African Americans and Type 2 Diabetes: Social Determinants of Health in Prevalence and Outcomes

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Abstract: Type 2 diabetes is a chronic disease that is more prevalent and has worse outcomes in Black Americans than White Americans. Structural racism has led to fewer health promoting resources in African American communities, preventing access and treatment for diabetes. Fewer opportunities result in lower median income for African Americans which creates difficulties for these communities to afford the high cost of diabetes care. Additionally, racist ideals are perpetuated in the healthcare institution that prevent access to equal treatment in diabetes care. Despite numerous organizations that support diabetes prevention and care, they fail to incorporate strategies that oppose racial disparities. Through the findings of this paper, it is recommended that various social policies are implemented simultaneously to improve the racial gap in type 2 diabetes.

Diabetes History and Prevalence

Diabetes is a chronic disease that occurs when an excess of sugar in blood leads to complications, including cardiovascular disease, nerve damage, and kidney damage. A type 2 diabetes patient's body is resistant to insulin, the hormone that allows blood sugar into cells for energy. Some of the main factors that lead to type 2 diabetes include obesity, inactivity, increased blood pressure, and prevalence in family history (Mayo Clinic, n.d.). Type 2 diabetes has been used in racial discrimination for over a century. Studies in the late 1800s stated the prevalence and morbidity rates of diabetes were higher in the Jewish population (Jacobs, 1893; Morrison, 1916). Scientists correlated this phenomenon with racial traits that made Jews more susceptible to the disease, despite a lack of data (Jacobs, 1893; Morrison, 1916). After Nazi eugenic practices, discussions of disease among Jews dissipated (Tuchman, 2011). The literature switched its focus from the Jewish population to the high prevalence of diabetes in African Americans (Lemann, 1927; Leopold, 1931). Many resources today continue to state that African Americans are at higher risk for diabetes but fail to determine the reasons for this racial discrepancy. Type 2 diabetes is disproportionately prevalent in African Americans with worsened outcomes

due to structural racism, low income, and bias from medical providers. However, there are multiple solutions that could be implemented to address this health gap.

Upon current examination of the biological factors causing the increased incidence of diabetes in African Americans, there is no single gene that causes the direct correlation between race and diabetes. Genetic ancestry is correlated to an increased incidence of type 2 diabetes in African Americans; however, there are multiple genes on various loci that contribute to this susceptibility (Cheng, 2012). This is consistent with a study that showed genetic variation in β-cell dysfunction and insulin resistance was associated with increased risk of type 2 diabetes in African Americans (Layton, 2018). Genetic studies only explain a small portion of the variation in

diabetes prevalence; therefore, social factors must be explored when determining the cause of this phenomena. In fact, analyzing the genome-wide association marker-based risk model was not able to predict type 2 diabetes in a person, regardless of race (Bao, 2013). Type 2 diabetes is a multi-faceted issue that has risk factors which can be passed down through generations, but diabetes itself is not genetically correlated to race. Social situations are essential to understand the full extent of incidence and outcomes of diabetes.

Recent data has shown that the rate of type 2 diabetes is high in African American populations. The Centers for Disease Control and Prevention (CDC) reported diabetes trends from the US Census Bureau and individuals' self-reported data. As Figure 1 indicates, 11.7 percent of African Americans have diabetes,

Appendix Table 3. Age-adjusted prevalence of diagnosed diabetes by detailed race/ethnicity, education level, and sex among adults aged 18 years or older, United States, 2017–2018.

Characteristic	Total Percentage (95% CI)	Men Percentage (95% CI)	Women Percentage (95% CI)
Race/ethnicity			
American Indian/Alaska Native	14.7 (14.6–14.7)	14.5 (14.4–14.6)	14.8 (14.7–14.9)
Asian, non-Hispanic, overall	9.2 (8.0–10.5)	10.0 (8.3–12.0)	8.5 (7.0–10.5)
Asian Indian	12.6 (9.3–16.7)	13.9 (10.3–18.6)	11.1 (6.6–18.0)
Chinese	5.6 (3.9–8.1)	5.9 (3.5–9.8)	5.3 (3.2–8.8)
Filipino	10.4 (8.1–13.4)	10.9 (7.6–15.4)	10.0 (6.8–14.6)
Other Asian	9.9 (8.1–12.2)	11.5 (8.5–15.3)	8.7 (6.2–11.9)
Black, non-Hispanic	11.7 (10.8–12.7)	11.4 (10.0–12.9)	12.0 (10.9–13.1)
Hispanic, overall	12.5 (11.5–13.5)	13.7 (12.3–15.2)	11.6 (10.2–13.0)
Central/South American	8.3 (8.0–8.6)	9.2 (8.8–9.6)	7.6 (7.2–8.0)
Cuban	6.5 (4.6–9.2)	7.3 (4.2–12.5)	6.0 (3.6–9.8)
Mexican	14.4 (13.1–15.8)	16.2 (14.2–18.3)	12.8 (11.1–14.8)
Puerto Rican	12.4 (10.1–15.1)	13.0 (9.5–17.6)	11.9 (9.0–15.5)
White, non-Hispanic	7.5 (7.2–7.8)	8.6 (8.1–9.0)	6.6 (6.2–7.0)
Education			
Less than high school	13.3 (12.4–14.2)	13.0 (11.8–14.4)	13.6 (12.3–15.1)
High school	9.7 (9.1–10.4)	11.2 (10.4–12.1)	8.6 (7.9–9.4)
More than high school	7.5 (7.2–7.9)	8.3 (7.8–8.8)	6.8 (6.4–7.3)

Note: CI = confidence interval.
Data sources: 2017–2018 National Health Interview Survey, except American Indian/Alaska Native data, which were from the Indian Health Service National Data Warehouse (2017 data only).

Figure 1. Source: CDC, 2020

whereas 7.5 percent of White Americans have diabetes (CDC, 2020). Since the majority of all of those diagnosed with diabetes is type 2, these data are appropriate to specifically evaluate type 2 diabetes (CDC, 2020). These statistics show a 4.2 percent increase in the prevalence of the disease between White-identifying and Black-identifying Americans. It is important to recognize that American Indian/Alaska Native, the majority of Asian, and the majority of Hispanic demographics also have a higher prevalence of type 2 diabetes than White Americans (CDC, 2020). These discrepancies should be explored in future research to garner more information to their existence. In addition to the CDC, the National Institute of Health (NIH) states, "black adults are nearly twice as likely as white adults to develop type 2 diabetes" (NIH, 2018). In both national resources, African Americans are significantly more likely to be diagnosed with the disease, but they do not examine the reasons behind why this occurs. The CDC report focuses only on the raw data, while the NIH reports that the main cause of discrepancies in the prevalence is the biological factor of obesity, ignoring the fact that obesity is largely impacted by social conditions (Mayo Clinic, n.d.b).

