



What We Knew Versus What We Know Now: Diabetes

Dumo N*

Department of Public Health, Nkumba University, Uganda

*Corresponding author: Neema Dumo, Department of Public Health, School of Sciences, Nkumba University, Uganda, Email: dumoneema@gmail.com

Received Date: October 04, 2024; Published Date: October 21, 2024

Abstract

Diabetes has been at the centre of many a debate in the public health space; experts in the field have carried out numerous studies into how this disease manifests and what it is exactly. Here, we explore the intricacies of the disease and its manifestation throughout the years.

Keywords: Diabetes; History; Prevalence of Diabetes; Epidemiology; Nutrition

Abbreviations

IDF: International Diabetes Federation; IGT: Impaired Glucose Tolerance; DIP: Diabetes in Pregnancy; HIP: Hyperglycemia in Pregnancy; GDM: Gestational Diabetes Mellitus.

Introduction

Human beings rarely concur with each other's ideology without evidence of proven facts present. As members of the homo-sapiens clan, we are innately predisposed to question every single piece of evidence presented in front of us. We are beings that like to ask the questions like, why? How? - A factor that physicians heavily dwell on for diagnostic purposes. In the early 1500s, questions were posed as to why certain people had developed the ability to excrete "sweet urine" or why the rich developed a particular sequence of diseases with similar characteristics. That sequence includes obesity, hypertension, and frequent urination (polyuria). Due to the novel and fatal nature of Diabetes, scientists from ancient Egyptian, Indian, Chinese, and Greek civilisations all had a stake in the fight against the disease. Diabetes as a disease has been on the minds of scholars for quite literally millennia for the most hilarious of reasons-the symptoms [1]. The peculiar nature in which this disease disrupts

normal body physiology is astounding and brought forth many ideologies. Philosophers and physicians like Sushruta in ancient Indian civilisation assert in their writings that diabetes is "madhumeha" which means honey-like urine. He went further to state categorically that this novel disease not only had sweet-tasting urine but also, the liquid excreta had a sticky consistency. The symptom quite literally defined the disease and made it hard for other physicians to find another way to title Diabetes properly. It may baffle the contemporary reader that these assumptions about diabetes were formulated in the 5th Century B.C. By that time frame alone, the dire situation that the presence of Diabetes had prompted an investigation into the matter. People simply had to know why the aristocrats only got sick with these weird symptoms. "What was in their food and or surroundings that made their urine taste sweet? Why did the common citizens not fall prey to the disease" That curiosity bore newer more plausible ideas on the disease-diabetes.

The confusion created by Sushruta (5th Century-B.C.) and his learned colleagues from different parts of the globe led to the selection of the sole Greek physician Aretaeus of Cappadocia (2nd Century-A.D.). His work focused on air components and how they affect the human body; also, the curative interventions that could be formulated for chronic

conditions. Aretaeus created two compiled writings, the “De causis et signis morborum acutorum et diuturnorum” which was on the causes and symptoms of acute and chronic diseases. He then worked on the “De curatione morborum auctorum et diuturnorum” which focused on the cure of acute and chronic diseases. Consequently, through simple observation, he found that diabetes is a chronic disease that majorly affects the kidneys and bladder; those that have it have an insatiable thirst that cannot be filled [1]. The skilled physician managed to observe that Diabetic patients had a long stream of urine that was sweet in nature. Like modern scientists, Aretaeus worked with the guidelines set by his predecessors like Rufus, the Ephesian (1st Century-A.D.). It was from their findings that Aretaeus found that the use of cereals, wine, and milk can be beneficial in managing Diabetes and could slow down the death process. The observation was that those with the disease are often overweight to some degree and have a slight increase in their intestinal heat. Essentially, this philosopher observed that people with Diabetes were attacked from all angles by a disease that was not spread from person to person aerobically. Regardless of the crude method of data collection for the diagnosis of a disease, Aretaeus had the ears of his colleagues during his time and those of the present because he wrote in the Ionic dialect. This is a dialect of the ancient Greek language that is spoken and written by natives of Athens, Attica, and Iona. These philosophers and early savants of the medical profession paved the way for the contemporary nutritionists and doctors to better understand Diabetes accurately. Granted, the progress took a long turn to get to professionals in the 21st Century; nonetheless, the effort is appreciated immensely. There was no way to understand exactly how this disease affects the human body without the observations and writings of those that came before. We have to gawk at how many hurdles they had to have gone through in order to give us the information we never knew would become vital in the progression of life.

