ARTICLES

DIABETES MELLITUS COMPLICATIONS IN SUB-SAHARAN AFRICA

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ABSTRACT:
Diabetes mellitus, commonly known as diabetes, is a non-communicable disease whereby a person’s pancreas is either incapable of producing or unable to use insulin in the body. The disease and its complications are growing in different parts of the world. It has been predicted that by 2035, there will be over 205 million diabetics in the world. It has been hypothesized that diabetes complications is highly prevalent in many African countries due to high medication cost, lack of early diagnoses and treatment, low economic standing, and culture-influenced beliefs about the disease. To address this hypothesis, a literary review was conducted on peer-reviewed articles. PubMed and Google Scholar were searched using the keywords: diabetes, diabetes in Africa, diabetes complications to retrieve these articles. The articles were read and evaluated by one reviewer and information was extracted to generate conclusion about the hypothesis. The research found that the high influx of diabetes complications in Sub-Saharan Africa is correlated with the low economic status of countries within this region. Also high reliance on traditional medicine leading to delayed treatment also influences the prevalence of complications. This research also sought to identify the most effective preventative measures for these complications (e.g. optimal diet, exercise, access to effective medications) and the availability of these measures in the Sub-Saharan African regions. It was determined that countries in Sub-Saharan Africa lacked access to optimal medications, which is the most effective preventative measure. Future studies should focus on ways to improve this preventive measure to optimize diabetes control in these regions.

INTRODUCTION:
Diabetes mellitus is a non-communicable disease whereby a person’s pancreas is either incapable of creating or utilizing the bodily insulin. There are different forms of diabetes with type I and II being the most common. The exact cause of type I diabetes is currently unknown, but it is speculated to be autoimmune associated. Thus, it cannot be prevented and it is often characterized by the body’s inability to produce insulin. The onset of type II diabetes is caused by the body’s inability to utilize the insulin that is created, and is speculated to be contributed mostly by obesity. In fact, obesity accounts for 90% of diabetes cases. Approximately 90% of the people in the world with diabetes have type II diabetes. Diabetes afflicts 347 million people in the world, with over 80% of cases affecting individuals in low-income countries. People with diabetes are at a higher risk of developing other diseases than non-diabetic individuals. Diabetic complications can be categorized as micro- and macrovascular. Microvascular complications are a result of small blood vessel damage, and may include retinopathy (damage to the eye potentially leading to blindness),
nephropathy (damage to the kidneys potentially causing kidney failure), and neuropathy (nerve damage consequently leading to loss of limbs and/or senses).\(^6\) Diabetic neuropathy is the most common of these complications, leading to the need for amputations of the limbs of the lower extremity.\(^7\) In contrast, macrovascular complications occur due to damage in the large blood vessels, and include diseases related to the cardiovascular system.\(^4\) Through a process called atherosclerosis, hyperglycemia causes the damage of large blood vessels. This decreases the inner circumference of arteries preventing blood from flowing through them easily to the heart, the brain, and other parts of the body. The end results are heart attacks and strokes, as well as decreased healing of infections.\(^4\) Complications are not exclusive to any one type of diabetes, patients with either type I or type II diabetes experience a variety of these complications.

The focus of this study was to discover if economic and cultural factors are what increase the likelihood of diabetes complications in Africa, specifically in Sub-Saharan countries. It was also hypothesized that Sub-Saharan African countries do not have the effective preventive measures available to save the lives of their diabetics. This research was conducted, due to a lack of knowledge of the epidemiology of diabetic complications in Sub-Saharan African countries.

**METHOD:**

Multiple scientific journal articles from 2008 and onwards were researched on the databases PubMed and Google Scholar using the keywords: diabetes, diabetes in Africa, and diabetes complications to retrieve these articles. The articles were reviewed and evaluated based on their content and relevance to the topic. Articles with just abstracts available were not considered, only full-text articles were viewed. The qualitative and quantitative reports of the articles were noted and compared in order to form a conclusion.

**RESULTS:**

It was observed that the lowest proportion, less than 1%, of global health expenditure on diabetes is in Africa.\(^6\)

- For every 10,000 people in Africa, there are 2 doctors and 11 midwives or nurses available.\(^4\)
- 76% of diabetes-related deaths in Sub-Saharan Africa occurred in people below the age of 60.\(^6\)
- Africa experiences at least 63% of the world's undiagnosed diabetes.\(^6\)

**DISCUSSION**

The primary treatment and monitoring device for diabetes is insulin and the glucose meter respectively. Due to the high cost of insulin and glucose meters, many diabetics in Sub-Saharan Africa are unable to afford these important tools.\(^6\) Lack of insulin can lead to poor glycemic control, which is one of the leading causes for diabetic complications.\(^8\) High costs of medications and treatment devices drive people to rely on traditional, less effective medicines for a cure. Many traditional healers promise a cure at reasonable costs; however, their knowledge on diabetes may be limited or out-dated. In the early stages of their illness, most Africans seek out traditional healers and only seek hospital care after they had already developed complications as a result of their ailments.\(^8\)

In this study, it was observed that the most effective measure to prevent diabetic complications is good glycemic control through healthy living and optimal medicine treatments.\(^9\) Unfortunately, many people in Sub-Saharan Africa are unfamiliar with optimal exercise regimes and healthy eating habits as a remedy to prevent diabetes, because they (and their health care workers) are not well informed of these matters.\(^10\) Ultimately, the availability of medication, constant monitoring, and adopting of good health habits can either prevent the onset of diabetes or detect the illness in its early stages, but are often inaccessible to patients in Africa.

In fact, when patients seek hospital care, they are often misdiagnosed with other common diseases such as malaria, due to lack of knowledge related to diabetes-related illnesses. By the time a proper diagnosis is made, the disease has progressed into its late stages and complications have begun to occur. Due to the fact that obvious complications and symptoms occur during the late stages of diabetes, there is little incentive to fund diabetes-related research and initiatives in Africa. Thus, diabetes is not viewed as a widespread epidemic, compared to communicable diseases such as HIV/AIDS and tuberculosis, which have plagued the continent for ages. This lack of acknowledgement makes constant monitoring of diabetes a challenge because patients...
do not have regular access to doctors. Additionally, the health care system in many African countries is quite poor in terms of finances and adequacy, leading to the unavailability of treatment and adequate treatment facilities for diabetes. Specifically, the lack of adequate health care and education in Sub-Saharan Africa hinders the ability of diabetics to attain good glycemic control and therefore enables the prevalence of diabetes complications.

CONCLUSION
Diabetes afflicts large masses of people around the world, the majority of which are in Africa, specifically in the Sub-Saharan regions. Many of these diabetic cases can cause mortality, because diabetic patients in Sub-Saharan Africa encounter serious diabetic complications due to socioeconomic barriers such as poverty and cultural barriers such as the belief in traditional healers. As shown in the literature, the most effective prevention against type II diabetes complications is proper glycemic control, which can be achieved through proper education on lifestyle changes and improved accessibility to effective medications. Non-communicable diseases such as diabetes warrant greater attention from African governments to ensure optimal management and improved quality of life in all affected citizens. Additionally, the reluctance of diabetics in Africa to see doctors and rely on traditional healers should be taken into consideration when determining how to optimally control and prevent diabetes complications. Thus, it is recommended that the African governments invest in educating traditional healers and health care practitioners, in order to properly inform and diagnose their patients.

REFERENCE: