Mini Review

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2023.54.008493

# Diabetes Statistics and Health Needs among African Americans

**Afolakemi C Olaniyan***

*Assistant Professor School of Health and Wellness Public Health Program Dillard University New Orleans, USA*

***Corresponding author:** Afolakemi C Olaniyan, Assistant Professor School of Health and Wellness Public Health Program Dillard University New Orleans, LA, USA

**ARTICLE INFO**

**Received:** November 26, 2023

**Published:** December 11, 2023

**Citation:** Afolakemi C Olaniyan. Ubiedo. Diabetes Statistics and Health Needs among African Americans. Biomed J Sci & Tech Res 54(1)-2023. BJSTR. MS.ID.008493.

**ABSTRACT**

This review fundamentally explores specific vulnerable minority groups and populations, with a focus on African Americans. The objective is to gather information that enhances the evaluation of health indicators for diagnosing, treating, and managing diabetes. This aim is accomplished by examining pertinent data in the literature, shedding light on the present health status, health needs, vulnerability levels, and existing health education initiatives for African American populations living with diabetes.

**Keywords:** Diabetes Statistics; Health Need; African Americans and Minority Populations

## Introduction

Diabetes Mellitus (existing as Type 1 and Type 2, and gestational diabetes) is a chronic disease that is steadily rising the world over with over 400 million sufferers (Global Report on Diabetes [1]). The disease occurs either when the pancreas defaults in producing adequate insulin (Type 1 variant) or the body simply cannot properly utilize the insulin secreted by the pancreas to regulate blood sugar (Type 2 variant) (Black [2]). However, most people affected by diabetes suffer from the Type 2 variant. Diabetes constitutes the four priority non-communicable diseases (NCDs) recognized by the World Health Organization (WHO, henceforth), and its steady increase and prevalence has been the subject of research and investigation for decades on end. In the preface to the (Global Report on Diabetes [1]), the then Director-General of the World Health Organization, Dr. Margaret Chan, averred that Diabetes prevention and treatment is hampered by various factors. These include a lack of effective policies to create supportive environments for healthy lifestyles and a lack of access to quality health care, particularly for people outside the rich class and nations far removed from the top-tier ones. The same metrics mentioned by the WHO boss are applicable to Diabetic sufferers of all colours and contexts. The prevalence of Diabetics among African Americans have been eye-catching, drawing the attention of scholars to the causative measures, health indicators, and proactive measures to curtail the ravenous effect of the disease on African-American populations (Embry [3]).

This review is one of such efforts geared towards providing an understanding of the vulnerability metrics of minority populations ravaged by the disease. Data collected from the literature show that African Americans constitute an ethnic population that is at high risk for Type 2 diabetes mellitus irrespective of age grade. (Marshall Jr [4]) avers that the prevalence of diagnosed diabetes is 1.6-fold higher in African Americans compared to the white population. These statistics imply that African Americans are at high risks of insulin resistance and Type 2 diabetes when compared to white Americans who are more affected by Type 1 diabetes. Diverse risk factors for the prevalence of Type 2 diabetes among African Americans have been mooted among which are genetic vulnerability, family history of diabetes, environmental factors, social group characteristics, insulin resistance arising from behavioural and lifestyle influences like obesity, genetic factors admixture, and clinical factors such as sufficient medical care and compliance with treatment regimens ((Black, et al. [2,5,6])).

This review is, in essence, an investigation of selected vulnerable minority groups and populations, African Americans, to be precise for information that would further aid the assessment of health indicators for Diabetics diagnosis, treatment, and management. This goal is executed throughout the review by identifying relevant data in the literature that provides insights into the current health status of African Americans living with diabetes; health needs of African Americans living with diabetes; level of vulnerability of African Americans living with diabetes; and current health education targeted towards African Americans populations living with diabetes.