Diabetes Prevalence

Contemporarily, the incidence rate of diabetes is on the rise and it not only affects the developed population but has also crept into the developing world as well. The disease is defined as the inability of the body to either produce insulin or be insulin-sensitive. This is due to numerous reasons including genetic mutations and inheritance, unhealthy life choices, pregnancy complications, and pancreatic impairments. In the modern world where fast food is the order of the day, it is no surprise that the overall prevalence of Diabetes is steadily on the rise. The World Health Organisation has warned countries of the impending population problem that may occur if the incidence of this non-communicable disease is not curbed. Diabetes is not a respecter of persons with regard to age, creed, race, ethnicity, nationality, income

bracket, or level of education. Naturally, several surveys have been undertaken with the most recent being that done by the International Diabetes Federation (IDF) [2] has reported alarming numbers.

Currently, the recorded number of adults living with diabetes is over 500 million. This denotes that for every group of 10, there’s one known individual with the disease. It is predicted that over time, this number will quadruple reaching between 643 million to 783 million by 2030 and 2045 respectively. The statistics are even more confusing in that 3 in 4 adult’s diagnosed hail from low- and middle-income countries; evidence showing that this is not a “rich man’s” disease only as was earlier thought true by specialists. Understandably, the death toll attributed to diabetes has seen an all-time high reaching 6.7 million deaths by 2021. One would wonder just how far the numbers will rise if appropriate interventions are not put in place. As if to add insult to injury, there are 541 million adults who have Impaired Glucose Tolerance (IGT).

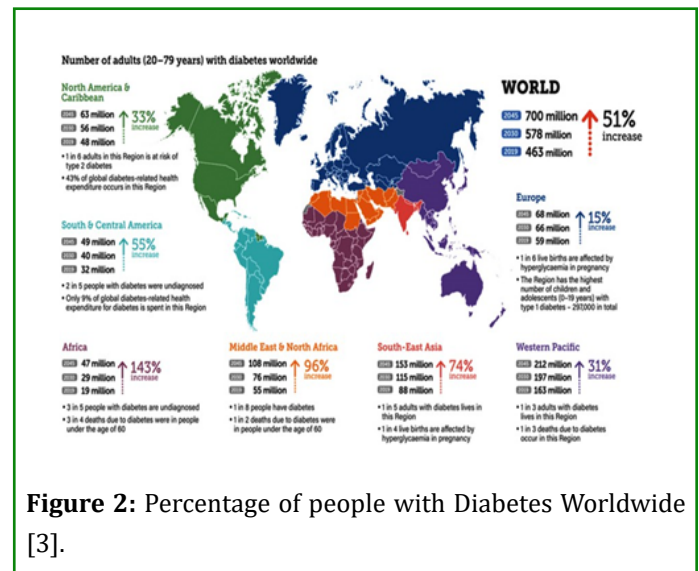


Figure 2: Percentage of people with Diabetes Worldwide [3].

As human beings traversed through the centuries, scientists believe that evolution followed them keenly. The homo-sapiens that had begun living nomadic primitive lives discovered fire and clothes [4]. They learned how to build their homes and found that it was safer to live in colonies. These erected communities helped them stand against predators that could come into their lives. The African people have lived this way for hundreds of years and some still do today. There has been a shift in recent times due to the burst of development. African people in major cities across the continent like Nairobi, Johannesburg, Cairo, and Abuja have a sedentary way of life. Gone are the hay days of picking fruit, hunting, and gathering for survival; with a few simple keystrokes on a laptop and food is delivered right to the doorstep. People are less likely to walk for long distances in major African cities. With this decline in activity, coupled

with an increase in carbohydrate-rich foods, obesity and its comorbidities easily follow. African countries throughout the discovery phase of diabetes were not considered a troubled area. This is because of the nature of the food prepared and the activity level that citizens within the African region have had within their ranks. In the past, scientists would have only focused on collecting data from developed countries where they believed the abundance of lifestyle-related ailments is prevalent.