In addition to the increased prevalence, more severe outcomes occur in African Americans. A volume of *A Dartmouth Atlas of Health Care Series* published by Giesel School of Medicine found that the amputation rate among African American patients with diabetes and peripheral arterial disease was three times higher than other racial identities with Medicare

insurance (Goodney, 2014). Additionally, one's risk for death increases after undergoing a lower-extremity amputation, especially for those with diabetes. A patient with diabetes has a median time to death of 27.2 months upon receiving a lower-extremity amputation (Schofield, 2006). African Americans receive diabetes-related amputations at a higher rate than White Americans, leading to shortened lifespans and limiting opportunities for affected individuals. Furthermore, African Americans with diabetes have worse hospitalizations. A cross-sectional study in Georgia determined African Americans had three times more hospital discharges and 3.5 times longer length of stay than White Americans (Cook, 2006). Although this was not directly investigated, it is suggested that this longer stay could be in part due to a more-complicated hospital course of treatment (Cook, 2006). Finally, blood glucose levels are an indicator for the likelihood for complications to occur in type 2 diabetes. African American women were determined to be in the group that has the worst glycemic control among type 2 diabetes patients, (Harris, 1999) meaning they were most likely to have complications. At present, African Americans face worse health outcomes that intensify the issue of having a high prevalence of type 2 diabetes.

Structural Racism Limiting Access to Diabetes Prevention

Structural racism, as defined by the Aspen Institute, an international nonprofit organization for humanistic studies, is "a system

in which public policies, institutional practices, cultural representations, and other norms work in various, often reinforcing ways to perpetuate racial group inequity" (Aspen Institute, n.d.). One example in which the government accomplished this was through redlining, zoning areas to make mortgages less accessible (Rothstein, 2017). Redlining was authorized through the Home Owners' Loan Corporation. This enterprise was created in 1933 to expand home ownership by determining who would be able to receive loans. To determine areas of non-eligibility, they would flag communities they deemed as hazardous. One of the criteria to be hazardous was if the population in the community was predominantly African American. These areas were redlined to make mortgages less accessible, preventing African Americans from buying homes (Rothstein, 2017). As of 2021, only 43.1 percent of African Americans versus 74.4 percent of White Americans own a home, as shown in Figure 2 (United States Census Bureau, 2022). This gap

Table 7. Homeownership Rates by Race and Ethnicity of Householder: 2017 to 2021

Year/Quarter	Homeownership Rates (percent)													
	United States		Non-Hispanic White Alone		Black Alone		All Other Races						Hispanic (of any race)	
							Total[a]		Asian, Native, Hawaiian and Pacific Islander Alone					
	Rate	MOE[b]	Rate	MOE[b]	Rate	MOE[b]	Rate	MOE[b]	Rate	MOE[b]			Rate	MOE[b]
2021														
Fourth Quarter	65.5	0.5	74.4	0.4	43.1	0.9	57.6	1.1	61.2	1.3			48.4	0.9
Third Quarter	65.4	0.5	74.0	0.4	44.0	0.9	57.2	1.1	60.2	1.3			48.3	0.9
Second Quarter	65.4	0.5	74.2	0.4	44.6	0.9	56.2	1.1	58.7	1.3			47.5	0.9
First Quarter	65.6	0.5	73.8	0.4	45.1	0.9	57.1	1.1	59.6	1.3			49.3	0.9
2020														
Fourth Quarter	65.8	0.5	74.5	0.4	44.1	0.9	56.3	1.1	59.5	1.3			49.1	0.9
Third Quarter	67.4	0.5	75.8	0.4	46.4	0.9	58.0	1.1	61.0	1.3			50.9	0.9
Second Quarter	67.9	0.5	76.0	0.4	47.0	0.9	59.3	1.1	61.4	1.3			51.4	0.9
First Quarter	65.3	0.5	73.7	0.4	44.0	0.9	55.9	1.1	59.1	1.3			48.9	0.9
2019														
Fourth Quarter	65.1	0.5	73.7	0.4	44.0	0.9	55.7	1.1	57.6	1.3			48.1	0.9
Third Quarter	64.8	0.5	73.4	0.4	42.7	0.9	56.0	1.1	58.5	1.3			47.8	0.9
Second Quarter	64.1	0.5	73.1	0.4	40.6	0.9	55.0	1.1	57.7	1.3			46.6	0.9
First Quarter	64.2	0.5	73.2	0.4	41.1	0.9	53.9	1.1	56.9	1.3			47.4	0.9
2018														
Fourth Quarter	64.8	0.5	73.6	0.4	42.9	0.9	55.6	1.1	58.1	1.3			46.9	0.9
Third Quarter	64.4	0.5	73.1	0.4	41.7	0.9	56.6	1.1	58.2	1.3			46.3	0.9
Second Quarter	64.3	0.5	72.9	0.4	41.6	0.9	55.7	1.1	58.0	1.3			46.6	1.0
First Quarter	64.2	0.5	72.4	0.4	42.2	0.9	54.8	1.1	57.3	1.4			48.4	1.0
2017														
Fourth Quarter	64.2	0.5	72.7	0.4	42.1	0.9	55.4	1.1	58.2	1.4			46.6	1.0
Third Quarter	63.9	0.5	72.5	0.4	42.0	0.9	54.7	1.2	57.1	1.4			46.1	1.0
Second Quarter	63.7	0.5	72.2	0.4	42.3	0.9	54.3	1.2	56.5	1.4			45.5	1.0
First Quarter	63.6	0.5	71.8	0.4	42.7	0.9	53.6	1.1	56.8	1.4			46.6	1.0

[a]Includes people who reported Asian, Native Hawaiian or Other Pacific Islander, or American Indian or Alaska Native regardless of whether they reported any other race, as well as all other combinations of two or more races.
[b]A margin of error is a measure of an estimate's variability. The larger the margin of error in relation to the size of the estimate, the less reliable the estimate. This number, when added to and subtracted from the estimate, forms the 90 percent confidence interval.
Source: U.S. Census Bureau, Current Population Survey/Housing Vacancy Survey, February 2, 2022.

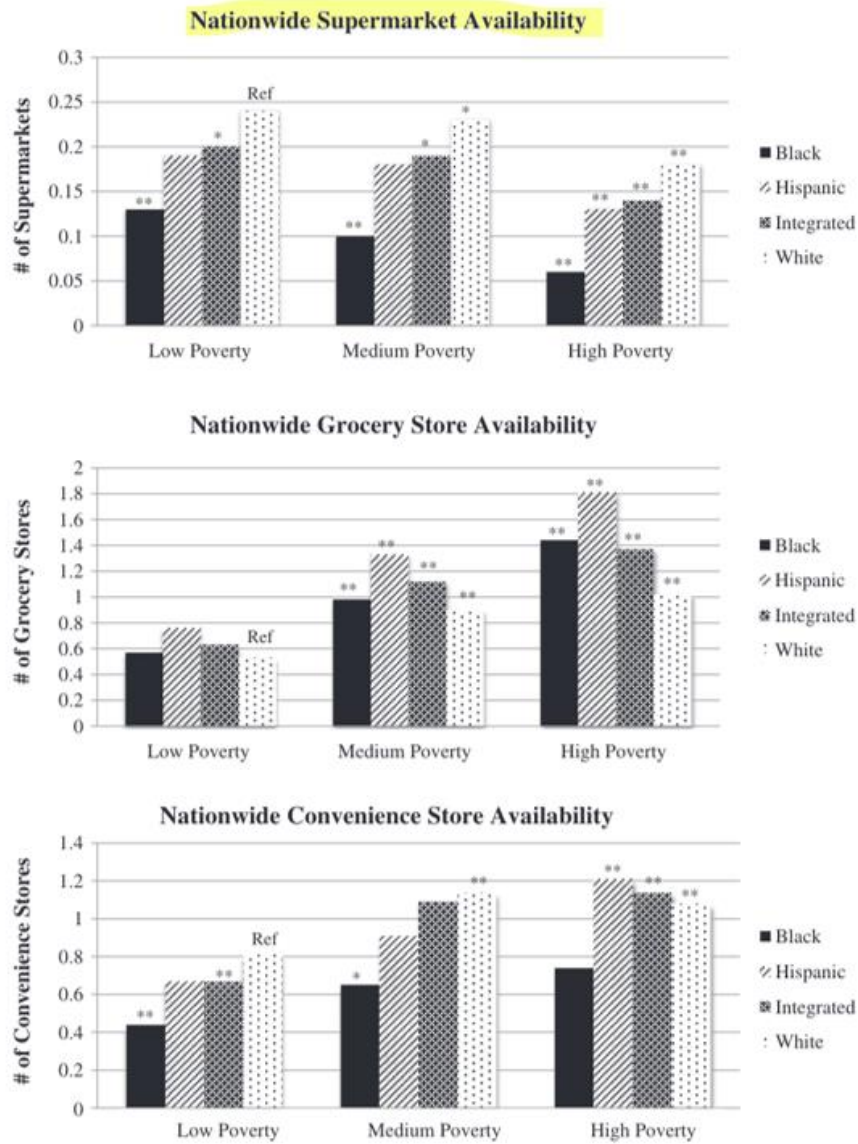*Figure 2.* Source: United States Census Bureau, 2022