## Diabetes Health Statistics

(Akintobi, et al. [7]) note that racial and ethnic minorities in the U.S. have always been vulnerable to illnesses and hospitalizations during public health emergencies for various reasons ranging from low socio-economic status to unequal access to social goods. Scholars such as (Black [2]) have attributed this uneven burden to "a higher level of social vulnerability." The data utilized for the analysis of Diabetic prevalence and level of vulnerability among African Americans was culled from the latest (National Diabetes Statistics Report [8]). The data source was chosen on account of being a veritable point of reference and an official source of data retrieval for many studies on diabetes in the U.S. The Figure 1 above presents the prevalence of diagnosed, undiagnosed, and total diabetes among adults aged 18 years or older within the period covering 2013-2016. The data breakdown shows that black and non-Hispanic populations turned in the highest prevalence of diagnosed diabetes at 13.7%. More so, 3.0% were recorded to fall under undiagnosed diabetes. Finally, the prevalence of total diabetes was confirmed in 16.8% of Black and non-Hispanic populations, a statistic that the Hispanic only bosses at 17.9%. The implications of these metrics are profound for the prevalence of diabetics among African Americans. The Figures clearly show that black populations remain at high risk of developing complications and recording high mortality (Figure 2). A second look at the data reveals that minority ethnic and racial groups in the U.S are at high risk of developing, nursing, and dying from diabetics and diabetic complications.

**Appendix Table 1. Age-adjusted prevalence of diagnosed, undiagnosed, and total diabetes among adults aged 18 years or older, United States, 2013–2016.**

| Characteristic | Diagnosed diabetes Percentage (95% CI) | Undiagnosed diabetes Percentage (95% CI) | Total diabetes Percentage (95% CI) |
|---|---|---|---|
| **Total** | **9.4 (8.6–10.2)** | **2.6 (2.2–3.1)** | **12.0 (11.1–12.9)** |
| **Sex** | | | |
| Men | 10.4 (9.2–11.7) | 3.0 (2.2–4.0) | 13.3 (12.0–14.8) |
| Women | 8.6 (7.7–9.5) | 2.2 (1.8–2.8) | 10.8 (9.9–11.8) |
| **Race/ethnicity** | | | |
| White, Non-Hispanic | 7.9 (7.2–8.7) | 2.2 (1.6–2.9) | 10.0 (9.2–11.0) |
| Black, Non-Hispanic | 13.7 (12.5–15.1) | 3.0 (2.0–4.5) | 16.8 (15.4–18.1) |
| Asian, Non-Hispanic | 11.3 (9.2–13.7) | 4.7 (3.0–7.3) | 16.0 (13.7–18.5) |
| Hispanic | 13.7 (12.1–15.6) | 4.1 (3.1–5.4) | 17.9 (16.0–19.9) |
| **Education** | | | |
| Less than high school | 12.7 (11.4–14.2) | 3.9 (2.5–5.8) | 16.6 (14.8–18.6) |
| High school | 9.7 (8.5–11.1) | 3.0 (2.1–4.4) | 12.8 (11.1–14.7) |
| More than high school | 8.3 (7.3–9.5) | 2.2 (1.6–2.8) | 10.5 (9.4–11.8) |

Note: CI = confidence interval.
Data source: 2013–2016 National Health and Nutrition Examination Survey.

**Figure 1:** National Diabetes Statistics Report (2020: 14).

**DOI:** 10.26717/BJSTR.2023.54.008493

**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 2:** National Diabetes Statistics Report (2020: 15).

There was a significant drop in the prevalence of diagnosed, undiagnosed, and total diabetes among black and non-Hispanic adults aged 18 years or older within the period covering 2017-2018. In table 3 above, black and Hispanic blacks constituted 11.7% of the total population accessed. Out of this population, male blacks and female non-Hispanics constituted 11.4%, while female blacks and female non-Hispanics constituted 12.0%. The figures derived are significant for several reasons (Figure 3). The decline of diabetes prevalence among black and non-Hispanics from 13.7% within the period covering 2013-2016 and 11.7% within the period covering 2017-2018 can only mean that diabetics education and awareness is on the rise among black populations in the U.S. Table 6 below proves this point. Black and non-Hispanic ranked highest on the issue of prevalence and awareness of prediabetes among adults aged 18 years or older in the U.S. within the period covering 2013-2016. Irrespective of increased awareness about the disease and its morbidity, diabetes diagnosis among black and non-Hispanic populations is still prevalent, as Table 4 below shows. The data presented reveal the current health status of blacks and non-Hispanics living with diabetes in the U.S. Blacks and non-Hispanics constituted 8.2% of total recorded incidence of diagnosed diabetes among adults who are 18 years or older in the U.S; a statistic that is only trumped by the Hispanic (another vulnerable population in the U.S). (Figure 4) These alarming figures have been attributed to potential risk factors of diabetes (lifestyle, environmental factors, genetic disposition) and associated factors such as being physically inactive, obese, or overweight (EUDIP [9], Swails [10]). While the rate of increase has been significant in low- and middle-income countries, available statistics prove that minority groups in established economies equally suffer high prevalence and mortality in as much the same way that sufferers from the low-income countries do (American Diabetes Association [11]).

