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Impact of Covid-19 on African Americans with Type II Diabetes: A Retrospective Study (January-November, 2020)

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Abstract

Background: This paper explored the impact of Covid-19 among African Americans with type II diabetes. Coronavirus disease (Covid -19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), was declared a pandemic by the World Health Organization (WHO) in March 11, 2020, after it had spread across six WHO regions. It was first discovered in Wuhan, China in December 2019. Covid-19 affected over 63.1 million people with 1.47 million deaths Worldwide in November, 2020. The first case of Covid -19 was reported in the United States in January 21, 2020 in Washington State. There were over 13.5million confirmed cases with 267,792 deaths in November 2020. The writer has attempted to synthesize findings from articles that report on the impact of Covid-19 in the United States with data on African Americans who also have type II diabetes in 2020. **Methods:** Many articles were retrieved using keywords search on PubMed and Google scholar. Out of the forty articles, only eighteen articles met the inclusion and exclusion criteria for this review study. The articles were further grouped in tabular form and sixteen articles were analyzed according to their critical level of evidence. **Results:** The result confirmed that patients with diabetes had poor outcomes with Covid-19 than patients with no diabetes. Also, health disparities, racial and socio-economic factors contributed to the poor outcomes of Covid-19 among African Americans with comorbidities than other races in the United States. **Conclusion:** Therefore, it is imperative that this disease must be managed properly with awareness on education, socio-economic interventions, pharmacological and non-pharmacological remedies couple with the recent placement of the Affordable Care Act in bridging the gap in economic and health disparities among the African American population.

Keywords: Covid-19; African Americans; Diabetes; Social determinants; Health disparities

Introduction

Coronavirus disease 19 (Covid -19) is a unique and infectious disease that affected most countries of the world. It was caused by a virus called severe acute respiratory syndrome coronavirus 2 (SARS COV-2) that was first discovered in Wuhan City, Hubei Province, China in December 2019 [1]. The prevalence of Covid-19 has continued to increase worldwide. Several studies have demonstrated the disparity in Covid-19 risk and its higher prevalence among minority groups in the United States [2-4]. The World Health Organization declared its outbreak as a pandemic in March 11, 2020 when it had spread across six WHO regions. Covid -19 is alarming based on its severity, mortality in the United States especially among African Americans who have comorbidities such as diabetes and cardiovascular disease.

There have been 7,420,609 confirmed cases of Covid-19 in the United States with 211,975 deaths at the time of this study (January-November 2020). At that time, the adjusted Covid-19 mortality was stratified by race and compared to whites; blacks were 3.4 times more likely to die, when compared to whites.

Latinos were 3.3 times as likely to die as whites compared to whites, while Asian Americans are 1.3 times more likely to die when compared to non-Hispanic whites [5]. Diabetes mellitus is a significant risk factor and determinants of severity and mortality among Covid-19 patients [6]. These disparities are not unique to Covid-19 but affects other health indices such as chronic medical conditions like diabetes mellitus, which reveals black community having a significantly higher prevalence compared to non-Hispanic whites.

The impact of Covid-19 is more pronounced among patients with co-morbidities like, diabetes, hypertension, obesity and cancers [7]. Patients with diabetes mellitus are more likely to have a more tumultuous course with increased risk of morbidities and mortalities [6]. These patients are more likely to have a more severe form of the disease and worse clinical outcome [8]. The mechanism of the association between diabetes mellitus and Covid-19 remains unclear. Although several mechanisms have been postulated, some of the proposed mechanism included a disruption in immune response, which may have resulted in more prolonged lung pathology.

