

Clinical Review

Conscious and Unconscious Bias: The Hidden Pandemic of Biases in Healthcare Exacerbated by COVID-19

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Abstract

Background

There are limited data on unconscious bias in healthcare, but there is consistent evidence that it alters clinical decision-making. COVID-19 exacerbated many pre-existing disparities, and this paper seeks to identify, deconstruct, and propose mitigation strategies for a few of them.

Discussion

Five of the largest disparities amplified by the pandemic are discussed in this paper. Older people, Black people, uninsured people, rural communities, and people with lower education levels have been disproportionately affected in both morbidity and mortality.

Conclusions

The disparities discussed above did not occur in a vacuum but are the result of systemic issues. Equity starts with understanding and addressing the root cause, and it can be worked toward with practical and impactful solutions.

Keywords

unconscious bias; implicit bias; hidden bias; healthcare disparities; healthcare inequality; COVID-19; SARS-COV-2; pandemic; ethnic and racial minorities

Background

Unconscious bias (also referred to as cognitive bias) is a preference for or against a person or a group of people. It is the filter through which a person evaluates the world, though they are unaware. Both positive and negative biases impact clinical decision-making; however, negative bias is of particular concern as it can lead to poor patient care and worse outcomes.¹ There is a growing body of literature identifying the impact of unconscious bias on healthcare delivery and outcomes. In the literature, there is consistent evidence that unconscious bias alters clinical decision-making.

A systematic review published in 2020 found that cognitive biases were associated with diagnostic inaccuracies in 36.5%-77% of case

scenarios.¹ In another study on unconscious bias in the diagnosis of behavioral disorders, strong evidence was found that Black and Hispanic children are 2.5 times more likely to be diagnosed with disruptive behavior and ADHD than their White counterparts, and clinicians were more responsive to non-Hispanic, White families in treating ADHD.² This is one example of how a stereotype can infiltrate clinical decision-making. People of color, specifically children in this study, were seen as more chaotic and disruptive than White people, and in this case, that trope may have impacted diagnostic decisions.

Another study investigated disparities in emergency departments (ED) consulting by race and gender.³ It was found that White adult

females and pediatric males are more likely than Black adult females and pediatric males to receive specialist consultations. This is further evidence that delivery of care is influenced by skin color, whether or not the ED clinicians in charge of placing referrals were aware of their biases.

Most pertinently, racial minorities were disproportionately affected by COVID-19.⁴ Roughly 20% of Black employees can work from home, whereas almost 30% of White employees are able to do the same.⁴ In addition, the Centers for Disease Control and Prevention (CDC) published surveillance data of COVID-19-related hospitalization, and though Black people make up only 13% of the population, they accounted for up to 33% of hospitalizations.⁴ This will be discussed further below, but the fact that Black people have been disproportionately affected by the COVID-19 pandemic has highlighted fundamental disparities in multiple systems, including healthcare delivery.

While there is a larger conversation emerging around unconscious bias and systemic discrimination in medicine, the literature on this topic, specifically in the context of COVID-19, is sparse. Healthcare providers are trained to leave their prejudices at the “patient’s door”; however, they must first be aware of those biases. Especially during a pandemic, when quick decisions have enormous consequences, it is essential that providers become familiar with their biases so that clinical decisions are reactions to the patient’s scenario and not the patient’s demographics.

This paper will provide a narrative review highlighting some of the unconscious biases (age, racial, insurance status, rural, and education) and specifically inherent biases within medical systems (systemic bias), that the COVID-19 pandemic has amplified, and propose mitigation recommendations (**Table 1**). Mitigation recommendations were created by the authors based on what is practical, impactful, and already available. As an example, one proposal is focused on vaccine outreach. Targeted advertising and strategically placed vaccination centers are feasible and practical.⁵⁻¹⁰ It would be impactful as vaccination prevents severe complications of COVID-19.^{11,12} Lastly, it builds on available resources. There is an abundance

of available vaccinations (in non-low-income countries),¹³ and focused outreach has been shown to increase vaccination rates.⁵⁻¹⁰

