Socio-Economics, Lifestyle and Association with Diabetes: A Short Review of the Literature

Abimbola Oluseyi Ogunsola, Olayinka K. Binuomoyo

Abstract—While socio-economic status (SES) and lifestyle have been isolatedly considered as key social factors affecting the prevalence of metabolic disorders like Type II diabetes mellitus, there had not been clear-cut analysis of the simultaneous relationship and impact of the two as diabetes risk factors. SES such as income, education, housing, access to primary health care services and lifestyle factors such as physical inactivities and dietary choices are the primary influencers and predictors of health outcomes. Highlighting the role that SES and lifestyle factors play in the development and progression of Type II diabetes could be central to effective development of primary intervention strategies. The aims of this paper were: (1.) to identify, distinctly from literature, the sub-factors associated with diabetes as lifestyle and socio-economic factors, and (2.) to discuss how the association of lifestyle and SES, in a simultaneous relationship, affect the incidence of diabetes. Studies have shown that type II diabetes is largely preventable through diet and lifestyle modifications. To curb the escalating diabetes epidemic, primary prevention through promotion of a healthy diet and lifestyle should be a global policy of priority.

Keywords— Type II Diabetes, incidence, Lifestyle, Socio-economic, Risk factor, health

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I. INTRODUCTION

Type II Diabetes has become a leading threat to public health globally, particularly in developing countries, due to rapid urbanization, nutrition transition and increase in sedentary lifestyle. Though, formerly commonly referred to as "affluence disease", it is now increasingly common among the poor, making it relevant to both developed and developing countries, as the prevalence of diabetes continue to increase worldwide, along with its socio-economic influence [1]. In developed countries, type II diabetes has become the third leading disorder after cancer and heart disease, with associated complications like heart and kidney disease, poor wound healing resulting in amputation of limbs, visual disorsders and premature death.

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More worrisome is the correlation of diabetes with other metabolic disorders like obesity and hypertension. In a report by the World Health Organisation (WHO), the population of diabetic patients will increase by 122% by the year 2025, with 170% increase in the number of patients in developing countries, from 84 million to 228 million [2]. As at 2013, 382 million persons across the globe have been diagnosed with type II diabetes [3]. In Nigeria, 5.12% of the total population which is approximately 8.19 million is reported to have diabetes, with type II diabetes accounting for about 90% of the cases [4].

Diabetes is an abbreviated term for diabetes mellitus and there are three main forms namely Type I (relating to the destruction of insulin-producing pancreatic β cells resulting in deficiency of insulin), Type II (a condition where the body becomes resistant to the effects of insulin), which is the most common type, and gestational diabetes (occur during pregnancy, with those affected having a higher risk of developing Type II diabetes in future) [5]. Diabetes results following poor glycaemic control, which is an inability of the body to regulate circulating blood sugar (glucose) levels also termed hyperglycemia.

Normally, blood glucose is maintained through a hormone produced in the pancreas called insulin which enhances the uptake of glucose from blood into the tissues, while also promoting the storage of blood glucose in the liver, thereby regulating glucose level in blood.

The incidence of type II diabetes have in the past been linked to people's socio-demographic characteristics, or attributed to social or economic class, but this has been proven as not always so [6]. And while previous studies have discussed the individual's dietary and lifestyle patterns as risk factors for diabetes, there had not been distinct analysis of the interrelated effects of lifestyle and socio-economics on diabetes.

Socio-economic factors as related to health refer to the conditions in which people are born into, live in, work, grow and age in. It is important to note that the role of socio-economics transcends just the causal variables but also the outcome of an effect. Thus, in this review, we discussed previous studies on the relationship between the individual's lifestyle and vulnerability to type II diabetes, and the impact on current and future research on diabetes.

II. SOCIO-ECONOMICS, LIFESTYLE AND DIABETES LINKAGES

A large number of studies have been carried out on the link between lifestyle-related factors and diabetes. Lifestyle factors resulting to overweight and obesity increase the risk of diabetes [6]. It has also been reported that risk factors like age, education, gender, lifestyle, health status and access to quality health services are related to poor health outcomes, and of course, both vulnerable to chronic diseases. This has moreso been emphasized for diabetes patients in the like where low SES, old age, obesity and over weight, tobacco smoking, physical inactivity or lack of exercise and poor glycaemic control are positively correlated [7,8].

A. Evidence on Socio-Economics and Lifestyle Relationship

Lifestyle factors have been identified to include physical inactivity levels, dietary choices and access to primary health care services, while socio-economic factors include income and education.

The incidence of Type II diabetes has been reported to be socially graded, as individuals with lower income and less education are 2 to 4 times more likely to develop diabetes than more advantaged individuals [9, 10, 11, 12, 13, 14]. If the role of social determinants is not sufficiently addressed in health management, they will continue to be a key barrier to the improvement of health in the population.