Type II Diabetes is the most common type of metabolic disorder. There are twenty-nine million people in the United States with type II diabetes. This type of diabetes is insulin resistance. It occurs when pancreas fails to produce, or body not fully respond to insulin. Insulin is a hormone secretes from beta cells of Langerhans that controls glucose level in the body. Low secretion of insulin due to pancreas insufficiency to metabolize glucose leads to excess glucose in the blood called hyperglycemia. Therefore, poor management of hyperglycemia non-complaint with antihyperglycemic drugs, and glucocorticoid treatment combined with Covid-19 infections caused more severe inflammation, coagulation disorders and organ failure. Patients with type 2 diabetes are at high risk to develop cardiovascular disease, a disease that affects the blood vessels and anatomical structures of the heart. Excess of glucose that do not metabolize will build up as a plaque along the arterial walls and causes atherosclerosis.

Diabetes patients often have much immune impairment including impaired T-cell mediated responses, ineffective microbial clearance, and inhibitions of neutrophil chemotaxis. These may account for the increased morbidities and mortalities among diabetes patients with Covid-19 as compared to non-diabetic patients who are infected with the same virus. Other proposed mechanism includes delayed clearance of the Covid-19 virus from the blood system with studies showing this to be more prevalent among diabetes and hypertensive patients [9]. Several studies have demonstrated disparities in the burden of Covid-19 in the United States. Minority groups like blacks and Hispanics tend to have more severe diseases and at increased likelihood of dying from the disease compared to their white non-Hispanic counterparts [10]. These same racial disparities have been demonstrated in other developed countries like the United Kingdom where studies showed that blacks and Asians are more likely to die of the Covid-19 than whites [11]. These disparities have been associated with social deprivation as health resources are often allocated based on race, gender and socioeconomic basis.

In addition to the aforementioned concern, the patients involved are mostly African Americans who may be homeless, unemployed, and those who could not afford their medical bills. Thus, many of these population are on the streets with no proper hygiene, no annual checkup until they are sick, or emergency services found them unresponsive on the streets and bring them to the hospital for proper care and some of the hospitals will not welcome these group based on disparity. This is the rationale of this study and as the investigator of this review project, and as a registered nurse practicing in a minority hospital with a firsthand information of Covid-19 impact on the underserved minority population.

Furthermore, this special group of individuals have no health insurance to cover their medications making their comorbidities condition not to be properly managed. During this pandemic of Covid-19, the affected group are not effectively practicing social distancing due to lack of housing, crowded in the streets and making Covid-19 to spread more among African Americans. There are concerns that racial disparity exists among African Americans with diabetes mellitus and other chronic medical conditions. These may be so with the relative disproportion of African Americans who have these chronic conditions [12]. A few studies have explored the role of racial disparities among African Americans with coexisting chronic medical conditions and Covid-19 with often conflicting reports.

Research Design: Many articles were extracted from reliable search engines and reviewed to ascertain the prevalence, morbidities and mortalities associated with African American patients diagnosed with Covid-19 and diabetes type II.

Methods

There were hundred articles accessed in the course of this study, but only eighteen articles published in 2020 were used and sixteen tabulated. The studies focused on clinical and biochemical diagnosis of Covid-19, inpatients, African American, diabetes while exclusions were on outpatients, non-diabetes, and other comorbidities such as chronic kidney disease, coronary artery disease, and groups as in Caucasian, Asian and Latino were omitted. These articles were retrieved using validated search engines such as PUBMED and Google scholar search engines.

Analysis

There were hundred articles accessed in the course of this

study, but only eighteen articles published in 2020 were used and sixteen tabulated. The studies focused on clinical and biochemical diagnosis of Covid-19, inpatients, African American, diabetes while exclusions were on outpatients, non-diabetes, and other comorbidities such as chronic kidney disease, coronary artery disease, and groups as in Caucasian, Asian and Latino were omitted. These articles were retrieved using validated search engines such as PUBMED and Google scholar search engines.

