



Review Article

Collaborative impact of diabetes education by International Diabetes Federation and national health systems on prevalence of diabetes amongst the indigenous people of Africa

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Abstract:

Background: Diabetes mellitus (DM) is becoming a serious health problem in Africa, affecting about 24 million adults, with more than half of them undiagnosed. Indigenous communities are affected the most because of poverty, poor healthcare, and inequality. This narrative review examines how diabetes education from the International Diabetes Federation (IDF) and national health systems is helping to combat this growing concern among indigenous Africans.

Methods: A total of 39 relevant articles were used for this review covering up to 2025, using search engines and databases including PubMed, Scopus, Web of Science, and Google Scholar.

Main content: The IDF has set up various education programs, like the IDF School of Diabetes and other initiatives, often working with host governments, while national health systems have used community-based approaches, such as training health workers, running radio campaigns, and school programs. These efforts have helped improve diabetes control with self-care. Although, problems like lack of funding, cultural differences, weak health monitoring, and poor infrastructure still limit the impact of these education programs.

Conclusion: This review highlights how collaborative diabetes education initiatives by the IDF and national health systems have improved diabetes awareness and control among indigenous Africans.

Keywords: Africa, Community health, Diabetes education, Diabetes mellitus, International Diabetes Federation (IDF)

Introduction

Diabetes mellitus is a metabolic disorder characterized by persistently high blood glucose and its prevalence globally is constantly rising [1]. This poses a significant global health burden [2]. In 2021, the International Diabetes Federation (IDF) reported that 537 million adult people have diabetes globally, which has been projected to rise to 643 million in 2030 and 783 by 2045 [3,4]. In Africa, diabetes mellitus is also a growing problem as about 19 million people are affected [5]. This number is predicted to increase by 143% by the

year 2045 [6]. As at 2021, an estimate of 24 million adults were living with diabetes mellitus and about fifty-four percent of these people were undiagnosed [7]. Diabetes mellitus is now regarded as a crisis in Africa especially due to the alarming cases. Factors contributing to the fast rising cases of diabetes mellitus in Africa include poverty, limited access to good healthcare and social inequality [8].

The impact of diabetes mellitus extends far beyond its prevalence as it can lead to several health complications such as kidney failure, stroke, lower limb amputation, blindness and heart attack [9]. Since there are a lot of undiagnosed cases of diabetes mellitus, these complications can be exacerbated as most people do not receive timely treatment. The economic and social burden of diabetes mellitus in Africa cannot be overlooked as the healthcare expenditure was about 10 billion USD in 2024 [10].

In regions with limited resources such as Africa, diabetes education plays an important role in the prevention and management of diabetes mellitus. It also helps to improve the quality of life of patients and prevent the development of associated complications [11]. According to the American Diabetes Association (ADA), patient education is regarded as a standard of care to improve knowledge and proficiency in diabetes self-care skills [12]. Diabetes self-management education and support (DSMES) interventions is cost-effective by reducing emergency department visits and hospital admissions and readmissions [13]. This review seeks to evaluate the impact of diabetes education organized by the IDF and national health systems in African countries with a focus on how these collaborative initiatives have impacted diabetes prevalence and control among the African indigenous populations.

Methodology

Major research databases and search engines were searched for this review article. These included PubMed, Scopus, Web of Science, and Google Scholar and ResearchGate, for a period up to 2025. Articles directly addressing diabetes education, and prevalence among indigenous people of Africa were selected and analyzed for this study. Only 39 articles were adopted for this review. Excluded articles included those outside the scope of this study, not in English, or whose full texts were unavailable and not retrievable. Keywords search included community health, diabetes education, diabetes mellitus, indigenous people of Africa, and International Diabetes Federation (IDF).