**Appendix Table 6. Age-adjusted prevalence and awareness of prediabetes among adults aged 18 years or older, United States, 2013–2016.**

| Characteristic | Prediabetes[a] Percentage (95% CI) | Prediabetes Awareness[b] Percentage (95% CI) |
|---|---|---|
| **Total** | **33.3 (31.1–35.7)** | **13.3 (11.0–16.0)** |
| **Sex** | | |
| Men | 37.4 (33.9–40.9) | 10.3 (7.7–13.6) |
| Women | 29.2 (26.7–31.8) | 17.5 (13.0–23.1) |
| **Race/ethnicity** | | |
| White, non-Hispanic | 31.0 (27.8–34.4) | 13.6 (9.9–18.4) |
| Black, non-Hispanic | 36.6 (33.7–39.6) | 15.1 (12.0–18.8) |
| Asian, non-Hispanic | 33.0 (29.6–36.7) | 8.3 (5.1–13.4) |
| Hispanic | 36.1 (33.5–38.9) | 11.5 (8.8–14.9) |
| **Education** | | |
| Less than high school | 37.2 (32.7–42.1) | 8.7 (5.9–12.6) |
| High school | 35.7 (32.5–39.1) | 13.1 (8.4–19.6) |
| More than high school | 31.3 (28.9–33.9) | 15.0 (11.4–19.5) |

[a] Prediabetes was defined as fasting plasma glucose values of 100 to 125 mg/dL or A1C values of 5.7% to 6.4%.
[b] Prediabetes awareness was based on self-report and estimated only among adults with prediabetes.
Note: CI = confidence interval.
Data source: 2013–2016 National Health and Nutrition Examination Survey.

**Figure 3:** National Diabetes Statistics Report (2020: 17).

**Appendix Table 4. Age-adjusted incidence of diagnosed diabetes among adults aged 18 years or older, United States, 2017–2018.**

| Characteristic | Rate per 1,000 (95% CI) |
|---|---|
| **Total** | **6.7 (5.7–8.0)[a]** |
| **Sex** | |
| Men | 7.2 (5.7–9.0)[a] |
| Women | 6.3 (4.9–8.0)[a] |
| **Race/ethnicity** | |
| White, non-Hispanic | 5.0 (4.3–5.8) |
| Black, non-Hispanic | 8.2 (6.0–11.0) |
| Asian, non-Hispanic | 7.4 (4.9–10.9) |
| Hispanic | 9.7 (6.7–14.0) |
| **Education** | |
| Less than high school | 11.5 (8.3–15.9) |
| High school | 6.0 (4.8–7.5) |
| More than high school | 5.6 (4.7–6.7) |

[a] Rate calculated using 2018 data only.
Note: CI = confidence interval.
Data source: 2017–2018 National Health Interview Survey.

**Figure 4:** National Diabetes Statistics Report (2020:16).

## Current Health Status of African Americans Living with Diabetes (AALWD)

Reducing premature mortality from NCDs— including people with Diabetes by one third happens to be one of the main targets of the 2030 Agenda for Sustainable Development, the other being to achieve universal health coverage and to provide access to affordable essential medicines by the stipulated year (Global Report on Diabetes [1]). Diabetic complications among affected African Americans can range from bodily dysfunctions and increased risk of premature death. Associated health complications include stroke, kidney failure, cardiac arrest, vision loss, nerve damage, lower-extremity amputa-

tion, and fetal death in pregnant women, among other health complications. Following this, several factors sum up the current health status of AALWD, including financial implications, accessing proper instruction about the disease, disease management, and food restrictions (Chelsa [12]). Studies on Diabetes prevalence and vulnerability among African Americans have accessed Diabetes in African American children (Tull & Roseman [13], African American Youth (Elizabeth, et al. [14]), as well as the adult demographics of the racial minority (Lisa, Signorello, et al. [15]) notes that "in comparison to whites, African Americans often are poorer, have less education, are more likely to live in distressed households and communities, are less able to access quality health care, and have a less favourable risk factor profile for many diseases." This aversion alludes to the current reality of black populations in the U.S. and paints a clearer picture of their vulnerabilities to Diabetes, among other NCDs. In addition to the aforementioned debilitating factors, the issue of racial marginalization is yet another drawback of health care access and provision for black populations in the U.S. (Ricci-Cabello, et al. [16]). However, racial discourses exist outside the scope of this present study and will not be expanded upon.