Discussion

Age Disparities

The COVID-19 pandemic has disproportionately affected the elderly and exacerbated the negative effects of ageism. Globally, older individuals have been the most impacted group both in morbidity and mortality. Individuals over the age of 80 had a fatality rate of over 10%.^{5,14} While this could be influenced by the increased morbidity and mortality associated with increased age in general, the elderly were clearly not a priority for care. For example, the Critical Care Society of South Africa developed a score-based emergency triage consensus, and age was used as a tiebreaker when assessing the priority of care.^{6,15} The older the patient was, the lower priority they had, even though comorbidities and disabilities usually increase with age. Furthermore, in February 2020 in Spain, it was recommended that hospitals not admit anyone over 80 into an intensive care unit.^{7,16} In Italy, where the COVID-19 pandemic ravaged one of the oldest populations in the world in 2020, their guidelines explicitly stated an age limit would be set for ICU admission.^{11,17}

It is important to acknowledge that these decisions were an effort to parse out limited resources in the most equitable and efficient way. Similar to organ transplantation, there has to be some system to decide who gets priority access to resources that are lifesaving but extremely limited. Institutions were trying to concentrate their resources on individuals with the highest likelihood of survival, and they were trying to reduce morbidity, as ICU stays have an enormous post-discharge impact on the elderly. However, this does not mean that those slighted by the system do not experience real harm. Ethically, age-related cutoffs are troublesome. By devising strategies based on age, it could reinforce the persistent beliefs that older individuals’ lives are less valuable or even expendable. In addition to being discriminatory, age is not the sole predictive factor of mortality or poor outcomes.^{5,14} Factors such as functional trajectory, multimorbidity, and frailty are more predictive. Therefore, age alone is a poor indicator of future outcomes.^{5,14} Proposed mit-

Table 1: Conscious and Unconscious Biases During COVID-19 Pandemic and Mitigation Recommendations

Unconscious bias type	Details	Mitigation recommendation
Age	<ul style="list-style-type: none"> • >80 years old is associated with greater mortality • Age limits on admission to ICU 	<ul style="list-style-type: none"> • Abolish absolute age limits when possible based on resources • Make treatment decisions centered around frank discussions with patients and their families regarding physiologic age, frailty, comorbid conditions, and likely outcomes after discharge from ICU
Racial and ethnic	<ul style="list-style-type: none"> • Black people unequally share disease burden: they comprise more COVID-19 cases than proportional to the Black population size • They have increased mortality rates • They are more likely to work essential jobs and be unable to work from home 	<ul style="list-style-type: none"> • Increased mask mandates to protect essential workers, who are more likely to be people of color • Focused vaccine outreach from healthcare leaders of color to increase trust and decrease vaccine hesitancy • Increasing affordable public broadband access to allow more employees to work from home
Insurance	<ul style="list-style-type: none"> • Uninsured status associated with higher rates of comorbid conditions, increased barriers to care, and disproportionate disease burden in the COVID-19 pandemic 	<ul style="list-style-type: none"> • Lengthening sign-up window for government-subsidized insurance • Focused outreach in underinsured communities offering COVID-19 testing and vaccinations
Rural location	<ul style="list-style-type: none"> • Healthcare worker shortages in rural areas • Fewer rural critical care resources including ICU beds • Higher rural mortality rates from COVID-19 	<ul style="list-style-type: none"> • Focused outreach in rural communities offering COVID-19 testing and vaccinations • Dispatch of resources including ICU trailers, mobile imaging centers, and distribution of essential equipment like personal protective equipment
Education level	<ul style="list-style-type: none"> • Lower rates of vaccination in those with lower education level • Misinformation dominates online platforms leading to miseducation 	<ul style="list-style-type: none"> • Vaccine outreach with language as simple as possible • Vaccine information written assuming lower health literacy so all education levels can understand • Regulation of misinformation on social media platforms • Educating health providers on trending misinformation to readily answer patient questions

igation strategies include abolishing absolute age limits for treatment, when possible, which many institutions have done as resources have become more widely available. Treatment decisions should be centered around frank discussions with patients and their families regarding

physiologic age, frailty, comorbid conditions, and likely outcomes after discharge from the ICU. As resources have become more broadly available and treatments for COVID-19 have become more effective, it is time to rethink age limits for admission and treatment.