Fig. 1. Count of food stores by neighborhood poverty and racial/ethnic composition in nationwide sample [+]. The symbols * and ** represent p ≤ 0.05 and p ≤ 0.001, respectively. [+] Estimates are incidence rate ratios (IRRs) derived from negative binomial regression models controlling for region, urbanicity, and population density.

Figure 3. Source: Bower, 2013

between races in homeownership persists even though redlining is now illegal (Williams, 2016). Barriers to purchase homes set up by the government prevented African Americans from owning land where families could have grown, where the asset of a house could have been passed down to future generations. Furthermore, the government did not invest in areas with a high African American population, which prevented them from accessing resources

that could have led to a healthy lifestyle of the local community (Rothstein, 2017).

Many predominately African American communities still geographically lack access to health-related resources. Although there are minor genetic factors that contribute to type 2 diabetes, it is often preventable with a healthy lifestyle consisting of proper nutrition and physical activity. Increased distance to

Exhibit 13: Current Use of FTE Physician Services per 100,000 Population by Patient Race and Ethnicity, 2019
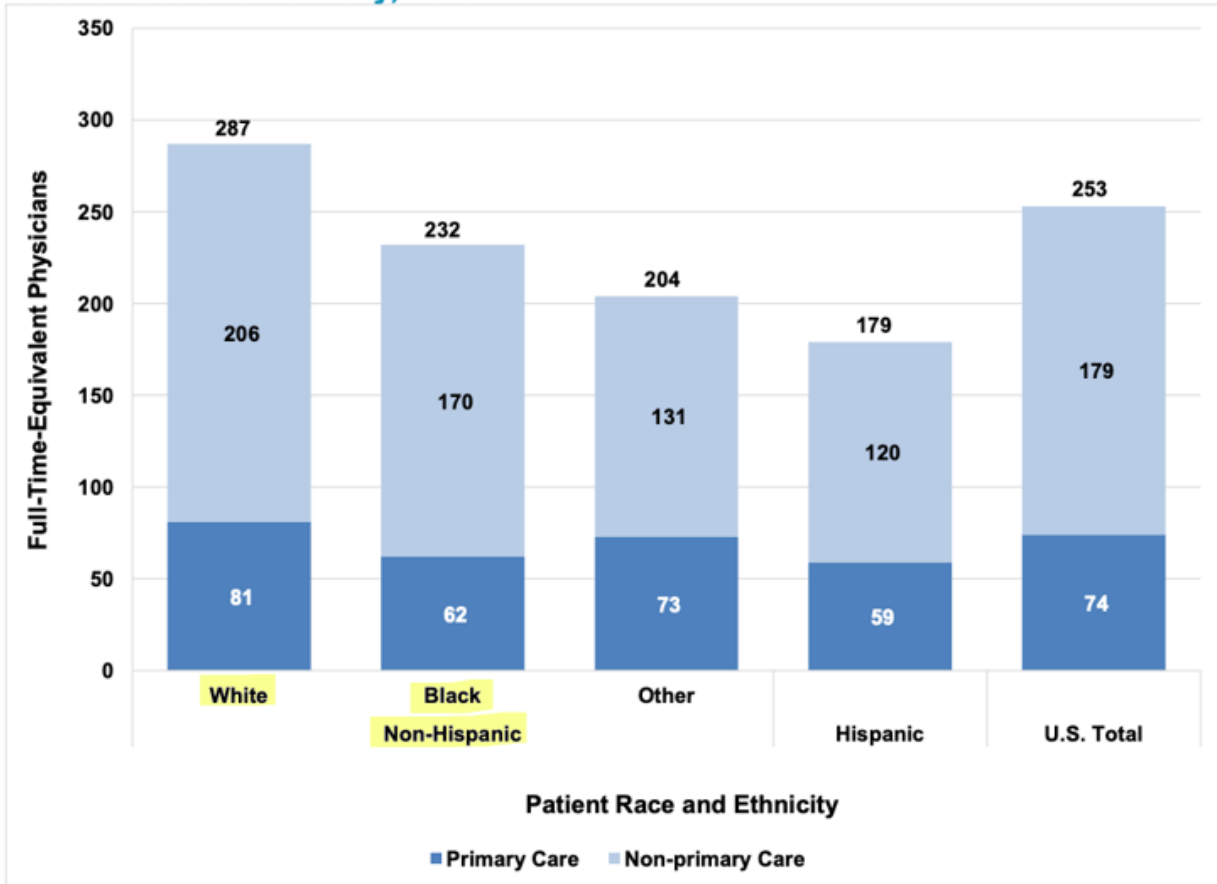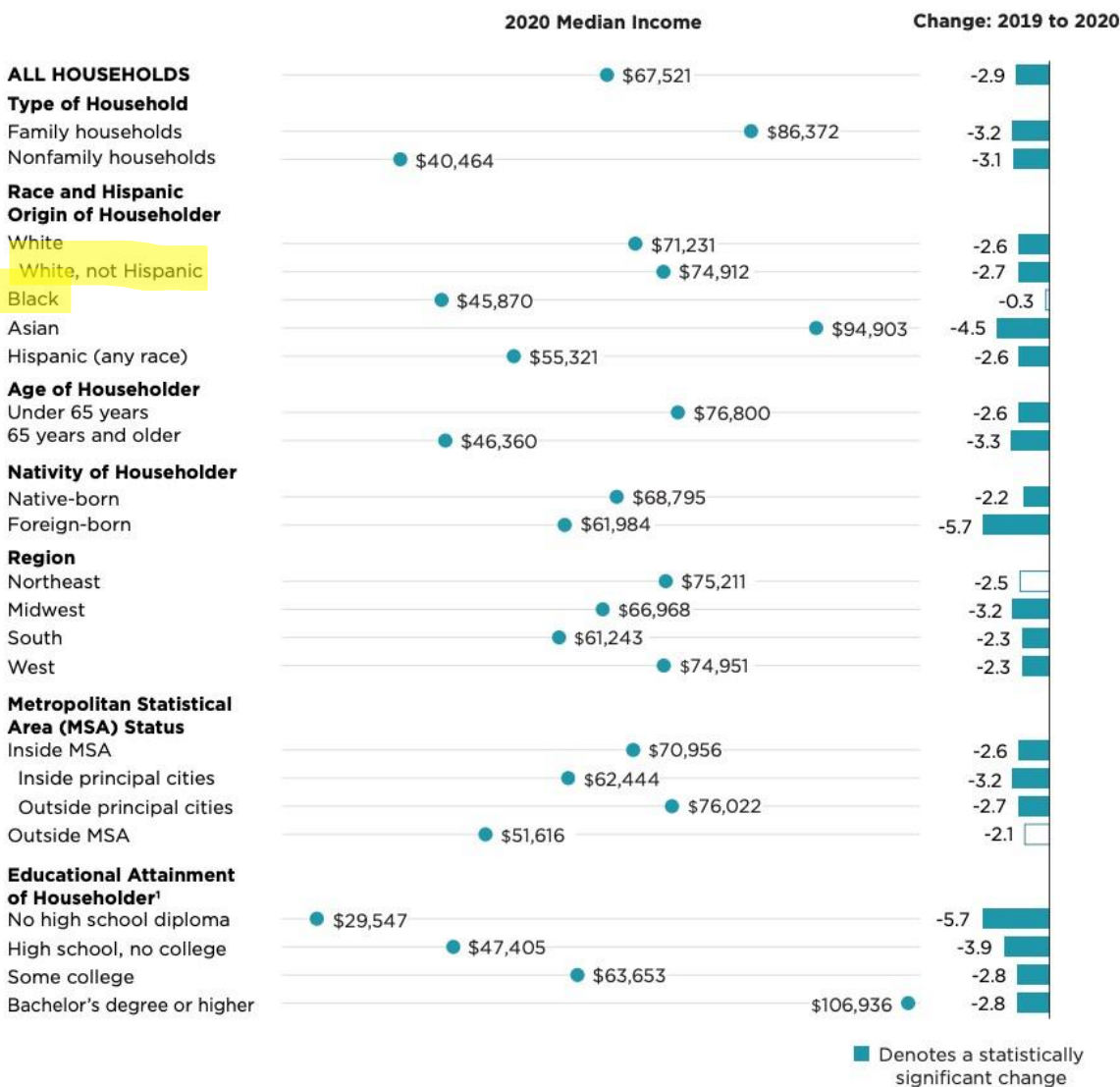