Author / Date	Article Title	Type of Research/ article	Background/ Conceptual Framework/ Abstract	Method / Sample size	Results / Future Research	Level of Evidence Base
[13]	Severity and mortality of Covid 19 in patients with diabetes, hypertension and cardiovascular disease.	Quantitative	The aim of the study is to evaluate the impact of diabetes, hypertension, cardiovascular disease and the use of angiotensin converting enzyme inhibitors/angiotensin II receptor blockers (ACEI/ARB) with severity (invasive mechanical ventilation or intensive care unit admission or O2 saturation <90%) and mortality of COVID-19 cases.	Systematic review of the PubMed, Cochrane Library and SciELO databases was performed to identify relevant articles published from December 2019 to 6th May 2020. Forty articles were included involving COVID-19 patients.	The random-effect meta-analysis showed that diabetes mellitus and hypertension were moderately associated respectively with severity and mortality for COVID-19: Diabetes [OR 2.35 95% CI 1.80-3.06 and OR 2.50 95% CI 1.74-3.59] Hypertension: [OR 2.98 95% CI 2.37-3.75 and OR 2.88 (2.22-3.74)]. Cardiovascular disease was strongly associated with both severity and mortality, respectively [OR 4.02 (2.76-5.86) and OR 6.34 (3.71-10.84)]. On the contrary, the use of ACEI/ARB, was not associate with severity of COVID-19.	Evidence 1

[8]	Is diabetes mellitus associated with mortality and severity of COVID-19? A meta-analysis	Quantitative	Many studies on COVID-19 have reported diabetes to be associated with severe disease and mortality, however, the data is conflicting. The objectives of this meta-analysis were to explore the relationship between diabetes and COVID-19 mortality and severity, and to determine the prevalence of diabetes in patients with COVID-19	The authors searched the PubMed for case-control studies in English, published between Jan 1 and Apr 22, 2020, that had data on diabetes in patients with COVID-19. The frequency of diabetes was compared between patients with and without the composite endpoint of mortality or severity. Random effects model was used with odds ratio as the effect size. They also determined the pooled prevalence of diabetes in patients with COVID-19. Heterogeneity and publication bias were taken care by meta-regression, sub-group analyses, and trim and fill methods.	They included 33 studies (16,003 patients) and found diabetes to be significantly associated with mortality of COVID-19 with a pooled odds ratio of 1.90 (95% CI: 1.37-2.64; p <0.01). Diabetes was also associated with severe COVID-19 with a pooled odds ratio of 2.75 (95% CI: 2.09-3.62; p <0.01). The combined corrected pooled odds ratio of mortality or severity was 2.16 (95% CI: 1.74-2.68; p < 0.01). The pooled prevalence of diabetes in patients with COVID-19 was 9.8% (95% CI: 8.7%–10.9%) (after adjusting for heterogeneity) Diabetes in patients with COVID-19 is associated with a two-fold increase in mortality as well as severity of COVID-19, as compared to non- diabetics. Further studies on the pathogenic mechanisms and therapeutic implications need to be one.	**Evidence 1**
[5]	Coronavirus Disease 2019	Quantitative	The provisional counts for coronavirus disease 2019 (COVID-19) deaths are based on a current flow of mortality data in the National Vital Statistics System. National provisional counts include deaths occurring within the 50 states and the District of Columbia that have been received and coded as of the date specified.	CDC uses National Vital Statistics System to do daily review of Covid	The data are still counting daily or weekly in all the fifty States and District of Columbia with Covid-19 cases.	Evidence 2