Furthermore, there are unique challenges faced by individuals living with diabetes in the African context. Limited access to affordable and quality healthcare, including diabetes education and medication, poses barriers to effective diabetes management. Here, people's cultural beliefs and misconceptions about diabetes can also hinder prevention efforts and adherence to treatment plans. The impact of diabetes extends beyond individual health, affecting families, communities, and healthcare systems. Diabetes-related complications, such as cardiovascular disease, kidney failure, and lower limb amputations, pose significant burdens on individuals and their families, as well as on healthcare resources. Addressing the rising prevalence of diabetes in Africa requires a comprehensive approach that includes public health interventions, health education campaigns, and improved access to affordable healthcare services. By raising awareness, promoting healthy lifestyles, and improving diabetes management and care, it is possible to mitigate the impact of diabetes and improve the quality of life for individuals living with this condition in the African context.

Importance of Exercise in Diabetes Management

It is ludicrous to force an understanding of just how vital exercise is in the realm of diabetes and its management without defining exercise. Unsurprisingly, numerous scientists have tried to define what the term actually entails; all of whom brought up similar key factors. Exercise is simply the act of doing a repetitive action at a particular pace [5-7]. Unfortunately, the masses have been cajoled into believing that heavily vigorous activity alone can be regarded as effective. Nothing can be further from the truth; simply doing things like dancing, walking, swimming, and climbing is valid and recommended. Physical activity a.k.a. exercise has a plethora of positive effects that the medical fraternity has put its leg in the race. The World Health Organisation urges adults to have 300 minutes of moderate-intensity exercise every week. Let not the hefty nature of the exercise minutes deceive you, it is very doable. By cleaning your house, cooking, and taking a few walks per week the 300 allocated minutes can be easily vanquished. Now this does not necessarily mean that those who do high-intensity exercises are overdoing things—a simple change in the numbers is all it takes. Instead of the

300 minutes, do 150 minutes instead to achieve the goal that you want especially if it is a healthier physiological body that you are after. Contrary to popular belief exercise can be easy and when tailored to the individual is also enjoyable; there are so many people with positive testimonials regarding exercise and diabetes management who do not exactly over-exert themselves.

"I was diagnosed with type 1 diabetes 31 years ago, and at that time, diabetics were treated like fragile dolls. There was a huge list of things that I would never be able to do because it would throw off my blood sugars- I'd either die of hypoglycaemia or have my legs amputated and go blind from hyperglycaemia. As time went on I started to give up on having a long life and started trying out all of those things on the "can't do" list. I found that I LOVE hiking and after I didn't die on the Pacific Crest Trail, have taken on long trails all over the US and Canada. Being constantly active is AWESOME for my blood sugars, and because of that, I am able to keep up with my two healthy, hyper kids (another thing that was absolutely impossible 30 years ago). Today I run, hike, and lift almost daily. A few times a year I volunteer at the hospital by my house, talking to young people who are newly diagnosed with diabetes. I show them pictures of where I've been and all of the "impossible" things I've done, so they know that diabetes isn't a death sentence." - Emmay Friedenson [8].

A diabetes diagnosis to most sounds like a definite death sentence primarily owed to the various stressful symptoms and signs. Physiological aspects like diabetic-related retinopathy, limited movement, issues with clotting, and the constant balancing act with insulin levels do not do much to ease the minds of those ailed persons. Then, psychological issues then ensue especially with children who are predisposed to peer pressure and the need to fit in with their contemporaries [9-11]. These children, unlucky enough to be diagnosed, even find it hard to focus in the class because of the bullying as uncouth as it sounds; humans, even little ones tend to fear and mock aspects of others that they do not know. It is known that diabetes comes in various forms namely; type I and II diabetes, gestation-related diabetes, and other concurrent afflictions that may arise. Currently, early onset diabetes in children is on the rise and is at 3% annually depicting a clear sign of a steady occurrence of the issue. Furthermore, records show that children unlike adults are highly sensitive to insulin; hence, they are more likely to develop ketoacidosis. This is a detrimental life-altering condition where an individual's body starts breaking down fat at a faster rate than normal. Here, the liver breaks down fat into ketones which are not hydrolysable by the kidneys from blood. Basically, it is often characterized by excessive thirst, frequent urination, nausea, and vomiting. From the name alone, this is a toxic situation and causes mortality in some instances. The statistics state the death rates are