Figure 4. Source: AAMC, 2021

nutritious foods in grocery stores illustrate one of the geographical barriers African Americans face. This has driven people living in these communities to opt for convenient, unhealthy options. A study using the 2000 US Census and 2001 InfoUSA food store data found that African American communities had the fewest nearby supermarkets available in comparison to Hispanic and White communities, as seen in Figure 3 (Bower, 2013). Lack of fresh food in African American communities means that they are not receiving the nutrients they need. Poor nutrition that resulted from structural racism leads to excess obesity in African American communities.

Besides food access, structural racism has led to fewer local sites for physical activity in areas with a high African American population. Locations with a high proportion of African Americans have less availability to sports areas, parks, public pools, beaches, and bike lanes than

Figure 1.
Median Household Income and Percent Change by Selected Characteristics
(Households as of March of the following year)

	2020 Median Income	Change: 2019 to 2020
ALL HOUSEHOLDS	$67,521	-2.9
Type of Household		
Family households	$86,372	-3.2
Nonfamily households	$40,464	-3.1
Race and Hispanic Origin of Householder		
White	$71,231	-2.6
White, not Hispanic	$74,912	-2.7
Black	$45,870	-0.3
Asian	$94,903	-4.5
Hispanic (any race)	$55,321	-2.6
Age of Householder		
Under 65 years	$76,800	-2.6
65 years and older	$46,360	-3.3
Nativity of Householder		
Native-born	$68,795	-2.2
Foreign-born	$61,984	-5.7
Region		
Northeast	$75,211	-2.5
Midwest	$66,968	-3.2
South	$61,243	-2.3
West	$74,951	-2.3
Metropolitan Statistical Area (MSA) Status		
Inside MSA	$70,956	-2.6
Inside principal cities	$62,444	-3.2
Outside principal cities	$76,022	-2.7
Outside MSA	$51,616	-2.1
Educational Attainment of Householder[1]		
No high school diploma	$29,547	-5.7
High school, no college	$47,405	-3.9
Some college	$63,653	-2.8
Bachelor's degree or higher	$106,936	-2.8

■ Denotes a statistically significant change

[1] Householders aged 25 and older. In 2020, the median household income for this group was $57,317.
Notes: Statistically significant indicates the change is statistically different from zero at the 90 percent confidence level. Margins of error and other related estimates are available in Table A-1. Information on confidentiality protection, sampling error, nonsampling error, and definitions is available at <https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar21.pdf>.
Source: U.S. Census Bureau, Current Population Survey, 2020 and 2021 Annual Social and Economic Supplements (CPS ASEC).

Figure 5. Source: Shrider, 2021

those with a high proportion of White Americans (Powell, 2004). Even more specifically, simulations showed that if all residents of an African American community were moved to a White community, there would be a 58 percent increase in access to at least one membership sports or recreation center (Powell, 2006). Physical activity is another obesity prevention strategy that becomes more difficult for African Americans due to the lack of access to facilities.

Figure 27.1. Percentage of adults age 25 and older who had not completed high school, by race/ethnicity: 2010 and 2016
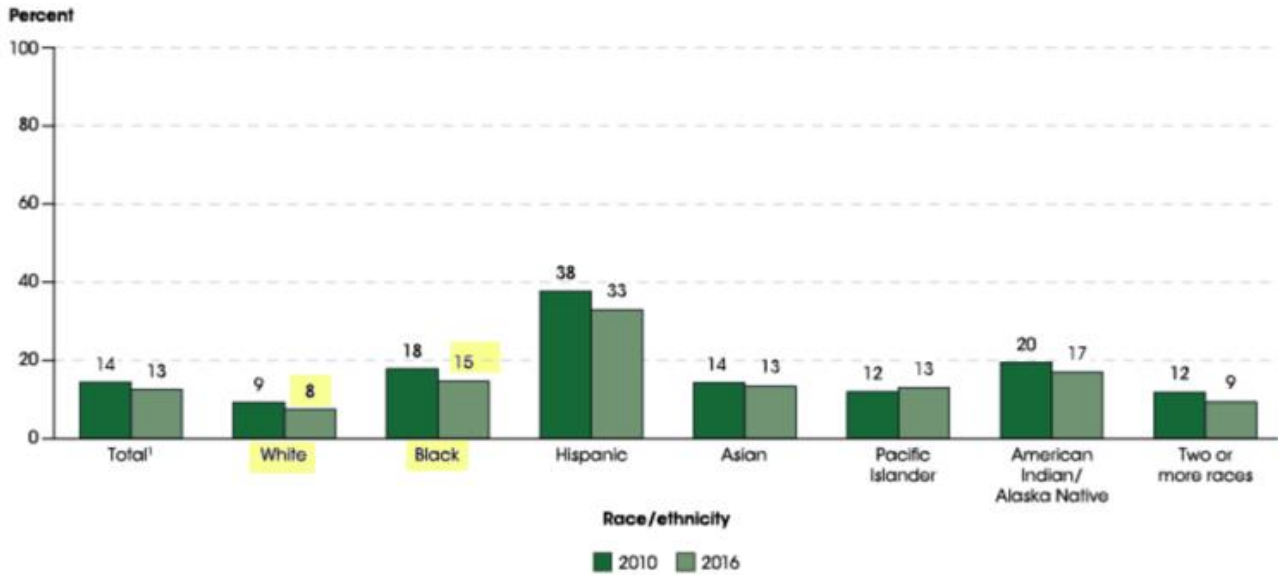
¹ Total includes other racial/ethnic groups not separately shown as well as respondents who wrote in some other race that was not included as an option on the questionnaire and therefore could not be placed into any of the other groups.
NOTE: Race categories exclude persons of Hispanic ethnicity. Although rounded numbers are displayed, the figures are based on unrounded estimates.
SOURCE: U.S. Department of Commerce, Census Bureau, American Community Survey, 2010 and 2016. See *Digest of Education Statistics 2017*, table 104.40.