[12]	Preliminary Estimates of the Prevalence of Selected Underlying Health Conditions Among Patients with Coronavirus Disease 2019 - United States, February 12-March 28, 2020.	Quantitative	On March 11, 2020, the World Health Organization declared Coronavirus Disease 2019 (COVID-19) a pandemic (1). As of March 28, 2020, a total of 571,678 confirmed COVID-19 cases and 26,494 deaths have been reported worldwide (2). Reports from China and Italy suggest that risk factors for severe disease include older age and the presence of at least one of several underlying health conditions	Data from laboratory-confirmed COVID-19 cases reported to CDC from 50 states, four U.S. territories and affiliated islands, the District of Columbia, and New York City with February 12–March 28, 2020 onset dates were analyzed.	As of March 28, 2020, U.S. states and territories have reported 122,653 U.S. COVID-19 cases to CDC, including 7,162 (5.8%) for whom data on underlying health conditions and other known risk factors for severe outcomes from respiratory infections were reported.	Evidence 2
[7]	Comorbidity and its Impact on Patients with COVID-19.	Quantitative	Since the beginning of the COVID-19 pandemic the virus has made its way across the globe to affecting over 180 countries. SARS-CoV-2 has infected humans in all age groups, of all ethnicities, both males and females while spreading through communities at an alarming rate	A meta-analysis study on COVID-19 comorbidities had a total of 1786 patients, of which 1044 were male and 742 were female with a mean age of 41 years old. The most common comorbidities identified in these patients were hypertension (15.8%), cardiovascular and cerebrovascular conditions (11.7%), and diabetes (9.4%) The less common comorbidities were coexisting infection with HIV and hepatitis B (1.5%), malignancy (1.5%), respiratory illnesses (1.4%), renal disorders (0.8%), and immunodeficiency (0.01%)	Available data have shown that patients with preexisting comorbidities have more deteriorating outcomes compared with patients without. COVID-19 patients with history of hypertension, obesity, chronic lung disease, diabetes, and cardiovascular disease have the worst prognosis and most often end up with deteriorating outcomes such as ARDS and pneumonia	Evidence 2

[9]	Hypertension and Diabetes Delay the Viral Clearance in COVID-19 Patients.	Quantitative	Comorbidities have significant indications for the disease outcome of COVID-19. however, which underlying diseases that contribute the most to aggravate the conditions of COVID-19 patients is still largely unknown. SARS-CoV-2 viral clearance is a golden standard for defining the recovery of COVID-19 infections. To dissect the underlying diseases that could impact on viral clearance, they enrolled 106 COVID-19 patients who were hospitalized in the Zhongnan Hospital of Wuhan University, Wuhan, China between Jan 5 and Feb 25, 2020	They comprehensively analyzed demographic, clinical and laboratory data, as well as patient treatment records. Survival analyses with Kaplan-Meier and Cox regression modelling were employed to identify factors influencing the viral clearance negatively	They found out that increasing age, male gender especially, and angiotensin-converting enzyme 2 (ACE2) associated factors (including hypertension, diabetes, and cardiovascular diseases) adversely affected the viral clearance. Furthermore, analysis by a random forest survival model pointed out hypertension, cortisone treatment, gender, and age as the four most important variables	Evidence 2
[2]	The impact of COVID-19 on African American communities in the United States.	Quantitative	The novel Coronavirus Disease 2019 (COVID-19), declared a pandemic in March 2020, may present with disproportionately higher rates in underrepresented racial/ethnic minority populations in the United States, including African American communities who have traditionally been over-represented in negative health outcomes.	Confirmed COVID-19 cases and deaths that were accumulated between January 22, 2020 and April 12, 2020 in each of the three most populous counties in each U.S. state and territory were used.	These study findings indicate that communities with a high African American density have been disproportionately burdened with COVID-19. Further study is needed to indicate if this burden is related to environmental factors or individual factors such as types of employment or comorbidities that members of these community have.	Evidence 4

[3]	Covid-19: Black people and other minorities are hardest hit in US	Quantitative	The current issue of the Morbidity and Mortality Weekly Report, compiled by the Centers for Disease Control and Prevention (CDC),2 shows that its reporting system has gathered racial data on just 534 covid-19 patients admitted to hospital, of about 40000 admitted so far around the country. Of these, 261 (45.0%) were non-Hispanic white and 192 (33.1%) were non-Hispanic black, in a country where black citizens comprise less than 13%of the population	The author uses narrative review of existing studies from CDC.	The author believes that the hardest hit of all is an invisible community, the undocumented immigrants. US Immigration and Customs Enforcement (ICE) continued to conduct raids even as lockdowns went into effect. While ICE has since promised not to arrest immigrants seeking medical care, its track record has left many terrified of going to hospital. In immigrant communities, reports abound of people having died at home because they were afraid to seek care. Their numbers may never be known	Evidence 4