Overview of Diabetes among Indigenous African Populations

Indigenous people of Africa refer to group of people who are native to Africa. Indigenous people are practitioners of unique culture and they possess cultural, social and economic characteristics that are quite different from the dominant societies in which they stay [14]. In Africa, indigenous communities are faced with high rates of diseases and challenges such as poor healthcare infrastructure, systemic discrimination, forced displacement and limited access to care. According to the International Diabetes Federation (IDF), about 70% of all reviewed studies reported the prevalence of type 2 diabetes mellitus to be over 10% in indigenous adult population [15]. Africa is estimated to have about 15.9 million adults living with DM which is a regional prevalence of 3.1% [16]. Africa has the largest amount of people living with undiagnosed diabetes mellitus and more than half of the people living with diabetes mellitus in Africa are undiagnosed [7]. Some factors responsible for undiagnosed diabetes mellitus for several years include poor healthcare systems, slow onset of the disease presentation and lack of awareness among the community [17].

In Africa, the prevalence of undiagnosed diabetes mellitus is not consistent across different countries as a result of disparities in social, economic and genetic variations. In North Africa, the prevalence of undiagnosed diabetes mellitus ranged from 18% to about

75% of all cases of diabetes [18]. Additionally, the incidence of undiagnosed diabetes mellitus in several African regions was displayed as follows: 2.6% and 5.97% in North Sudan, 7.2%, 11.5%, 5%, 2.3%, 3.8%, and 2.13% in Ethiopia, and 9% in Tanzania (East African studies); 3.19% in Guinea, 6.3% in Cameroon, 4.77% in Mauritius, 4.64% in Senegal, and 7% and 4.6% in Nigeria (West African studies); 18.1% in South Africa; and 4.2% in Egypt (North Africa) [18]. The pooled prevalence of undiagnosed diabetes mellitus among adults was 3.85%, according to a systematic analysis of African nations; this translates to 4.43% in Eastern Africa, 4.72% in Western Africa, 4.27% in Northern Africa, and 1.46% in Southern Africa, respectively [19].

Diabetes Education Initiatives by the International Diabetes Federation (IDF) in Africa

The International Diabetes Federation (IDF) is focused on diabetes mellitus education targeting healthcare professionals and people living with DM. They are aimed at improving diabetes care and management. They offer educational resources, advocacy programs and online courses. One of the key IDF program in Africa is the IDF School of Diabetes which was launched in 2016 [20]. Currently, the IDF School of Diabetes provides three short courses (Diabetic Retinopathy, Diabetes and Cardiovascular Disease, and Type 2 Diabetes Prevention) and three Certified Online Courses (for Diabetes Educators, Specialists, and Primary Care Physicians). The Collaboration Centre is an additional feature that allows users to ask questions, start discussions, or participate in topics that have been started by others [20].

The International Diabetes Federation (IDF), in partnership with the International Society for Paediatric and Adolescent Diabetes (ISPAD) and Sanofi, created the Kids and Diabetes in Schools (KiDS) project, an educational initiative that is another important IDF activity in Africa. Its primary objective is to prevent type 2 diabetes by promoting healthy lifestyles in schools and fighting the stigma associated with diabetes. The program's main goal is to teach parents, teachers, and students about diabetes management and good lifestyle choices. Other diabetes education initiatives organized in Africa by IDF include world diabetes day campaigns and training of healthcare workers in diabetes management.

IDF Collaboration with Host National Health Systems

In Africa, the International Diabetes Federation (IDF) collaborates with national diabetes associations, including health authorities in the host country to lead diabetes education programs. One of such can be seen in sub-Saharan Africa where the IDF Africa region collaborated with World Diabetes foundation to create a standard Diabetes Education Training Manual which was intended for patients and also for healthcare workers [21]. This curriculum was distributed among 11 African countries. It was translated into various languages such as French, Portuguese and Kiswahili so as to ensure a unified culturally sensitive teaching framework [21]. In addition, IDF and its various partners have produced type 2 diabetes guidelines which is much applicable in the African context and this has been disseminated remotely and also among indigenous communities in Africa.

