Across The Spectrum of Socioeconomics
Volume 1 Issue 2
DOI: https://doi.org/10.5281/zenodo.4320158

International Socioeconomics Laboratory™

Are the misdiagnoses in the healthcare system linked to systemic racism?

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Abstract

Systemic racism refers to the prejudice towards Black Americans embedded in society that exists in different establishments. However, as Black Americans are discriminated against in several institutions, the mistreatment of these individuals in the healthcare system is scarcely discussed. In the healthcare system, issues such as misdiagnoses are prevalent and affect the quality of life of the thousands of people who receive improper treatment. We wanted to determine how systemic racism is present in the healthcare system through misdiagnoses. Due to the nature of the study we were unable to administer any surveys or conduct interviews. Our methodology focused on collecting archival data, in which we compiled in a table. Through the collection of archival data, it was found that there is a large gap in public data and that disparities do exist in misdiagnoses for Black individuals. Thereby, it is imperative that further research is done to account for the gaps in data.

Background

The inherent bias in American institutions leads to a difference in the treatment of Black Americans; this is prevalent in many establishments that are supposed to serve all people equally. There are mechanisms for racial disadvantage which perpetuate inequalities in different industries that impact Black Americans disproportionately. Systemic racism is defined as the inequalities that exist in society embedded within social institutions that disadvantages Black Americans. Racial profiling, red lining, unemployment, unequal access to education, affordable house care, lack of opportunities, and poor health care treatment are only a few problems that Black Americans are subjected to (Yancey-Bragg, 2020).

However, the problems that exist within the healthcare industry are often not discussed. There are reports of the mistreatment of patients and even doctors of African American descent.

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Doctors take oaths to serve patients fairly and to do no harm, however doctors work in an inherently racist institution built on the foundation catering to white supremacy. Implicit bias also affects the treatment of Black Americans (Tello, 2017). This means differences in diagnoses between patients of minority groups and patients that are not of color. Misdiagnoses are incorrect diagnoses of a health condition that can have extreme negative consequences.

There are 12 million misdiagnoses per year in outpatient care in the US alone (Singh, Meyer, Thomas, 2013). Since Black Americans are three times more likely to use outpatient care (Brown, Burton, Hixon, et al. 2012), these statistics raise the question, "How is systemic racism present in the healthcare system towards black people?" With the discrimination that exists in this structural institution, it can be hypothesized that the disparities in misdiagnoses are not just mistakes, but are due to racial bias. Especially since, recently there was a study done that showed Black Americans being misdiagnosed with major depression at a higher rate than their white counterparts in clinical behavior outpatient clinics (Gara, Minsky, Silverstein, et al. 2018). However, there is a lack of research on misdiagnoses and its disparities with Black Americans and there has been a lack of collective data. Thus, for our research purposes statistics and archival data will be collected.

Materials and Methods

To address the question of misdiagnoses in the healthcare system being linked to systemic racism archival research was collected and compiled. For the conditions the data was collected for, the conditions chosen were picked from a recent study done on the rate of misdiagnosis for the top five vascular diseases, infections, and cancers (Toker, Wang, Zhu, et al. 2020). The conditions chosen were conditions that had over 200,000 diagnoses annually in the U.S. based off of the CDC's statistics or other journals. For every condition, data was collected on the number of people who were diagnosed for each condition in the United States; each condition has a percentage of misdiagnosis that was recorded. Using the annual diagnosed cases, the total number of people misdiagnosed was found based on the misdiagnosis rates provided in the recent study. Studies that linked higher misdiagnosis rates with blacks were collected. If a paper was found discrediting such a link then "no" was put, if a paper supported such a link "yes" was put. If there were no studies supporting either link, the area was left blank.

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Results

Table 1. *Misdiagnosis statistics in the Healthcare system for Blacks/African Americans*

Condition	# of people diagnosed on Average in the U.S.	General Misdiagnosis Percentage	# of People Misdiagnosed	Are Black People more likely to be misdiagnosed
Stroke	795000[a]	8.70%	69165	Yes[i]
Myocardial Infarction	30300000[b]	2.20%	666600	Yes[j]
Venous thromboembolism	900000[c]	19.90%	179100	---
Aortic Aneurysm	200000[d]	29.70%	59400	---
Sepsis	1,700,000[e]	9.50%	161500	---
Pneumonia	1,300,000[f]	9.50%	123500	Yes[k]
Lung Cancer	228,000[g]	22.50%	51300	---
Breast Cancer	276,480[h]*	8.90%	246067	Yes[l]

Note. *Data is only from women

All general misdiagnosis rates are from (Toker, Wang, Zhu, et al. 2020)

Data are from

(Virani, Alonso, Benjamin, et al. 2020, Table 14-1)[a],

(CDC, Summary Health Statistics Tables for U.S. Adults: National Health Interview Survey, 2018, Table A-1b, A-1c)[b],

(Beckman, Hooper, Critchley, et al. 2010)[c],

(Singh M., 2020)[d],

(CDC, Clinical information. U.S. Department of Health & Human Services, 2020)[e],

(CDC, Pneumonia. U.S. Department of Health & Human Services, 2020)[f],

(Howlander, Noone, Krapcho et al. 2019)[g],

(American Cancer Society, 2020)[h],

(Newman-Toker, Voy, Malente, et al. 2017)[i],

(Moy, Barret, Coffey et al. 2014)[j],

(Henry Ford Health System. Pneumonia often misdiagnosed on patient readmissions, 2010)[k]

(Fox, 2015)[l]