B. Evidence on Lifestyle and Diabetes Relationship

Data on the relationship between lifestyle in health and diabetes has been well reported. According to [15], study participants with diabetes were less likely to indulge in lifestyle risk factors like alcohol but more likely to be ex-smokers, obese, physically inactive, and have at least heart disease, high blood pressure, high blood cholesterol, depression and anxiety compared to those without diabetes.

The prevalence of Type II diabetes which is related to obesity, has reached epidemic proportion, although evidence has confirmed that it is preventable through lifestyle modification related to diet and physical activity [16].

[17, 18] noted the most important lifestyle-related risk factors for Type II diabetes to include (abdominal) obesity, a sedentary lifestyle and a dietary pattern with high saturated fat, refined carbohydrate and total energy as well as low fiber food content. Lifestyle-related factors are mostly also referred to as behavioural risk factors which include physical activity levels, dietary choices and access to healthcare services.

It has indeed thus been established that good lifestyle factors are positively correlated with positive diabetes condition.

C. Evidence on Socio-Economics and Diabetes Relationship

SES is a strong risk factor in health outcomes. It has been proven that a lower SES is positively related to vulnerability to diseases [19, 20, 21]. Certain social factors which are often referred to as social determinants of health, have been identified to affect health, are the primary influencers and best predictors of health outcomes [22].

Lifestyle modifications (like modest body weight reduction, healthy eating and moderate exercise) has been demonstrated as effective in managing diabetes, and as cost-effective intervention instrument [23].

D. Socio-Economics, Lifestyle and Diabetes: Analysing the Simultaneous Relationships

The relationships between each of the socio-economic and lifestyle-related factors with diabetes have been separately documented. For example, a person's socio-economic indicator like income or formal education goes a long way to influence his understanding (or education) on diabetes and its management, and also the behavioural risk factors or lifestyle (like smoking of tobacco, drinking of alcohol, obesity, exercise and sleep) also influence vulnerability to diabetes [24].

Life expectancy does not however favour people with low socio-economic level. This is because their SES goes a long way to define their lifestyle and the level of risks they are exposed to, and thus their consequent vulnerability to diseases like diabetes.

III. SOCIO-ECONOMICS AND LIFESTYLE FACTORS IN DIABETES: THE CONSEQUENT DEFAULTS

A large number of studies have been carried out on the linkage between lifestyle and the risk of type II diabetes, for example, sedentary behaviours and improper diet has been reported as risk factors for diabetes. Excessive caloric intake has been identified as a major driving force behind the escalating prevalence of type II diabetes, diet quality have also been reported to have an independent effects [25]. High dietary glucose load and trans fat are associated with increased diabetes risk, evidence also indicates that consumption of sugar-sweetened beverages increases the risk of type II diabetes even after taking into account the effects of body weight [26].

In Western societies, physical in activity and obesity have been associated with low SES [27]. Therefore, an inverse relation would be expected between the prevalence of type II diabetes and SES. However, few published studies have investigated this relationship. If current worldwide trends continue, the number of overweight people is projected to increase from 1.3 billion in 2005 to nearly 2.0 billion by 2030 [28]. Compared with Western populations, the prevalence of overweight and obesity in Nigeria is relatively low, but it is increasing in parallel with economic development and rapid urbanization. A tendency towards greater abdominal obesity among individuals in developing countries will result in an increased propensity for insulin resistance.

Individuals with low SES are faced with the challenge to make ends meet, which may result in chronic stress, leading to psychological and biologic responses [29, 30]. Chronic stress can lead to anxiety, reduced self-esteem and decreased energy and motivation, which increases the likelihood of self-destructive behaviours and choices like tobacco smoking, alcohol intake and consumption of unhealthy foods [31, 32]. The physical evidence of chronic stress is the negative consequence of allostatic load, which includes increased blood pressure, cortisol and blood glucose levels as well as impaired ability to effectively respond to future stressors [33, 32, 34]. These physiologic reactions over time increases the risk of Type II diabetes.

CONCLUSION

Socio-economics though largely connected with lifestyle yet, it is an independent factor which goes a long way to influence the individual's lifestyle. Thus, we have been able to find evidence on the relationship between socio-economics, lifestyle and diabetes as follow:

- Socio-economic factors and principally, income and education are positively related to an individual's lifestyle. In essence, People with a higher income and education rate higher on socio-economic level, in that an higher income encourages a healthy lifestyle. Also, (formal) education helps the individual better appreciate the place of knowledge towards making choices, for better health management.
- Lifestyle is a strong determinant of incidence of diabetes. Lifestyle factors here include physical activity, dietary patterns, smoking and drinking (of alcohol). As have been established in previous studies, these factors are body conditioners, both internally and externally, affecting the functioning of the body system, and as well as creating point of strengths (or vulnerabilities) as applicable.
- The individual's socio-economic level have become the major risk factor globally. There is need for greater political and health system governance that will empower the people socially and economically through varied transmission effects like social and health infrastructure, as well as accessible strong social insurance platforms.

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