[18]	Evidence mounts on the disproportionate effect of COVID-19 on ethnic minorities.	Quantitative	The author said, On May 1, 2020, the UK's Institute for Fiscal Studies (IFS) published its report, which found that people from ethnic minorities are more likely to live in areas badly affected by COVID-19infection. However, despite people from ethnic minorities being younger on average than the white British population, and therefore theoretically less susceptible to infection, they were found to have higher death rates. After adjusting for age, sex, and geography, the authors of the IFS report found that the death rate for people of black African descent was 3·5 times higher than for white British people, while for those of black Caribbean and Pakistani descent, death rates were 1·7 times and 2·7 times higher, respectively.	The author reviewed the existing studies from United Kingdom's Intensive Care National Audit and Research Centre data (BAME communities), the UK's Institute for Fiscal Studies (IFS), The Australia Epidemiology report and CDC's data.	The author encourages government to put good measures in place such as Australia's Federal and State and Territory Governments does for its indigenous living in remote and rural locations.	Evidence 4

[17]	The impact of ethnicity on clinical outcomes in covid -19: A systematic review.	Quantitative	The relationship between ethnicity and COVID-19 is uncertain. We performed a systematic review to assess whether ethnicity has been reported in patients with COVID-19 and its relation to clinical outcomes.	The authors searched EMBASE, MEDLINE, Cochrane Library and PROSPERO for English-language citations on ethnicity and COVID-19 (1st December 2019-15th May 2020). They also reviewed: COVID-19 articles in NEJM, Lancet, BMJ, JAMA, clinical trial protocols, grey literature, surveillance data and preprint articles on COVID-19 in MedRxiv to evaluate if the association between ethnicity and clinical outcomes were reported and what they showed.	Of 207 articles in the database search, five reported ethnicities; two reported no association between ethnicity and mortality. Of 690 articles identified from medical journals, 12 reported ethnicities; three reported no association between ethnicity and mortality. Of 209 preprints, 34 reported ethnicity – 13 found Black, Asian and Minority Ethnic (BAME) individuals had an increased risk of infection with SARS-CoV-2 and 12 reported worse clinical outcomes, including ITU admission and mortality, in BAME patients compared to White patients.	Evidence 4
[11]	OpenSAFELY: factors associated with COVID-19-related hospital death in the linked electronic health records of 17 million adult NHS patients	Quantitative	The novel COVID-19 has been demonstrated to have more devastating outcome among minority groups and people with preexisting conditions.	Cohort study analyzed by Cox-regression to generate age and sex adjusted hazard ratios. Primary care electronic health records were retrieved and used in the analysis. There was a total of 5683 deaths attributed to COVID-19.	The study findings showed that people from Asia and black groups are at increased risk of in-hospital death from COVID-19. These are largely immigrants communities in the UK. This association was only partially explained by pre-existing clinical risk factors or deprivation. There is a need for further research to explore the drivers of this association.	Evidence 4