Figure 6. Source: National Center for Education Statistics, 2019

Finally, structural racism has led to geographical barriers in medical attention. Preventative treatment is critical to the outcome of diabetes. Among all diabetes patients, there would be a 44 percent reduction in hospitalizations if they visited a diabetes specialist for preventative care (Albright, 2021). However, low numbers of medical practices and working physicians in African American communities make it difficult to receive this necessary treatment. On average, African Americans spend 29.1 minutes commuting to receive medical care, whereas White Americans spend 20.6 minutes (Probst, 2007). Additionally, there are 232 physicians per 100,000 population of African Americans versus 287 physicians per 100,000 population of White Americans, as shown in Figure 4 (AAMC, 2021). The 41.3

percent increase in travel time (Probst, 2007) and 19 percent decrease in working physicians (AAMC, 2021) within African American communities showcases a disparity of access to healthcare. Shortage of time has been shown to delay proper treatment that would prevent hospitalizations (Weissman, 1991). Therefore, this inequality in access to medical attention perpetrates worse side effects.

Income Barriers to Diabetes Care

African Americans have an average lower income than White Americans. According to Figure 5, of the 2020 U.S. Census, African Americans had a median household

Earnings and unemployment rates by educational attainment, 2020
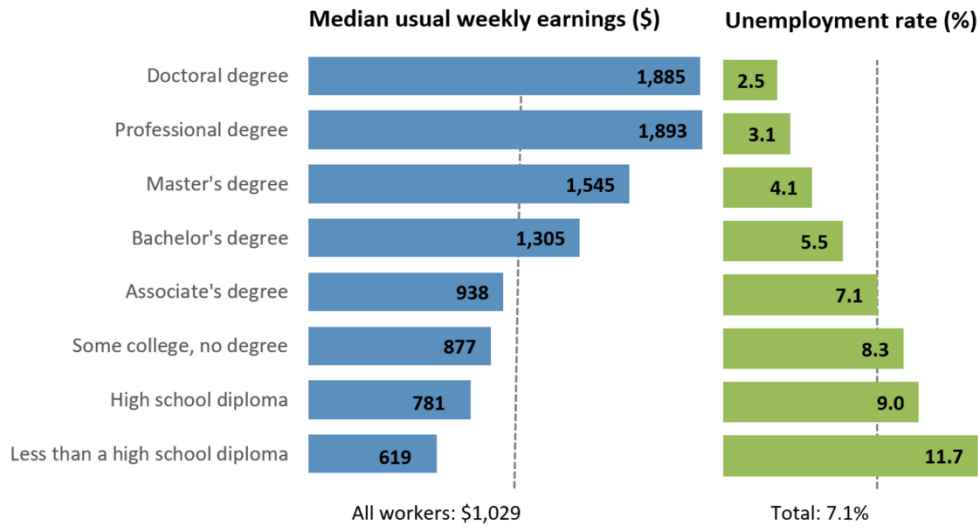
Figure 7. Source: U.S. Bureau of Labor Statistics, 2021

income of $45,870 and non-Hispanic White Americans had a median household income of $74,912 (Shrider, 2021). This gap is in part due to a lack of social mobility that resulted from decreased access to adequate school and increased incarceration rates. The Supreme Court ruling of *Brown v. Board of Education of Topeka* legally desegregated schools in 1954. However, it did not propose a time requirement or plan for how to alter the nationwide school system that was in place. For this reason, many schools did not desegregate until funding was threatened to be withheld or they were taken to court in the 1960s (Cascio, 2008). This ruling's effects are seen today in the educational achievement of African Americans. In a study at Georgia Southern University, African American students were reported to have lower Scholastic Aptitude Test (SAT) scores, lower grade point averages, and less educated parents than White

students (Pino, 2004). Furthermore, 7 percent more White Americans than African Americans had a college degree in 2016, as shown in Figure 6 (National Center for Education Statistics, 2019). Attaining a higher education correlates with higher weekly earnings and a lower chance of unemployment, as depicted in Figure 7 (U.S. Bureau of Labor Statistics, 2021). Since African Americans are less likely to attain higher education, they are at a disadvantage from receiving higher income. Even though *Brown v. Board of Education of Topeka* took place over 50 years ago, disparities in education persist today that prevent African Americans from being able to achieve a higher income.

In addition to education, the racial gap in incarceration rates has lowered the average income of African Americans. The current policing system was created to control runaway and rebelling slaves. After slavery was abolished,

the main task of the police force was to maintain White power through lynching and promoting systems of sharecropping (Blackmon, 2008; Francis, 2017). Following the Civil Rights Act of 1964, the racial policies enforced by police became more discrete, such as the "War on Drugs" initiative in 1971 that targeted African Americans for small crimes in fear of criminality. In 1974, African Americans had an 11.2 percent higher chance of being admitted to prison than White Americans, and this number has continued to increase (Bonczar, 2003). Policies like these prevented the social mobility of African Americans. When working African Americans were taken to prison, their families would lose the income that the individual was providing. Previous racial discrimination is still negatively affecting the average income in the African American community.

A lower education status and the incarceration of Black Americans has resulted in lower median income of this community, leading to barriers in receiving healthcare for diabetes. Multiple studies have found a positive correlation between income and health. One meta-analysis concluded that individuals working long hours with a low socioeconomic status (SES) were at an increased risk of type 2 diabetes whereas those working long hours with a high SES did not (Kivimäki, 2015). An additional study found similar findings that a higher household income resulted in a lower prevalence of undiagnosed diabetes (Ruiz, 2021). The exact reasoning behind this correlation is unknown but is likely due to the

association of other risk factors, such as financial constraints and not being able to prioritize personal health (Kivimäki, 2015). These findings are similar to others that determined that those with a low SES have limited access to healthcare because of their lack of insurance coverage and high costs (Washington Health Alliance, 2014). With reduced healthcare, individuals cannot receive adequate preventative or treatment options for diabetes. Thus, a low-income status leads to the higher prevalence of type 2 diabetes in African Americans.