## Health Needs of African Americans Living with Diabetes

The careless treatment and mismanagement of Diabetes can pose risks such as worsening health, low quality of life, and decreased longevity for sufferers of the ailment. Hence, a critical appraisal of the health needs of African Americans living with diabetics is in place. African American sufferers of Diabetes mellitus are in dire need of strong financial assistance and support systems from the government, family members, and health care administrators (Embry [3]). Specifically, family members are expected to perform monitoring and supervisory roles for their affected kin. In the case of type 2 sufferers, adherence to stipulated feeding regimes, medication intake, adequate exercising, and weight loss regimes should be pursued by family members. On a rather important note, (Chesla [12]) mentions that emotional support should be provided to affected family members on occasions that the reality of their illness disrupts their moods. In equal measure, diabetic African Americans require access to affordable health schemes and quality health care services to put them in a favourable position to manage the disease better (Spanakis & Golden [17]). Acceding to the health needs of African American sufferers of Diabetes is important considering the associated health risk for cardiovascular dysfunctions, renal failure, loss of eyesight, body part severance, cardiac arrests, and peripheral neuropathy, all of which African American diabetics are susceptible to. Moreover, screening and interventions in the prediabetic years must become standard practice. There is a need to increase screening among vulnerable groups like African Americans (Black [2]). Government and health bodies should institute culturally appropriate interventions that will enhance change in the prediabetic years and the inception of adulthood.

## Vulnerability Status of African Americans Living with Diabetes

The vulnerability levels of African Americans to Diabetes are quite evident from the literature cited so far and the raw data put forward in the (National Diabetes Statistics Report [7]). More so, many studies like (Signorello, et al. [15]) and Embry [9]) have provided commentaries and data on the level of vulnerability of African Americans living with Diabetes or experiencing prediabetes. A grim picture of the current level of vulnerability is put forward by (Ricci-Cabello [16]). The scholars state that African Americans are almost twice as likely to suffer from type 2 diabetes, experience lower-extremity amputation, and diabetes-induced blindness compared to Caucasians. (Marshall [4]) enumerates genetic traits, obesity prevalence, and insulin resistance as morbid factors that contribute to the risk of Diabetes among African Americans. The author goes further to quip that the high rate of diabetic complications noticeable among African Americans are due to poor glycaemic control, genetic admixture, and racial disparities in health care in the U.S. While glycaemic control may be considered to arise spontaneous chemical changes in the body or unhealthy lifestyle practices, racial disparities in health care access and provision allude to a long-standing problem of racial segregation in the U.S. Studies have shown that virtually all racial and ethnic minorities in the U.S receive lower-quality health care irrespective of insurance coverages, age or comorbid conditions (Marshall [4]). Spanakis and Golden (2014:8) aver that this situation is worsened by the low social-economic status that black people possess compared to the whites (cf. Black [2]). In many situations, minorities with Diabetes were less likely to have a dilated ophthalmological examination and a lipid profile compared to Caucasian patients. (Marshall [4]) notes that "it is less probable that African American diabetics have their treatment intensified to improve glycaemic control."

## Current Health Education targeted towards African Americans populations Living with Diabetes

Studies have revealed that there is low health literacy among the African American population (Embry [3]). This trend is not impressive and could be primarily responsible for the prevalence of Diabetes among black populations in the U.S. Reducing the burden of Diabetes is a health priority that should be pursued by world leaders, civil society groups, and health NGOs. As such, efforts geared towards addressing this growing health challenge should begin with public investment in cost-effective, affordable, and research-based interventions. Education of the affected populations appears to be the first step in the right direction. (Voda [18]) asserts that the key aims of Diabetes education are to promote self-management while offering tools and support to sufferers as they learn how to manage the health challenge. (Muonagolu [19]) posits that relatives of the affected population should be enlightened on management practices for their affected kin and preventive measures for themselves as family members and caregivers. Current health education targeted towards African American popu-

lations living with Diabetes have centered on health literacy training (Han, et al. [20]). note that the PLAN 4 Success-Diabetes is the first intervention to incorporate health literacy skills training with education in a bid to enhance glycemic control among African American sufferers of Diabetes. In another clime, (Collins-McNeil, et al. [21]) examined the feasibility of conducting a church-based, culturally targeted diabetes self-management education program targeted at African American sufferers of the disease.