less than 1% showing that mortality is rare but plausible. Women are not any safer from diabetes and its effects; they face hyperglycemia in pregnancy (HIP) which can develop into diabetes in pregnancy (DIP) and then, gestational diabetes Mellitus (GDM). The impact of which has skewed the total global diabetes II statistics causing scientists to find applicable interventions to the problem. For Diabetes management, the general consensus is that physical exercise assists in the management of the disease [12]. Although the reasons are numerous and varied, specific derivations have long since been investigated and proved.

Conclusion

Despite changes and improvements that savants in the diabetes prevention, treatment and care field have engendered regarding this disease and how it is handled, little impact is seen in the way of impact. It is alarming that the general public, especially the rural global South, is completely oblivious to the growing prevalence of Diabetes within their communities. Healthcare providers, policymakers and other actors need to factor in emphasizing and harmonizing sensitization efforts in diabetes mellitus hotspots as a viable means of mitigating the disease prevalence.

References

1. Karamanou M, Protogerou A, Tsoucalas G, Androutsos G, Poulakou-Rebelakou E (2016) Milestones in the history of diabetes mellitus: The main contributors. *World Journal of Diabetes* 7(1): 1-7.
2. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, et al. (2022) IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Research and Clinical Practice* 183: 109119.
3. Abbasitabar M, Franak R, Mirzaei S, Direh ZK, Ahamadi S, et al. (2022) Improve data classification performance in diagnosing diabetes using the Binary Exchange Market Algorithm. *Journal of Big Data* 9: 43.
4. Gopalan S, Berl RE, Myrick JW, Garfield ZH, Reynolds AW, et al. (2022) Hunter-gatherer genomes reveal diverse demographic trajectories. *Current Biology* 32(8): 1852-1860.
5. Amanat S, Ghahri S, Dianatinasab A, Fararouei M, Dianatinasab M (2020) Exercise and Type 2 Diabetes. *Advances in Experimental Medicine and Biology* 1228: 91-105.
6. Kanaley JA, Colberg SR, Corcoran MH, Malin SK, Rodriguez NR, et al. (2023) Exercise/Physical Activity in Individuals with Type 2 Diabetes: A Consensus Statement from the American College of Sports Medicine. *PubMed Central* 54(2): 353-368.
7. Hamasaki H (2016) Daily physical activity and type 2 diabetes: A review. *World Journal of Diabetes* 7(12): 243-251.
8. Tamkins T (2019) 19 Moving stories from people who used exercise to change their Life. *Buzz Feed*.
9. Patterson CC, Karuranga S, Salpea P, Saeedi P, Dahlquist G, et al. (2019) Worldwide estimates of incidence, prevalence and mortality of type 1 diabetes in children and adolescents: Results from the International Diabetes Federation Diabetes Atlas, 9th (Edn.). *Diabetes Res Clin Pract* 157: 107842.
10. Yuen L, Saeedi P, Riaz M, Karuranga S, Divakar H, et al. (2019) Projections of the prevalence of hyperglycaemia in pregnancy in 2019 and beyond: Results from the International Diabetes Federation Diabetes Atlas, 9th (Edn.). *Diabetes Res Clin Pract* 157: 107841.
11. Dumo N (2023) Physical Exercise and Its Impact on Diabetes in Uganda. *Biomedical Journal of Scientific & Technical Research* 48(5): 40079-40080.
12. Zheng J, Cheng J, Zheng S, Zhang L, Guo X, et al. (2018) Physical Exercise and Its Protective Effects on Diabetic Cardiomyopathy: What Is the Evidence? *Frontiers Endocrinology* 9: 729.