicities is ongoing.

The powers of silence and complicity are damaging and caustic. Social scientists, academics, physicians, and public health specialists must foster safe spaces that uphold cultural humility and celebrate our common humanity. Patients who have experienced racism and implicit prejudice in healthcare firsthand must advocate. This means that rather than just recognizing the presence of health inequalities, the public should encourage research treatments aimed at eliminating them to minimize health gaps. Patients' advocacy in challenging physicians' work ethics needs to be strengthened, and patients should be encouraged to seek out doctors who share their gender, color, ethnicity, culture, and language.

Public health measures, including vaccination campaigns and efforts to address social determinants of health, aim to reduce these disparities. It's essential to consider the intersectionality of various factors when examining the relationship between COVID-19 and ethnicity, and ongoing research is crucial for a comprehensive understanding of these dynamics. Always refer to the latest information from reputable health organizations and scientific publications for the most up-to-date insights.

Long before a patient sets foot in a hospital, health occurs. Healthcare practitioners, leaders, scientists, and citizens in the United States should collaborate to fight the COVID-19 pandemic to reduce health disparities that persist all over the country, and ensure continuing health equity for Black Americans.

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