Costs for diabetes care are increasing, which adds an additional barrier to African Americans with a low income. Healthcare is expensive in the United States and the costs significantly increase if one is diagnosed with a chronic disease such as diabetes. Public and private health insurance options are available in the United States to provide preventative care and lower the cost of unexpected health emergencies. They differ because public insurance is provided by the government and private insurance is more expensive but offers more opportunities for better care. According to Figure 8 in 2020, 7.9 percent, 19.9 percent, and 74.3 percent of White Americans are uninsured, publicly insured, and privately insured, respectively (Cohen, 2021). For African Americans in 2020, 12.0 percent were uninsured, 42.1 percent had public insurance, and 48.3 percent had private insurance (Cohen, 2021). These statistics show that African Americans are slightly less likely than White

Table V. Percentage (and 95% confidence intervals) of people under age 65 who lacked health insurance coverage, had public health plan coverage, and had private health insurance coverage at the time of interview, by race and ethnicity, age group, and year: United States, 2019–June 2021

Race and ethnicity[1], age group (years), and year	Uninsured[2]	Public health plan coverage[3]	Private health insurance coverage[4]
Hispanic			
Under 65			
2019	22.1 (20.3–23.9)	34.7 (32.7–36.7)	44.3 (42.1–46.4)
2020	22.1 (20.3–24.1)	34.5 (32.4–36.6)	44.7 (42.4–47.0)
2021 (January–June)	23.6 (21.1–26.3)	35.9 (33.8–38.1)	42.0 (39.5–44.6)
0–17			
2019	7.2 (6.0–8.6)	58.7 (55.9–61.5)	35.4 (32.7–38.1)
2020	7.8 (6.0–10.0)	57.3 (53.7–60.8)	37.0 (33.5–40.7)
2021 (January–June)	7.8 (6.1–9.7)	62.2 (59.1–65.2)	31.6 (28.4–35.0)
18–64			
2019	29.7 (27.4–32.0)	22.5 (20.4–24.7)	48.8 (46.5–51.1)
2020	29.3 (26.9–31.9)	23.0 (21.0–25.1)	48.6 (46.2–51.0)
2021 (January–June)	31.4 (28.1–34.9)	23.0 (20.3–25.7)	47.2 (44.3–50.1)
Non-Hispanic White			
Under 65			
2019	9.0 (8.4–9.7)	19.6 (18.7–20.7)	73.3 (72.2–74.3)
2020	7.9 (7.3–8.6)	19.9 (18.9–21.0)	74.3 (73.2–75.5)
2021 (January–June)	7.5 (6.8–8.3)	22.0 (20.6–23.5)	72.7 (71.3–74.1)
0–17			
2019	4.5 (3.7–5.4)	27.9 (26.1–29.8)	69.3 (67.4–71.1)
2020	3.8 (2.8–5.1)	29.4 (26.9–31.9)	69.1 (66.5–71.6)
2021 (January–June)	2.9 (2.1–4.0)	31.9 (29.1–34.7)	67.9 (65.0–70.7)
18–64			
2019	10.5 (9.8–11.2)	17.0 (16.1–18.0)	74.5 (73.5–75.5)
2020	9.2 (8.6–10.0)	16.9 (16.0–17.8)	76.0 (75.0–77.1)
2021 (January–June)	9.0 (8.1–9.9)	18.8 (17.5–20.2)	74.3 (72.9–75.6)
Non-Hispanic Black			
Under 65			
2019	11.6 (10.2–13.0)	42.8 (40.0–45.6)	48.5 (46.0–50.9)
2020	12.0 (10.4–13.8)	42.1 (39.2–45.0)	48.3 (45.3–51.4)
2021 (January–June)	11.8 (9.9–13.8)	40.2 (37.4–43.1)	50.2 (47.2–53.1)
0–17			
2019	3.5 (2.5–4.9)	64.5 (60.1–68.7)	35.1 (31.1–39.3)
2020	5.1 (2.9–8.1)	65.8 (60.6–70.8)	30.7 (25.9–35.8)
2021 (January–June)	*	66.0 (60.8–70.9)	32.6 (27.4–38.2)
18–64			
2019	14.7 (12.9–16.7)	34.3 (31.5–37.1)	53.7 (51.3–56.0)
2020	14.6 (12.7–16.7)	33.1 (30.5–35.9)	54.9 (51.9–57.9)
2021 (January–June)	14.7 (12.5–17.1)	31.0 (28.3–33.9)	56.4 (53.4–59.4)
Non-Hispanic Asian			
Under 65			
2019	6.6 (5.0–8.7)	17.5 (15.1–20.2)	76.6 (73.5–79.5)
2020	7.7 (5.9–9.9)	19.3 (16.4–22.5)	73.9 (70.5–77.1)
2021 (January–June)	5.1 (3.3–7.4)	21.0 (18.4–23.8)	74.7 (71.2–78.0)
0–17			
2019	3.2 (1.6–5.7)	24.1 (19.6–29.1)	73.2 (68.2–77.8)
2020	3.4 (1.5–6.3)	29.6 (23.5–36.3)	68.2 (61.5–74.4)
2021 (January–June)	1.3 (0.3–3.5)	30.5 (23.6–38.0)	70.3 (62.9–76.9)
18–64			
2019	7.5 (5.6–9.9)	15.8 (13.2–18.7)	77.5 (74.2–80.5)
2020	8.8 (6.7–11.4)	16.7 (13.8–20.0)	75.4 (71.8–78.8)
2021 (January–June)	6.1 (3.9–8.9)	18.4 (15.4–21.8)	75.9 (72.1–79.4)

See footnotes at the end of table.

Figure 8. Source: Cohen, 2021

Table V. Percentage (and 95% confidence intervals) of people under age 65 who lacked health insurance coverage, had public health plan coverage, and had private health insurance coverage at the time of interview, by race and ethnicity, age group, and year: United States, 2019–June 2021—Con.

Race and ethnicity[1], age group (years), and year	Uninsured[2]	Public health plan coverage[3]	Private health insurance coverage[4]
Non-Hispanic, other races and multiple races			
Under 65			
2019	14.6 (11.4–18.2)	34.5 (28.9–40.3)	52.9 (46.7–59.0)
2020	13.0 (10.1–16.3)	39.2 (34.1–44.6)	51.3 (45.1–57.5)
2021 (January–June)	11.7 (8.1–16.3)	40.1 (34.1–46.3)	50.8 (43.8–57.8)
0–17			
2019	5.9 (3.5–9.3)	45.3 (38.0–52.8)	50.4 (42.6–58.3)
2020	6.1 (3.0–10.9)	48.5 (41.5–55.6)	49.2 (42.2–56.3)
2021 (January–June)	*	46.3 (39.1–53.6)	48.6 (41.5–55.7)
18–64			
2019	21.1 (17.0–25.8)	26.2 (20.6–32.5)	54.8 (48.1–61.3)
2020	17.6 (13.7–22.1)	32.9 (25.7–40.9)	52.7 (44.3–61.0)
2021 (January–June)	15.5 (11.1–20.9)	35.4 (27.2–44.3)	52.5 (42.5–62.4)

* Estimate is not shown, as it does not meet National Center for Health Statistics standards of reliability.