Indigenous and rural communities access IDF's healthcare provider training programs through multiple channels. For example, clinicians in rural and indigenous areas can access free online courses organized by the IDF School of Diabetes [22]. In 2024, a training program was organized by the IDF-Sanofi Global Health Unit collaboration for primary healthcare workers across Africa. This program provided online diabetes education to healthcare providers. It also provided in-person courses across African countries like Malawi, Chad, Togo and Uganda [23]. This program was beneficial because it enabled local nurses and doctors in indigenous communities to learn practical skills which facilitate the early diagnosis and treatment of diabetes. Another notable case to consider is the

Tanzanian Diabetes Association which is an IDF member in collaboration with the national ministry of health. This initiative helped in providing training and educational support in 44 diabetes clinic which was established nationwide [23]. This type of host government-IDF partnership integrated diabetes education into the existing health system, extending reach into indigenous and rural communities.

In indigenous and rural communities, IDF networks organize awareness campaign program and also education at the grass-root level [23]. Currently, IDF Africa network is now made up of 32 member associations in 27 countries and each of them organizes local outreach in cities and remote areas. Just in 2022, IDF Africa member association organized screening campaigns and public awareness programs in several places such as in schools, markets, prisons and workplaces [22]. Educational materials which help in sensitizing the public on diabetes were distributed. Also, school based programs like the global Kids and Diabetes in Schools (KiDS) initiative which was launched in 2013 takes place in some African countries to enlighten school children and their teachers on diabetes and healthy lifestyles to prevent diabetes.

Effectiveness of IDF diabetes education initiatives

Studies show that well-organized education in African settings can improve diabetes outcomes, but effectiveness is lopsided and there are significant barriers. A meta-analysis of diabetes self-management education (DSME) trials in the WHO African Region showed that educational interventions resulted in significantly lower HbA1c as compared to normal care [24]. This implies that there were moderate improvements in the blood sugar control in patients receiving DSME. Also, a few randomized trials in South Africa have shown that group education sessions boost self-care and patient adherence [25]. For instance, people who went to a one-day education program or several group sessions took their medications more days a week and took better care of their feet [25]. The consumption of starchy foods by patients was considerably decreased by another intervention that combined weekly group classes with teaching about community gardening [25]. These findings suggest that African patients, including those from underprivileged communities, can benefit from culturally tailored education that promotes healthier habits and improved glycemic control.

Challenges of IDF diabetes education initiatives

One of the challenges encountered is poor infrastructure facilities and workforce. One scoping review in West Africa significantly noted that there are inadequate clinical spaces and limited avenue for diabetes education [26]. Many primary healthcare facilities do not have reserved space for diabetes education or adequate staffing to carry out the task. When this is absent, educational campaigns cannot penetrate deep into remote villages. Shortages of qualified healthcare professionals also impede program reach [26].

Another challenge faced is cultural and socioeconomic restrictions. Diabetes education system in indigenous communities must tally with local beliefs and culture. Most times, conventional western-style advice often clashes with traditional views [26]. Experts recommend redesigning diabetes education that is rooted in local sociocultural structures such as partnering with local healers or combining nutritional advice with traditional African food [26].

In practice, most of these indigenous patients first consult traditional healers, so purely biomedical education can be restricted. In addition, funding is another significant challenge. This is because the government prioritizes funding for infectious diseases such as HIV and malaria and neglects others like diabetes. Due to this reason, IDF-affiliated initiatives may therefore be project-based or have a limited capacity for expansion. The

IDF–Sanofi training hubs, for instance, show promise, but their long-term viability depends on governments and donors continuing to fund.

Diabetes Education by National Health Systems

Health Policy Frameworks

The increasing outbreak of diabetes in sub-Saharan Africa has led to the need for comprehensive diabetes education policies. Countries like Nigeria, Ghana, South Africa, and Kenya have developed policies which aim to raise public awareness, strengthen primary health care, and provide diabetes education within the available frameworks. However, these policies are not homogenous in their implementation due to the constraints of limited resources and chronic inefficiencies in the health care systems. Where and how these policies are implemented varies widely [27].