[16]	Black Americans dying of covid -19 at three times the rate of white people. Support The Guardian.	Quantitative	Across the country, African Americans have died at a rate of 50.3 per 100,000 people, compared with 20.7 for whites, 22.9 for Latinos and 22.7 for Asian Americans. More than 20,000 African Americans – about one in 2,000 of the entire black population in the US – have died from the disease.	New figures compiled by the non-partisan APM Research Lab and released under the title Color of Coronavirus provide further evidence of the staggering divide in the Covid-19 death rate between black Americans and the rest of the nation.	The racial disparities in the US death figures became apparent relatively early on in the pandemic, particularly in large cities where black neighborhoods were hit much harder than wealthier white areas. When New York City produced its first racial breakdown of Covid-19 deaths in April it showed that Latino and black New Yorkers, especially in the outer boroughs including Queens and the Bronx, were experiencing death rates that were at least twice those of whites and Asians.	Evidence 4
[10]	Ethnic and racial disparities in COVID-19-related deaths: counting the trees, hiding the forest	Quantitative	To determine the impact of social determinants of Health on COVID-19.	A critical review of studies showing the role of social determinants of health on COVID-19 burden.	The authors emphasized the role of disaggregated data in identifying gaps in the social determinants of health disparities. It also guides appropriate prevention/response efforts.	Evidence 5
[4]	COVID-19 and African Americans	Quantitative	There is a huge health disparity in the Burden of COVID-19 in the USA. Underrepresented minorities like black and Latinos are developing the infection more frequently and dying disproportionately when compared to their white counterparts.	A review of the racial disparities in COVID-19 diseases in the USA	The author suggested that the racial disparity in the burden of COVID-19 can be explained in terms of the burden of ill health, limited access to healthy food, housing density, the need to work or else, the inability to practice social distancing. He went on to suggest that the COVID-19 pandemic should inspire policy makers to tackle the causes of racial disparities in the USA.	Evidence 5

[14]	Association of Blood Glucose Control and Outcomes in Patients with COVID-19 and Pre-existing Type 2 Diabetes	Quantitative	Type 2 diabetes (T2D) is a major comorbidity of COVID-19. However, the impact of blood glucose (BG) control on the degree of required medical interventions and on mortality in patients with COVID-19 and T2D remains uncertain.	A total of 9,663 patients with COVID-19 were included. After various exclusion criteria, 2,326 patients were removed from the study. Of the remaining 7,337 patients, data from 6,385 patients without diabetes (non-T2D) were placed in one group, while 952 individuals with type 2 diabetes (T2D) were placed in a second group. Of the 952 cases with T2D, 142 cases were further excluded due to hypoglycemia or lack of BG readings. Of the remaining 810 cases of T2D, 282 were considered to have well-controlled BG, while 528 had poorly controlled BG. And of these two T2D groups, 250 of each were used for propensity score-matched analysis.	Study findings shows that COVID-19 patients with T2D required more medical interventions and had a significantly higher mortality (7.8% versus 2.7%; adjusted hazard ratio [HR], 1.49) and multiple organ injury than the non-diabetic individuals	Evidence 4
[6]	Diabetes in COVID-19: Prevalence, pathophysiology, prognosis and practical considerations	Quantitative	There is a high prevalence of diabetes among patients with SARS-CoV-2 (COVID-19). Preexisting chronic medical conditions like diabetes is a determinant of disease severity and mortality. Increased viral entry into cell and impaired immune response has been proposed as a cause of this association.	PubMed database and Google Scholar were searched using the key terms 'COVID-19', 'SARS-CoV-2', 'diabetes', 'antidiabetic therapy' up to April 2, 2020. Full texts of the retrieved articles were accessed.	The study discovered an increase incidence and severity of COVID-19 in patients with diabetes. This COVID-19 could have effect on the pathophysiology of diabetes. Blood glucose control is important not only for patients who are infected with COVID-19	Evidence 4

Table 1: Selected Articles Reviewed By Level of Evidence.

Level I is the strongest with rigor and highest level of a systematic review or meta-analysis of all relevant randomized controlled trials or evidence-based clinical guidelines based on a systematic review of three or more randomized controlled trials of good quality that have a similar result. Level II, evidence obtained from at least one approved or well-designed random controlled trial such as a large multi-site random controlled trial. This level is also known as a single randomized controlled trial. Level IV, type of evidence from a well-designed single correctional study, or a single observational study such as case-control or cohort studies. Level V, evidence from the expert opinion, case reports, or from the editorial committee.

Results

According to de Almeida, et al., the team retrieved forty systematic reviews or meta-analysis articles with similar results and was categorized on this table as level I [13]. Their results showed that diabetes mellitus and hypertension were moderately associated with the severity and mortality of Covid-19. Also, Kumar, et al. study articles were categorized as level I on the table, identified diabetes associated with a mortality rate of Covid -19 [8].