[1] Hispanic origin and race are two separate and distinct categories. People of Hispanic or Latino origin may be of any race or combination of races. Hispanic or Latino origin includes people of Mexican, Puerto Rican, Cuban, Central and South American, or Spanish origin. Race is based on respondents' descriptions of their own racial background. More than one race may be reported. For conciseness, the text, tables, and figures in this report use shorter versions of the 1997 Office of Management and Budget terms for race and Hispanic or Latino origin. For example, the category "not Hispanic, Black or African American, single race" is referred to as "non-Hispanic Black" in the text, tables, and figures. Estimates for non-Hispanic people of races other than White only, Black only, and Asian only, or of multiple races, are combined into the "non-Hispanic, other races and multiple races" category.

[2] People were defined as uninsured if they did not have any private health insurance, Medicare, Medicaid, Children's Health Insurance Program (CHIP), state-sponsored or other government-sponsored health plan, or military plan. People also were defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

[3] Public health plan coverage includes Medicaid, CHIP, state-sponsored or other government-sponsored health plan, Medicare, and military plans. A small number of people were covered by both public and private plans and were included in both categories.

[4] Private health insurance coverage includes any comprehensive private insurance plan (including health maintenance and preferred provider organizations). These plans include those obtained through an employer, purchased directly, purchased through local or community programs, or purchased through the Health Insurance Marketplace or a state-based exchange. Private coverage excludes plans that pay for only one type of service, such as accidents or dental care. A small number of people were covered by both public and private plans and were included in both categories.

NOTES: Due to the COVID-19 pandemic, data collection switched to a telephone-only mode beginning on March 19, 2020. Personal visits (with telephone attempts first) resumed in all areas in September 2020. In addition, from August–December 2020, a subsample of adult respondents who completed NHIS in 2019 were recontacted by telephone and asked to participate again. Response rates were lower and respondent characteristics were different in April–December 2020. Differences observed in estimates between April–December 2020 and other time periods may have been impacted by these differences in respondent characteristics. Data are based on household interviews of a sample of the civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics, National Health Interview Surveys, 2019–2021.

Figure 8 (continued). Source: Cohen, 2021

Americans to be insured and less likely to have private health insurance. The racial gap in income makes it harder for African Americans to afford better private insurance or afford any insurance at all. This is detrimental because people who are uninsured are more hesitant to receive preventative care or necessary care for serious ailment (Ayanian, 2000). Routine checkups are critical in preventing or recognizing illnesses such as diabetes (Luo, 2019). Those without health insurance are less likely to do so, meaning potential risk factors for diabetes are not recognized and advance before the individual is aware of the concern.

Studies have proven that diabetes adds approximately $9,600 per year in medical care for an individual, which totals to medical costs 2.3 times higher than the average person without diabetes (Yang, 2018). With a median household income of $45,870 for African Americans (Shrider, 2021), this additional cost in medical care equals 21 percent of the family's yearly income. The family will likely have to choose how to use this significant portion of their salary, whether it be for healthcare or choosing to receive less care for other necessities in life such as food and housing. In addition to the high expenses of healthcare, the price of

diabetes insulin treatment continues to rise. Around 15.1% of Americans with type 2 diabetes are prescribed insulin for treatment (Lipska, 2014). From 2002 to 2013, the price for insulin increased by 197 percent (Hua, 2016). The increasing price of insulin is due to companies continuously re-patenting the drug with minor, irrelevant changes that prevent generic companies from making the drug for cheap (Luo, 2015). Companies decide to increase their own profits rather than increase affordable access for consumers. One in four Americans in a study at an urban diabetes center underused their insulin for cost-related purposes (Herket, 2019). On a larger scale, the CDC reported in 2015 that those with diabetes were 9.2 percent more likely than those without diabetes to skip medication doses, take less medication, or delay refilling prescriptions to save money (Lessem, 2015). This shows that diabetes is expensive and affects how patients decide to take care of their illness. African Americans, who have an average lower income than White Americans, are disproportionately affected by these high insulin prices. Since they are less likely to afford the drug, they have worse outcomes from their diabetes diagnosis. High prices for health insurance and insulin exacerbate racial disparities in prevalence of type 2 diabetes because they prevent African Americans from receiving the care they need.

Racist Ideas Persisting in Healthcare

Healthcare institutions in America have continuously held racist beliefs that imply African American inferiority, which has led to a lack of trust between practitioners and African Americans. The idea behind the 20th century eugenics movement in the U.S. was to make the country more intelligent and Whiter through forced sterilization of certain populations, such as African Americans and by banning interracial marriage (Jackson, 2005). African Americans were seen as undesirable, and physicians were forcing procedures that would permanently change their bodies despite the lack of consent, knowledge, or desire for such operations. Despite the collapse of the eugenics movement, science has continued discriminating against African Americans. The Tuskegee study in the early to mid-1900s involved studying African American male participants in the progress of untreated syphilis (CDC, 2021a). These participants were not informed that they had syphilis and were not given the known antibiotic treatment (CDC, 2021a). Recruitment of only African Americans in a study that prevented participants from receiving care shows how African American inferiority has persisted among scientists since the eugenics movement.

In the present day, racist ideas still exist in healthcare. In 2016, approximately half of White medical students held the false belief that African American patients intrinsically had a higher pain tolerance than White patients (Hoffman, 2016). Racial bias continues to affect the quality of care African Americans receive. In a study on racial disparities in diabetes care, results showed that African American diabetes patients were significantly less likely than White diabetes patients to receive low-density lipoprotein cholesterol (LDL) testing in the

same healthcare facility (Heisler, 2003). LDL testing is used to screen diabetes patients for their risk of severe outcomes such as heart failure. Since these tests are not routinely performed on African American patients, they are less likely to know how the disease has progressed. In an additional study that eliminated SES as a confounding variable to care, rates of diabetes remained high for African Americans. African American physicians were found to have twice the incidence rate of diabetes than White physicians and higher case fatality by 42.1 percent (Thomas, 1997). These patients had the same careers yet there were discrepancies in the care they received, indicating bias was a likely factor causing poor outcomes. The continued existence of racial malpractice in modern healthcare prevents appropriate access to diabetes care for present day African Americans.

Type 2 Diabetes Organizations

There are multiple organizations that attempt to assist individuals with type 2 diabetes. For one, the CDC created a National Diabetes Prevention Program (National DPP) in 1996 that works with public and private organizations to prevent or delay type 2 diabetes (CDC, 2021b). This includes training and organizing lifestyle change programs that inform communities about healthier diets and adding physical activity to one's daily routine (CDC, 2021b). Additionally, they work to expand employee public or private health insurance coverage (CDC, 2021b). These initiatives aim to educate all Americans about

diabetes and increase access to affordable treatment. Another initiative that offers services for diabetes care is Project Power that was formed by the American Diabetes Association. This is a virtual online afterschool program exclusively for children to assist in their knowledge of nutrition and engage them in physical activities (American Diabetes Association, n.d.). Project Power attempts to prevent diabetes for those children involved. However, they lack a program that would benefit adults in diabetes prevention.