The program was targeted at teaching diabetic African Americans the pros and cons of Diabetes self-management. In the end, the study concluded that CBCT programs constitute a veritable intervention protocol. Elsewhere, (Peek, et al. [22]) cites the REACH 2010 Diabetes Education program as a current intervention protocol tailor-made for African American diabetics. The researchers assert that "The REACH 2010 Charleston and Georgetown Diabetes Coalition has had the goal of improving access, care, reimbursement, education, and outcomes for the over 12,000 African American diabetes patients served through their affiliated ambulatory care health systems." To increase diabetes literacy among African American populations, the organizers utilized Q1 strategies, patient education, provider engagement, strong community partnerships, faith-based organizations, civic organizations, and local business partnerships (Peek, et al. [22]). (Akintobi, et al. [7]) suggest that culturally based prevention measures, structured disease management protocols, diabetic educators, and support from health care professionals (doctors and nurses) should all be put in place to improve conditions of life for people with diabetes (cf. Pendleton [23]). (Black [2]) mentions that intensive therapy for Diabetes should be made available to coloured U.S. populations due to "its effectiveness in reducing the occurrence of retinopathy and blindness by over 40%, and end-stage renal disease by over 70%." Hence, these strategies and personnel should be incorporated in efforts geared towards the treatment and (self-) management of Diabetes in African Americans (Marshall [4]).

The nation of Cuba is living testimony of the effectiveness of population-based prevention measures. The country witnessed a sharp decline in type 2 diabetics prevalence when the economic crisis lasted. At this time, the Cuban population-wide were conditioned to engage in lifestyle changes bothering on low-calorie consumption, adherence to specified food regimes, and engagement in physical activities; a string of measures that worked the trick of reducing diabetics prevalence rates among the population. In a nutshell, the promotion of local community leaders to actively inform mitigation strategies should be put in place. Furthermore, political actors should strategically engage public health and community-attuned policy leaders and prioritize community stimulus strategies. More so, community-informed health literacy on public health disasters should be cultivated. Moreover, culturally tailored behavioral and mental health dialogue and response should be fostered. Finally, patient-centered medical homes and neighborhood homes should be prioritized.

## Conclusion

From the analysis and discussions put forward in this review, it is evident that African American populations are increasingly vulnerable to diabetics and diabetics complications. Hence, stronger responses and coordinated efforts from the government, stakeholders in the health sector, food producers, diabetics drug manufacturers, civil society, and persons living with diabetics are required if the diseases will be halted in its stride. For minority populations like the African American populace, diabetics prevalence can be attributed to various unwholesome lifestyle practices like uncontrolled feeding habits, physical inactivity, obesity, and tobacco consumption. Hence, the promotion of healthy diets, low consumption of sugary and carbonated food drinks, and increased physical activities among African American populations should be encouraged. In like manner, culturally based campaigns, and interventions to reduce tobacco consumption could abate type 2 diabetes. The (WHO Report on Diabetes [1]) avers that there is emerging evidence of a causative link between tobacco smoking and the risk of developing type 2 diabetes. (Lindström [24]) notes that African Americans' access to effective tools and strategies to prevent and combat Diabetes should be significantly improved so that the high prevalence rates can be curtailed. In the same vein, the blurring of racial divides will help African Americans gain access to quality health care services and schemes. Furthermore, access to available drugs and management practices will reduce the complications and premature deaths resulting from diabetics and its complications. The health body suggests proactive measures based on a set of legislative, regulatory, fiscal, and educational measures, including overt graphic warnings on cigarette packs, extensive mass media campaigns, and tax raises for nations to better address increasing rates of Diabetes [25].