In Nigeria, the Federal Ministry of Health has launched the National Strategic Plan of Action on Non-Communicable Diseases for 2019-2025 which lays out goals for the prevention, early diagnosis, and health promotion of diabetes. It places emphasis on media and community outreach campaigns, though has little to no details on funding pathways to achieve these goals [28]. In parallel, the Ghana Health Service reported that the Ministry of Health integrated diabetes in the Non-Communicable Diseases (NCDs) Strategy 2022-2026 and focuses on community health education, training, and improving the detection of diabetes. Despite facing the dual burden of communicable and non-communicable diseases, South Africa has one of the most advanced diabetes frameworks on the continent. South Africa's Integrated Chronic Disease Management (ICDM) model has both a facility-based and community-based components with established programs employing trained community health workers (CHWs) [29]. On the other hand, Kenya has prepared the Kenya National Diabetes Strategy 2010-2015 and the National Strategic Plan for the Prevention and Control of NCDs (2021-2025) which aim to utilize mobile health units, radio programs, and school-based programs for health promotion and education [30].

Community Level Interventions

The majority of national diabetes education initiatives focus on community-based tactics. Community health workers are trained to provide health messages, conduct basic screenings, and refer patients to health centers. They are frequently hired from within indigenous communities. According to [31], this strategy has been successful in raising awareness and promoting lifestyle modifications among rural populations. Radio campaigns and mobile clinics are also frequently used, especially in underserved and rural areas. Important information regarding symptoms, diet, and foot care is provided by government-sponsored radio programs in local languages in Ghana and Kenya. These campaigns are particularly crucial in low-literate communities.

In sub-Saharan Africa, school-based health education initiatives have emerged as essential instruments for early intervention. In South Africa, primary schools in the Western Cape's socioeconomically disadvantaged communities implemented the HealthKick program, a randomized school-based nutrition and physical activity intervention. Teachers worked with students and parents using an action-planning framework to increase diabetes awareness, physical activity participation, and food diversity. According to de Villiers et al. [32], the process evaluation revealed that more than 54% of the planned activities pertaining to diabetes and chronic disease awareness were carried out successfully, indicating their viability and acceptability in school environments with limited resources.

Evidence from Nigeria, as well as South Africa, highlight the difficulties and possibilities of diabetes education in schools. A cross-sectional study conducted in Delta State re-

vealed that while around 88% of secondary school students were aware of diabetes, their understanding of risk factors, symptoms, and preventive measures was alarmingly deficient, with overall knowledge scores averaging merely 3.4% [33]. These results indicate an immediate necessity for organized educational interventions in educational environments to enhance awareness. School-based programs in both countries work together to get important messages across about diabetes risk factors, healthy eating, and exercise. These interventions also have an indirect effect on parents' behavior by getting kids and teens involved, which increases the reach and effectiveness of health education [32, 33].

Challenges Faced by National Health Systems

In spite of these efforts, national healthcare systems continue to grapple with significant challenges in effectively implementing educational programs aimed at diabetes management. There is a lack of funding as most NCD strategies rely on donor funding and lack sustainable domestic investment. The WHO notes that in many African countries, less than 2% of the national health budgets allocated to NCDs, which includes diabetes [34].

There is a lack in workforce training. Most primary care clinicians receive little to no training in diabetes education. This is worsened by high turnover rates in staffing, particularly in rural regions. Additionally, inadequate surveillance systems restrict determining the outcomes of educational programs. Few countries have reliable, comprehensive data on the prevalence of diabetes and rates of patient adherence which hampers the evaluation of the impact of educational initiatives.

