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Short Communication

TYPE 1 DIABETES DILEMMA IN SUB-SAHARAN AFRICA.

Dr Chrysanthus Chukwuma Sr

Executive Director, Centre for Future-Oriented Studies
Abakaliki, Ebonyi State, Nigeria

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For Correspondence
Email ID:
Cfos_nigeria@yahoo.com

Abstract

Type 1 diabetes is a rigorously studied metabolic and human disease that mostly affects young people, and it is dependent upon human insulin and insulin analogs for its control. The Type 1 diabetes has low-frequency incidence in sub-Saharan Africa than I n more advanced societies, ostensibly due to delayed onset in Africa. However, it is projected that in the foreseeable future that the trend may metamorphose into an increase in the frequency rate in sub-Saharan Africa due to cross-cultural and other influences. Due to pecuniary difficulties, socioeconomic status and awareness, inadequate healthcare and clinical settings, the increase in morbidity and mortality associated with Type-1 diabetes may increase at a frightening rate in Sub-Saharan Africa.

Keywords: IDDM, mortality, morbidity, costs, clinical features, hyperglycemia, constraints, challenges

Introduction

Diabetes mellitus constitutes one of the most intensively researched metabolic alterations and human disorders in the annals of the history of medicine. Although variants of the major symptoms of diabetes were initially described in ancient periods followed by the isolation of insulin over decades ago, there is no extant perspicuous explication and elucidation of the basic biochemical defect (s) in the disorder. Thus, diabetes remains a serious and important health dilemma of grave concern, pervading populations worldwide, especially in developing countries, as the African continent [1]. Diabetes is an intricate and complex impairment of the autoimmune variety, exhibiting diverse types and magnitude of pathology with astronomical economic costs [2]. It depicts a familial disease; vulnerability to diabetes presents an expansive genetic and environmental component [3]. Physical exercise as well as the quality and quantity of the diet present

formidable impact on its incidence with decreased impact in times of famine and increased in times of affluence [4]. The healthcare system and the pharmaceutical establishment have the urgent functionality for the control or eradication of type 1 diabetes complications, and to control the life-threatening ailments which they present. Improvement of newfangled pharmaceutical drugs at affordable costs and prices need to be made available as new remedies in the present and in the future in order to provide hope and succor for long-term existence and better quality of life.

Clinical and economic features With other parameters

Mortality-linked- type 1 diabetes has ostensibly declined because of the identification and expansive application of insulin and insulin analogs [5]. However, this significant achievement has not been applicable to a vast majority of LDCs, especially those in sub-Saharan Africa. The major issues relating to IDDM or type 1diabetes include missed diagnosis and non-availability of insulin to children or young adults in sub-Saharan Africa with resultant imminent mortality [1].

Insulin is important but not enough for the improvement of the prognosis for patients presenting with diabetes. A Rapid Assessment Protocol procedure may be applied to designate issues in diabetes healthcare delivery in the provision of health personnel, medical supplies, diagnostics, monitoring [6] and evaluation facilities.

Diabetic ketoacidosis, DKA presents as the most prevalent hyperglycaemic emergency in diabetes with increased mortality in both treated patients and those with the nascent presentation of the disease in sub-Saharan African clinical settings [7]. The major aetiological agents or precipitators of DKA in sub-Saharan Africa patients are newly diagnosed diabetes, missed insulin dosage and presenting or precipitating infections or parasitoses. The principal underlying mechanism is impairment in insulin production with resultant deficiency, thereof. Insulin doses are missed due to diverse reasons, such as missed clinics, non-availability, and non-affordability of insulin due to astronomical costs to the vulnerable populations and deficient nutritional status [5]. Intensive insulin therapy in the sub-optimal nutrition patient induced or deteriorated by diabetes gives a semblance of "re-feeding syndrome" [8]; thus, presenting an acute anabolic condition with unfavorable outcome during the diabetic ketoacidosis treatment. With elevated morbidity and mortality due to diabetic ketoacidosis in sub-Saharan Africa, it is pertinent to make provision for education, nutrition, poverty eradication, adequate health care systems in combination with reliable and veritable insulin supply to immeasurably revert the trend for the improvement of health, self-care and living with the diabetes state [7], as in uncontrolled diabetes. The application of capillary ketone monitoring in type 1 diabetes and severe diabetic ketoacidosis management is relevant. The utilization of capillary ketones significantly reduces the duration of intensive insulin therapy with resultantly decreased admission rates and costs [9]. A long-term outcome investigation of type 1 diabetes in South Africa depicted substantial mortality due to a renal failure associated with diabetic nephropathy that was inextricably linked to a deficiency of adequate facilities for renal management and therapy [10]. However, survivors of type 1 diabetes present with long-term prognosis and absence of deranging complications. Currently, it is well-nigh impossible for sub-Saharan Africa to acquire the standard of care provided and available to children in resourceful countries presenting with type 1 diabetes [11].