Racial and Ethnic Minority Disparities

In April of 2020, the CDC published data of laboratory-confirmed COVID-19-related hospitalizations. Though only 18% of the population surveyed was Black, they made up 33% of the COVID-19 cases.^{14,18} As of April 9th, 2020, in Chicago, Illinois, 51.5% of COVID-positive patients and 67.3% of those who died were Black, though they account for only 14.6% of the state's population.^{14,18} Minority groups may have a greater risk of infection due to comorbidities, but there are also social inequalities that can offer insight into these disparities.^{14,18} Black people are more likely to live in densely populated neighborhoods of lower socioeconomic status, leading to greater risk of exposure, less access to healthcare, and lower rates of COVID-19 testing.^{14,18} While the history is too vast to thoroughly detail in this paper, racial housing policies decades ago, including redlining and discriminatory lending, have effects to this day on where people of color live, generational wealth, and the ability to own a home. Studies have shown a direct correlation of those who were historically redlined and increased ED admissions for asthma^{15,19} and worse birth outcomes.^{16,20} This may also be why Black people have more underlying comorbidities: centuries of systemic racism affecting access to and delivery of healthcare. Additionally, it was reported that only 19.7% of Black employees can work from home, compared to 29.9% of White employees.^{14,18} This may be in part because minorities are more likely to work in essential jobs that are unable to be performed in isolation at home. For example, in New York City, 75% of frontline workers were people of color.^{17,21} It could also be due to a lack of resources including adequate access to the internet. According to a recent Pew Research poll, about 80% of White people own a desktop or laptop computer and have a broadband connection at home, whereas about 69% of Black people report having devices and 71% report having broadband at home.^{18,22} These factors, along with housing, access to care, and job differences, were present before COVID-19, but the pandemic has highlighted the discrepancies and shown how they systematically lead to disparate outcomes for Black Americans. Potential solutions include mask mandates to protect essential workers, who are more likely to be people of color, focused vaccine outreach from healthcare leaders of color to increase trust

and decrease vaccine hesitancy, and increasing public affordable broadband access to allow more employees to work from home.

Insurance Status Disparities

COVID-19 and the health insurance crisis in the United States are intersecting epidemics.^{19,23} During the final week of March 2020, a record number of 6.648 million unemployment benefit claims were filed, surpassing the record set the previous week of 3.307 million.^{19,23} Among those uninsured, a large portion came from Hispanic/Latinx populations.^{20,24} In the state of Rhode Island, Hispanic/Latinx adults had the highest percentage of uninsured at 41.2%. Additionally, 29.3% reported not having seen a doctor in the past year, and 31.3% of Hispanic/Latinx adults reported financial barriers to healthcare, the highest rate compared to other racial and ethnic groups in the state.^{19,23} The high rate of uninsured can be partly explained by ineligibility for subsidized or public medical insurance because of immigration status and partly by lack of income to pay for employer-based or private insurance.^{20,24} This leaves the Hispanic/Latinx population especially vulnerable to COVID-19. The increased hazard from COVID-19 due to insurance status also parallels the discussion above regarding racial discrimination. Nationwide, 28.6% of COVID-19 cases are Hispanic/Latinx patients, though they only compromise 18% of the population.^{21,24} Lengthening the sign-up window for government-subsidized insurance would allow for more eligible individuals to obtain coverage, and focused outreach in underinsured communities offering COVID-19 testing and vaccinations would improve vaccination rates.⁵⁻¹⁰ While not everyone could obtain insurance coverage, this would at least offer more protection to those who are vulnerable and lack access to affordable care.

Rural versus Urban Disparities

Health disparities between rural and urban areas are not limited to life expectancy and risk factors but to testing capacity and healthcare quality as well.^{22,26} Rural communities often face the constraints of hospital closures, healthcare worker shortages, and more limited pre-existing resources—such as fewer ICU beds and a lack of critical care staff—which become crucial during a time of widespread disaster. When comparing COVID-19 cases and mortality in