Impacts of Diabetes Education

The International Diabetes Federation (IDF) role has involved the development of solid frameworks for healthcare workers and the certification of educational programs that comply with standard guidelines. Programs certified by the IDF offer standardized educational materials and training methods which can be adjusted to local needs while keeping global quality standards. The accreditation process guarantees that educators have current evidence-based knowledge and teaching skills. Additionally, IDF supports the inclusion of multidisciplinary teams such as diabetologists, dietitians, physicians, nurses, pharmacist, diabetes educators, psychologists, and other relevant professionals to enhance patient engagement and tailor education delivery [35]. This educational structure helps provide consistent and scalable diabetes self-management education (DSME) programs around the world, hence, improving the overall effectiveness of diabetes care initiatives.

Despite certain challenges, some national health systems have made progress toward integrated care models that include clear pathways for diabetes education. Some systems are trying centralized education centers and community outreach to improve access and consistency. New strategies, like using opinion leaders and feedback for healthcare providers, show promise in overcoming resistance to change [36].

Research on IDF-certified education programs shows clear improvements in important health outcomes. Studies report lower HbA1c levels, meaning better blood sugar control, along with positive changes in body mass index (BMI) and blood pressure after participating in these structured programs [37]. Patients also become more active and stick to monitoring their blood sugar more closely. The lasting effects suggest that IDF programs successfully encourage behavior changes that lead to real health benefits. Results from national health systems (NHS) diabetes education programs revealed many national programs reported better blood sugar control, although differences still exist, often related to location, healthcare settings, or socioeconomic status [38].

IDF-endorsed integrated education and care models have shown promising cost-effectiveness by lowering consultation costs and delaying the onset of costly diabetic complications [38]. For example, studies comparing integrated outpatient clinics that deliver IDF-aligned education with traditional care models reveal significant cost savings, especially for type 2 diabetes patients, through more efficient use of resources and lower complication rates [38]. These models use multidisciplinary teams and structured education to improve care quality while managing costs. The savings help ease financial pressures on health systems and also improve patient quality of life by preventing costly hospital stays and interventions in advanced stages of disease.

Gaps in Diabetes Education among Indigenous Africans

Across sub-Saharan Africa, diabetes education for indigenous communities faces many challenges. Cultural differences, low literacy levels, remote locations, and weak links with traditional health systems all make it harder to reach these populations. Often, educational materials are not adapted to fit local cultures, so many indigenous people do not engage with them because their health beliefs are quite different from Western medicine [34]. Another big obstacle is low literacy. Most indigenous people in rural areas have little formal schooling, making it hard for them to understand written materials. Health messages on posters or pamphlets do not work well when they are not shared through channels people actually use or in local languages [15].

Geography and poor infrastructure make things worse. Many indigenous groups live far from health centers, and outreach efforts like mobile clinics or radio programs are often inconsistent due to lack of funding. Also, community health workers often do not get enough training, which makes these programs less effective [29]. Another major issue is that formal diabetes education often does not connect with traditional healers or community elders, who many indigenous people trust first for health advice. Without working together with these trusted figures, educational programs risk being ignored or seen as untrustworthy by the communities.

Weaknesses in surveillance systems and health policy implementation make it difficult to build effective educational programs. Without reliable data on diabetes rates among indigenous populations, it is difficult to allocate resources properly or design interventions that fit the needs of specific communities [39]. To improve diabetes education for indigenous Africans, we need culturally relevant materials, simple interventions for those with low literacy, strong community involvement, and connections with traditional health systems. Without these efforts, health gaps will continue, and diabetes education programs will not reach their full potential.

Conclusion

The increasing prevalence of diabetes among indigenous Africans shows the urgent need for targeted education. The collaborative efforts of the International Diabetes Federation and national health systems in employing the use of diabetes education has ultimately led to the beneficial outcomes of diabetes control among indigenous Africans. Furthermore, increased successes can be achieved with the programs tailored to be more culturally sensitive and community-focused, with proper training of indigenous community health workers, integration of traditional healers, and provision of educational materials need in local dialect to address literacy challenges. Also, governments must invest in robust data-gathering practices to monitor diabetes trends in indigenous groups and ensure long-term funding by incorporating education programs into national NCD strategies.

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