## References

1. (2016) World Health Organization. Global Report on Diabetes. p. 1-86.
2. Black S (2002) Diabetes, Diversity, and Disparity: What do we do with the evidence? American Journal of Public Health 92(4): 543-548.
3. Embry M (2013) Diabetes is a community issue: evidence-based diabetes education outreach programs in the African American population. Ohio: Wright State University.
4. Marshall M C (2005) Diabetes in African Americans. Postgrad Med J 81(962): 734-740.
5. Signorello L B, Schlundt D G, Cohen S S, Steinwandel M D, Buchowski M S, et al. (2007) Comparing diabetes prevalence between African Americans and Whites of similar socioeconomic status. American journal of public health 97(12): 2260-2267.
6. Bruce K (2017) Epidemiology of Type 2 Diabetes in populations of African Descent.
7. Akintobi T, Jacobs T, Sabbs D, Holden K, Braithwaite R, et al. (2020) Community engagement of African Americans in the era of COVID-19: considerations, challenges, implications, and recommendations for public health. Preventing chronic disease 17: E83.

8. (2020) National Diabetes Statistics Report. Estimates of diabetes and its burden in the United States. U.S. Department of Health and Human Services, Centre for Disease Control and Prevention.
9. (2002) EUDIP Group Establishment of indicators monitoring diabetes mellitus and its morbidity.
10. Swails AL (2018) The Impact of Diabetes and Obesity in the African American Population (Doctoral dissertation, Walden University).
11. (2017) American Diabetes Association. Promoting health and reducing disparities in populations. Diabetes Care 40(Supplement 1): S6-S10.
12. Chesla C A, Fisher L, Mullan J T, Skaff M M, Gardiner P, et al. (2004) Family and disease management in African American patients with type 2 diabetes. Diabetes care 27(12): 2850-2855.
13. Tull ES, Roseman JM (1995) Diabetes in African Americans. Diabetes in America 2: 613-630.
14. Elizabeth J, Ronny A, Dana D, Ralph B, Jean M, et al. (2009) Diabetes in African American youth. Diabetes Care 32(Suppl 2): S112-S122.
15. Signorello LB, Schlundt DG, Cohen SS, Steinwandel MD, Buchowski MS, et al. (2007) Comparing diabetes prevalence between African Americans and Whites of similar socioeconomic status. American journal of public health 97(12): 2260-2267.
16. Ricci Cabello I, Ruiz Perez I, Nevot Cordero A, Rodríguez-Barranco M, Sordo L, et al. (2013) Health care interventions to improve the quality of diabetes care in African Americans: a systematic review and meta-analysis. Diabetes Care: 36(3): 760-768.
17. Spanakis EK, Golden S H (2013) Race/ethnic difference in diabetes and diabetic complications. Current diabetes reports 13(6): 814-823.
18. Voda SC (2008) Improving diabetes education for minority-group members. Nursing 2020 38(7): 12-13.
19. Muonagolu MS N (2021) The Effects of Diabetes Self-Management Education among African American Adults.
20. Han H R, Nkimbeng M, Ajomagberin O, Grunstra K, Sharps P, et al. (2019) Health literacy enhanced intervention for inner-city African Americans with uncontrolled diabetes: a pilot study. Pilot and feasibility studies 5(1): 1-9.
21. Collins-McNeil J, Edwards C L, Batch B C 0, Benbow D, McDougald C S, et al. (2012) A culturally targeted self-management program for African Americans with type 2 diabetes mellitus. The Canadian journal of nursing research Revue canadienne de recherche en sciences infirmieres 44(4): 126-141.
22. Peek M E, Ferguson M, Bergeron N, Maltby D, Chin M H (2014) Integrated community-healthcare diabetes interventions to reduce disparities. Current diabetes reports 14(3): 467.
23. Pendleton M (2020) Education to Improve Health for Rural African American Women with Diabetes (Doctoral dissertation, Walden University).
24. Lindström J, Wikström K, Maggini M, Icks A, Kuske S, et al. (2015) Quality indicators for diabetes prevention programs in health care targeted at people at high risk. Annali dell'Istituto superiore di sanita 51(3): 187-191.
25. Henry Akintobi T, Jacobs T, Sabbs D, Holden K, Braithwaite R, et al. (2020) Community engagement of African Americans in the era of COVID-19: considerations, challenges, implications, and recommendations for public health. Preventing chronic disease 13(17): E83.


**ISSN: 2574-1241**

DOI: 10.26717/BJSTR.2023.54.008493

**Afolakemi C Olaniyan.** Biomed J Sci & Tech Res