Discussion

The data supports the hypothesis that misdiagnoses in the healthcare system are linked to systemic racism. The results were organized into the number of people misdiagnosed for each condition and then whether black people were more likely to be misdiagnosed. This bias was consistent with conditions that had data to show that black people were more likely to be misdiagnosed for the same condition compared to other races and ethnicities. However, for the

number of conditions that did not have information released to show the breakdown of misdiagnoses per race, the surrounding literature supports that it is likely the data has not been collected yet. Even though many of the conditions did not have specific data to show that black people were more likely to be misdiagnosed, there is supporting literature that correlates mistreatment for black people that have these conditions. For example, for venous thromboembolism (VTE), although African Americans have a significantly higher diagnosis rate of VTE, this is particularly followed after exposure to a provoking risk factor such as surgery, medical illness, trauma, etc (White, Kennan, 2010). Blacks and other races were more likely to develop sepsis than whites but less likely to be hospitalized for it (Di Meglio, Dubensky, Schadt, et al. 2018). The prevalence of aortic aneurysm in black patients was about 40% of that in whites patients, yet while accounting for disease burden, only at less than one-third the rate of white patients. Black patients who were diagnosed with aortic aneurysm were less likely to undergo emergency repairs compared to their white counterparts (Wilson, Fetcher, Welsh, 2008). For black patients with early-stage lung cancer, they were less likely than white patients to have surgery recommended, even though both groups of patients had similar access to health care (Lahan, Neville, Earle. 2006). This calls into question whether there are group disparities in ethnic groups receiving the same kind of care and provider support from hospitals. Certain factors may not be taken into consideration during the diagnosis of black patients, and physicians are less likely to suggest emergency repairs or surgical options for black patients compared to other racial groups. This may be because of the disparities in health care and addressing barriers to all groups of people. This indicates that there is a correlation between racial bias and the maltreatment received by black patients. One can construe the idea that the same may exist for misdiagnoses and explains why black patients are more likely to be misdiagnosed for many of these conditions compared to their white counterparts.

The systemic racism within the healthcare system pertaining to misdiagnoses is important to address for the future of the system. It is important because researchers currently are working on creating A.I. programs to close the gap in misdiagnoses (Han, Rundo, Murao, et al. 2020). Since these A.I. programs will be learning to diagnose based on statistics from misdiagnoses and diagnoses, the misdiagnosis gap will not lessen if the problem of systemic racism in misdiagnoses is not identified and accounted for within the program. The A.I. program would continue to diagnose using incorrect statistics, resulting in the A.I. being racially biased as well when it comes to offering treatment leading to Blacks/African Americans and other minorities not receiving the care they need. This is supported by the concerns of other researchers when it comes to the development of VTE diagnosis A.I. (Addo-Tabiri, Chudasama, Vasudeva, et al. 2020). Thus, for future studies, more exploration needs to be done on misdiagnoses for specific

conditions such as sepsis, venous thromboembolism, aortic aneurysm, and lung cancer to define whether the misdiagnoses are happening based on race or other various factors Additionally, more studies need to be done on misdiagnoses for the conditions with papers supporting the link to race, as the body of literature is lacking and the data used in those studies limit their broad application. Future studies also need to readdress the question proposed in this paper as this paper was solely based on archival research with no new data analyzed or collected for significance. Once these studies are addressed and accounted for, then A.I. programs can be developed and serve as a tool to close the gap of misdiagnosis within the healthcare system. However, until then, it is up to healthcare workers and researchers to raise awareness on implicit and systemic racial bias within the methods of diagnosis and other areas of healthcare to ensure proper treatment for all (Fitzgerald and Hurst, 2017).

To properly support future investigations/research addressing this question or topics related to this study, we will be acknowledging the limitations of our study (Ross and Zaidi, 2019). This study is limited in its scope, methodology, and significance. The study is limited in its scope of application as we limited our definition of systemic racism to only Blacks and African Americans; When racial bias exists against other minorities in the healthcare system and could be linked to misdiagnoses as well (Hall, Chapman, Lee, et al. 2015). Future studies can avoid this limitation by exploring and comparing the misdiagnoses rates between all races. This study is limited in its methodology as it collected archival research/results from publicly available studies as there was no access to hospital data, and did not account for potential limits in those studies. This limitation is avoidable through rigorously checking the standards of each paper used and taking into account the limitations of other papers. Additionally, the methodology is limited as we specifically searched only for misdiagnosis studies focusing on Blacks and African Americans, which is a limitation as various other factors affect Blacks and African Americans pertaining to healthcare. These factors include lack of access to quality care, mistrust of doctors, insurance bias, etc. (Noonan, Valesco-Mondragon, Wagner. 2016). The methodology is also limited due to the time frame of data not being accounted for, the data within this paper range from 2010 - 2020. To lessen such limitations, future studies would need to close this gap in time to make the paper more accurate. Consequently, because of our limitations in our methodology and scope, the significance of our study is not likely significant. To avoid this, future studies can use data quality assessment methods and significance tests such as t-tests to ensure high-quality data, is used to correlate a link between systemic racism and misdiagnoses while noting the limitations of such methods used (Chen, Hailey, Wang, et al. 2014). There may be other limitations in this study that are unmentioned, as we may not have identified them due to a lack of knowledge and review as well as bias towards our study. For future studies to avoid

this, they can have their study reviewed by peers to help establish and identify limitations (Kelly, Sadeghieh, Adeli. 2014).

We would like to thank and acknowledge all of the authors of the papers we have cited and any papers and researchers who are working on related topics concerning racial bias in healthcare or in fixing/improving the healthcare system in general.

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