Despite all the organizations attempting to combat type 2 diabetes, they each fail to assist in the fight against its racial discrepancies in prevention and treatment. The CDC's National DPP failed to aim its services toward African American communities until recently. Starting in 2017, the company initiated a five year timeframe to build their programs in underserved communities (CDC, 2021b). This means that for the first 21 years of its existence, and for five additional years of expansion, the company ignored the racial discrepancies in the disease. In addition to the CDC, the American Diabetes Association fails to take measures for equal care in diabetes. Their website states health inequity is on the rise and includes a list of rights for all patients with diabetes. This page informs individuals of the racial disparities in diabetes and promotes people to act. However, there is no direct-action plan that the organization provides to get involved in the fight for racial justice in handling the disease (American Diabetes Association, n.d.). Even though the organization knows of the health

disparities in type 2 diabetes, they simply inform the public of the fact and have no initiatives to act. These two organizations assist diabetes patients as a whole but fail to act on the racial discrepancies in the disease.

The Food and Drug Administration is one of the only organizations that is attempting direct change in African Americans' diabetes incidences and outcomes. Their Office of Minority Health and Health Equity (OMHHE) has started connecting with diabetes organizations such as the American Diabetes Association to create initiatives that would help minority groups stay healthy, receive treatment, and be a consenting participant in diabetes research (U.S. FDA, 2020). Despite the efforts of the organization (Lee, 2021; Spinner, 2021) there are no studies showing their discernable results on communities and individuals. Further review is necessary to determine the efficacy of their work. Another concern with the FDA's initiatives is their website's introduction of diabetes as an inherited trait. They state the other social determinates of the disease in relation to its prevalence in minority populations; however, this is not presented until later (U.S. FDA, 2020). Although some risk factors for diabetes are inherited (Layton, 2018), their website uses this relatively small aspect as an attention getter. This focus on unchangeable components of diabetes predisposes readers to believe there are a lack of implementable solutions, which is untrue and misleading. The lack of initiatives combating racial disparities in type 2 diabetes is a concern because the current

barriers of lower SES, medical bias, and high medical costs will persist without intervention.

Recommendations

In response to the social determinants that cause a higher type 2 diabetes prevalence in African Americans, six recommendations should be implemented to narrow the gap. These recommendations should be used in conjunction with one another and vary in magnitude to respond to each local community's needs. They include education reform, investing in African American communities, drug price regulations, adoption of universal health care, reformation of the justice system, and health equity research. Each one of them has been discussed in this paper as a critical factor causing the disproportionate prevalence and outcomes of type 2 diabetes in African Americans. Therefore, they have been sectioned below into main topics that are essential to be addressed by future professionals to determine the appropriate course of action for their implementation into policies.

Education Reform

There should be a change in the education systems of medical providers and secondary schools. Ideas such as racial differences in pain tolerance still exist among medical providers when they originated from racist ideology (Hoffman, 2016). For this reason, the education system for medical providers should be critically evaluated, from textbooks to

professors, to determine sources of racial bias. Then, updated courses equip physicians to be culturally and racially aware in their practice. For instance, a study was conducted comparing premedical Vanderbilt seniors pursuing biological science majors with those pursuing a degree in Medicine, Health, and Society (MHS), which contains topics on cultural and structural analysis. Those pursing the MHS major were better at identifying social determinates of health in various factors, such as causes of obesity and heart disease (Metzl, 2018). Holistic education on medical topics improves future medical professionals' awareness of various factors that are needed in treatment.

Investing in African American Communities

To address the previously discussed disparities in homeownership, access to supermarkets, sites of exercise, and medical facilities (AAMC, 2021; Bower, 2013; Powell 2004; United States Census Bureau, 2022), investments should be incentivized in low-income African American communities. This strategy would act to reduce the effects of redlining by increasing the SES of African American communities in its economy. A higher SES correlates with lower obesity and therefore diabetes prevalence. For instance, owning a house as an asset will allow social mobility for future generations. Food deserts should be combated by investing in infrastructure or transportation in areas that have a high African American population and low access to healthy grocery stores. Extending accessibility to nutritious food will make it

easier to achieve healthier diets that prevent obesity, one of the main risk factors for type 2 diabetes. Likewise, there should be increased incentives for healthcare providers to work in underserved communities with a large African American population. Increasing the number of healthcare facilities and practitioners in these areas will lower the time commitment needed to see a physician. A shorter commute to better physicians will prevent access barriers for African Americans to receive preventative and specialized care. Appropriate care recognizes early signs and treats diabetes, preventing worse outcomes.

Drug Price Regulations

The lower median household income for many African Americans in comparison to White Americans (Shrider, 2021) makes the increase of drug prices disproportionately affect this community. Adding drug price regulations would make necessary medications more accessible. For instance, eliminating patent protection laws would allow generic companies to produce drugs for a lower price, eliminating a cost that currently motivates people to skip their medications (Herket, 2019). This would promote drug access to more individuals, significantly improving the results of African Americans diagnosed with diabetes.

Adoption of Universal Healthcare

Universal healthcare should be implemented in the United States. Structural

racism has prevented the growth of African American SES, which prevents them from affording health insurance (Cohen, 2021). Expanding health insurance to cover all Americans would allow African Americans with low income to receive better care for their diabetes prevention and treatment (Luo, 2019).

Reformation of the Justice System

The justice system should change to decrease the disparities in White and African American incarceration rates. Efforts such as the "War on Drugs" incarcerated more African Americans than White Americans, preventing their social mobility (Bonczar, 2003). By decriminalizing these low-level crimes, fewer African Americans will be incarcerated in the future. As explained in a literature review on this topic, decriminalization of small possession and personal use of drugs followed by legal regulation of the distribution of drugs has been proven in other countries to increase safety (Earp, 2021). Therefore, altering regulations to decriminalize drug use and possession would prevent the current increase of African American incarceration (Bonczar, 2003) while not disrupting safety levels. Furthermore, opportunities for developing skills while in prison should be offered to lower the recidivism rate. As depicted in an analysis of the Norwegian prison system, prisons focusing on rehabilitation prevented offenders' re-imprisonment in the future (Bhuller, 2020). Equality in the justice system would prevent African American families' SES from being affected more than White Americans. This

increase in SES would allow better access to diabetes treatment.

Health Equity Research

Health equity research should be funded. The current misconceptions state that race is a genetic factor leading to diabetes (U.S. FDA, 2020). This fails to investigate alternative underlying factors that influence the course of the disease. Further research to determine the various genetic, social, and environmental causes of is needed.

Conclusion:

Structural racism, low median income, and bias from medical providers cause an increased prevalence of type 2 diabetes in the African American community with worse outcomes. Structural racism has added a barrier for African Americans to live near adequate schools and in proximity to healthy resources. These factors create challenges to receive nutritious food, conduct physical activity, obtain assistance from medical facilities, which are all essential to prevent type 2 diabetes. Likewise, the lower median household in African American communities in comparison to White American communities makes it more difficult to invest in health-related resources or afford adequate health insurance. Increasing costs of drugs further prevent access to proper treatment. Additionally, false racial biases practiced by some physicians worsen the treatment outcomes in African Americans

patients with diabetes. To resolve these issues, there are organizations involved in type 2 diabetes prevention and treatment, but they fail to endorse any action against racial disparities. Solutions are available that combat the social constructs causing higher rates of diabetes in the African American community. However, they should be implemented together after being carefully constructed by experts to provide the most beneficial solutions for racial disparities. Social conditions need to be addressed as a major factor in the increased prevalence and worse outcomes for African Americans with type 2 diabetes.

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