Whereas there have been expansive improvements in the awareness, information, knowledge, epidemiology, and management of type 1 diabetes in the industrialized countries, there are extant deficiencies in the healthcare management and states of this condition in sub-Saharan Africa and other non-industrialised countries. There is a paucity of data on the exact diabetes burden, and the available data are merely anecdotal, and are not generally population-based; thus, the presenting data are not based on specificities. Irrespective of these strategic restrictions, the populations involved may be useful in the determination and establishment of the aetiological factors and natural history of type 1 diabetes for its effective and efficient management and preventive measures with its accompanying sequelae in a multidisciplinary dimension with specialized clinics [12]. The limited available data for type 1 diabetes in sub-Saharan Africa is suggestive of a low frequency and that onset age is delayed than in industrialized nations. There is evidence implicating genetic and immunologic factors as well as HIV/AIDS and other parasitoses in predicting diabetes prevalence [13]. As there remains a myriad of health system impediments perpetuating inadequate diabetes control, sub-Saharan Africa persists in having the highest global diabetes-linked mortality rate. Rural communities are deficient in the access to adequate monitoring and evaluation of glucose and other crucial biologic tests. Several of these diabetes patients are recipients of random blood glucose readings merely during clinic visitations. This tendency presents abysmal clinical value in the determination of disease adjustments in the instance of constricted therapeutic index medications, such as insulin, and access to physical examination procedures as well as several other blood tests for the detection of transient or early signs of diabetes complications. It is suggested that routine access to hemoglobin A1c (HbA1c) may provide latitude for stringent or ardent monitoring of diabetes control and critical data regarding the population level at risk to diabetes complications [14]. Adequate political will, pecuniary feasibility, contextual research empowerment and access to HbA1c test is vital to curbing the elevated diabetes-linked mortality rates in rural areas of sub-Saharan Africa. In the application of improved prescribed daily dosage adjustments and maintenance of blood glucose control, there persists increased body weight. A comparison of the basal NPH in combination with prandial insulin regimen twice daily, it was found that biphasic insulin was linked with a statistically significant elevation of BMI, as baseline HbA1c and BMI were significantly proportional to time-varying BMI [15]. With human insulin usually inducing weight gain over time, irrespective of the level of glycaemic control achieved, there is a disproportionate lower weight decrease for male patients in contradistinction to female subjects. Ostensibly similar results have been obtained [16, 17]; although, remains controversial [18]. On the whole, the factors essential for better glycaemic control include adherence to insulin and blood glucose monitoring, diet control, maternal primary caregiver and caregiver knowledge of diabetes [19].

Discussion and Conclusion

In recent decades, the worldwide health index has rapidly metamorphosed from infectious or communicable diseases as the paramount aetiological agents for morbidity and mortality to non-communicable diseases which are ostensibly leading the pack. However, there are expansive variants across regions in disease dissemination as sub-Saharan Africa is desperately and persistently burdened in this age and clime with competing health

priorities, scarce human and pecuniary resources in the instance of type 1 diabetes dilemma [20]. Recent times have witnessed the polemics inundated with budget cuts in the management, awareness, and treatment of the constraints and challenges concerning diabetes and related diseases states, with particular reference to LMCs [21]. There must be a realizable and veritable model or strategy to ameliorate the risk of diabetes development and its complications in sub-Saharan Africa.

Constraints and challenges due to difficulty in insulin access have been noted in low-income and middle-income countries including high-income countries, in vulnerable populations [5]. Although a vast majority of African countries currently have a low diabetes incidence, it is predictable that there will be an elevated incidence in the foreseeable future due to cross-cultural and societal influences. It is pertinent that governmental policies in healthcare programmes must inculcate substantial sustainable measures to harness and curb such debilitating increases [22].

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