urban and rural communities in South Carolina, of the 124 289 confirmed cases between March 1st-September 5th, 2020, 84% occurred in urban counties. But, when adjusting for county-level population size, the COVID-19 case rate showed distinct urban-rural differences with rural county cases rates (2757.40 per 100 000) being higher than those in urban counties (2373.14 per 100 000).^{22,25} Furthermore, while total fatalities in rural areas were less than in urban areas, mortality rates were higher. Disparities in access to healthcare and health prevention behaviors between rural and urban populations can explain this. Rural populations are less likely to seek healthcare and engage in preventative behaviors. For instance, residents of the most rural counties are the most likely to lack health insurance, and physician supply per capita decreases as rurality increases.^{23,26,27} Rural communities also have the lowest prevalence of health-related behaviors (sufficient sleep, current nonsmoking, nondrinking or moderate drinking, maintaining normal body weight, and meeting physical activity recommendations).^{24,28} Most pertinently to COVID-19, deaths from infectious diseases in urban counties decrease much more rapidly than in rural counties where there are limited testing and recovery resources.^{25,26,28,29} Ideas that may decrease this disparity include focused outreach in rural communities offering COVID-19 testing and vaccination and the dispatch of resources including ICU trailers, mobile imaging centers, and distribution of essential equipment such as personal protective equipment.

Education Level and Information Spreading Disparities

Health disparities have also been observed based on education level and information surrounding COVID-19. A study at the beginning of 2021 looked at factors influencing receipt of or definite intention to receive ≥ 1 vaccination dose. Of those with a high school education or less, 64.4% indicated they had or intended to receive the vaccine versus 74.3% of those with a college education and 88.8% of those with beyond a college education.^{27,30} Since there are not much data regarding COVID-19 outcomes by socioeconomic status, vaccination intention and hesitancy are key to understanding this disparity. Vaccines have been proven to greatly reduce COVID-19 incidence and disease sever-

ity,^{11,12} so the decision of whether or not to get vaccinated is of enormous consequence.

Vaccine hesitancy may also be influenced by education more specifically around COVID-19. The swarm of health misinformation has been called an infodemic.^{28,31} Social media and access to endless amounts of information play a role of varying importance, depending on the platform. Information from unreliable sources gets about 3 times more engagement (time spent with each item, share, reaction, and comment) than information from reliable sources.^{28,31} Reliable information and misinformation are often shown to users at similar rates,^{28,31} but this suggests that users are interacting for longer and in more meaningful ways with untrustworthy information. Additionally, of the top COVID-19-related videos on YouTube, 25% contained misinformation, and government or professional videos only accounted for 11% of views.^{29,32} Even though 75% of the videos were fact-based, again users were engaging with unreliable information at much higher rates.

There are no aggregate data that this research team could find directly linking social media misinformation to poor outcomes or COVID-19 vaccine hesitancy. However, there are many news reports regarding unsafe behavior. Early during the pandemic, hydroxychloroquine was identified as a potential treatment.^{30,33} The WHO strongly recommends against its use,^{30,33} but after prominent public figures touted it as effective, people rushed to get it, driving supplies so low that patients with chronic rheumatic diseases could not fill their prescriptions.^{31,34} Similarly, people have been getting ivermectin from livestock stores after misinformation circulated that it could prevent COVID-19.^{8,32} It has yet to show any benefits in the treatment of the disease,^{9,33} and moreover can cause serious harm when taken in doses meant for livestock.^{10,11} Again, while there are no large studies available directly analyzing COVID-19 misinformation found on social media and its effects on health outcomes, many instances of real-world consequences have been observed. Proposed mitigation solutions include vaccine outreach with language as simple as possible so that health literacy is not a barrier, or it is at least reduced. Similarly, vaccine information should be written assuming lower health literacy so all education levels can

understand. Regulation of misinformation on social media platforms is the most challenging of the mitigation solutions; however, it would likely make a large impact.

Conclusions

The COVID-19 pandemic highlighted and exacerbated multiple disparities in healthcare, including inequities based on age, race, insurance status, rural setting, education level, and exposure to misinformation. These disparate outcomes did not occur in a vacuum; they are the result of systemic issues with healthcare, insurance, discriminatory policies, practitioner bias, and much more. Rectifying these discrepancies must start with recognizing them and being curious about why they are occurring. While change must occur at a systemic level, individuals can also make meaningful changes, starting with educating themselves on pertinent disparities of care and incorporating that awareness into their practice and clinical decision-making.

Conflicts of Interest

The authors declare they have no conflicts of interest.

Dr Hartmann is an employee of TriStar Southern Hills Medical Center, a hospital affiliated with the journal's publisher.

Dr Koumtchev is an employee of TriStar Centennial Medical Center, a hospital affiliated with the journal's publisher.

Dr Kashyap is an employee of HCA Healthcare Graduate Medical Education, an organization affiliated with the journal's publisher.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

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