In addition, CDC study was categorized as level II on the table. On their National Vital Statistics System, the data on coronavirus cases and death were increasing daily [5]. As at of November 30, 2020, the cases of coronavirus in the United States were 13,750,608 with 273,077 deaths. Also, Sanyaolu, et al. article was categorized as level II on the table, patients with pre-existing comorbidities have more deteriorating outcomes compared with patients without comorbidities with Covid-19 [7].

Another study, Zhu, et al. was categorized as level IV, showed in their findings that Covid-19 patients with type II diabetes required more medical interventions and had a significantly higher mortality, multiple organ injury than the non-diabetic individuals [14]. Concurrently, a study by Xu, et al. was categorized as level IV, showed in their study that diabetes mellitus worsens the clinical condition of Covid-19 patients and increased the likelihood of significant morbidity and mortalities [15]. The authors' result revealed elevated fasting blood glucose (Z=11.1 mmol/L) and it is believed that glucocorticoid treatment is associated with poor prognosis in Covid-19 patients who have preexisting type II diabetes, but the impact of this glucocorticoid treatment is unclear.

Furthermore, an article by Pilkington categorized on the table as level IV shows in their findings that racial disparities in the United States death figure became obvious in the early pandemic in New York particularly in larger cities where the black neighborhood was affected much harder than wealthier white areas [16]. From the report of New York city produced its first racial breakdown of Covid-19 deaths in April 2020, it shows Latinos and black New Yorkers were experiencing death rates that were at least twice those of whites and Asians. Thus, Williamson, et al showed in their study that people from Asia and black groups are at increased risk of in-hospital death from Covid-19. Hence, a need for investigators to explore further was encouraged [11].

Dyer, et al. whose study was categorized as level IV used a narrative review of existing studies from the CDC [3]. The investigator believed that the hardest effects of all is the invisible community, the undocumented immigrants that are afraid of seeking care to avoid deportation in that course some died in their various homes without the government awareness.

Also, Pan, et al. whose study was categorized on the table as level IV reported that the relationship between ethnicity and Covid-19 is uncertain, further research was encouraged [17]. Lastly, Kirby with a level V study suggested the government to put good measures in place as the Australia's federal and State and Territory Government does for its indigenous regardless of where they live in remote and rural locations [18]. This author believed that social-economic factors should be addressed to prevent the spread of this Covid -19 among the minorities.

Summary and Conclusion

BBased on the evidences, the result showed that Covid -19 is a viral infection that increased inflammation in people with diabetes and causes the outcomes to be worse than those who have no diabetes, although, research is still ongoing on daily basis on Covid-19 because is a new disease. Other variables that contributed to the increased mortality of Covid-19 among those with type II diabetes include socio-economic status such as unemployment, lack of awareness and health insurance, inadequate housing, and lack of social distancing practice. Hence, the relationship between ethnicity and Covid-19 is indirectly related to health disparities, inequalities that occur in the provision of health care as health outcomes based on racial, ethnic and socioeconomic groups can cause the impact of Covid-19 among the minorities to be worse than the white group.

In conclusion, it is a great news that thirty one million Americans have health coverage through the recent placement of the Affordable Care Act (popularly known as Obama Care). Research also shows that there have been reductions in uninsured rates in every state in the country since the law's coverage expansions took effect. People served by the health marketplaces and Medicaid expansion have reached record highs. With the ACA, it would be much more easier for the minorities and the under served to find a health insurance plan based on individuals' income and personal health needs. In most states, participants may even qualify for financial subsidies. Minorities may now quickly and easily apply for coverage through the new healthcare marketplace for coverages. Further investigations and resources are needed to bridge the health disparities gap that deprived the

minority population of their love ones which ultimately widened the gap despite the Covid-19 vaccine implementation.

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