

Consumption of Junk Foods and Risk of Type 2 Diabetes: A Review

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Abstract

According to the estimation of International Diabetes Federation (IDF) 2021, there are 537 million diabetics worldwide. The purpose of the current review is to explore the relationship between consumption of junk food and type 2 diabetes. Junk food is defined as being easily accessible, typically inexpensive, and having low nutritive value. These foods have lesser amounts of iron, calcium, and dietary fiber and are higher in calories, salt, and saturated fat. Unhealthy diet is one of the important lifestyle factors responsible for several health conditions. Junk foods includes deep fried, processed or ultra-processed foods (UPFs) and high sugar containing foodstuffs and beverages such as Sugar Sweetened Beverages (SSBs) are directly linked with higher body mass index (BMI), adiposity and increased insulin resistance (IR). For pertinent databases IDF Atlas reports, PubMed, Springer, Elsevier, Web of Science and BMJ were searched for original and meta-analysis studies published up to March, 2023. In recent decades, consumption of these foods has significantly increased worldwide. The primary risk factor for type 2 diabetes is obesity and consuming junk foods is strongly associated with being obese. Junk food consequences include an increase in type 2 diabetes cases especially among youths and adult women compared to men. Obesity or high BMI indicate a positive energy balance due to junk food intake. As a result, the recurrent consumption of junk food increases the likelihood of developing the type 2 diabetes.

Keywords— BMI, IDF, IR, obesity, SSBs, UPFs

I. INTRODUCTION

India is currently witnessing one of the speedily growing modern epidemics which have a significant role in confining the eminence of life and plummeting life expectancy. The burden diabetes is steadily increasing on a worldwide scale each passing day. Former names for type 2 diabetes include maturity-onset diabetes and non-insulin-dependent mellitus (NIDDM). It originates when beta-cells fail produce enough insulin to accommodate demand, typically in the context of progressive insulin resistance. Somehow, the beta cells have been unable to react to insulin resistance. Typically, adults over the age of 30 are affected. These days, young people and children are routinely diagnosed with it [1]. In India, the prevalence of type 2 diabetes and obesity has considerably grown during the past ten years. The present review's goal is to examine the connection between type 2 diabetes and an unhealthy diet, namely the intake of junk food.

II. TYPE 2 DIABETES

There are 537 million diabetics worldwide, according to the International Diabetes Federation's (IDF) 2021 estimate [2]. The findings of the International Diabetes Federation (IDF) report, which is published almost every two years since 2000, showed that the incidence of diabetes was 6.6% in the year 2010 and it was risen to 8.3% in the year 2013. In the year 2015 and 2017 it was increased up to 8.8% [3,4]. Prevalence was estimated 9.3% and 10.5 in the year 2019 and 2021 respectively. IDF projections from 2010 indicated that the incidence will be 7.8% in 2030, however the prevalence reportedly surpassed that number in 2013 [5]. According to IDF reports, the expected prevalence projections for the year 2045 range between 10.1% and 10.4%. However, it has already outperformed the IDF's predicted prevalence [5]. Several modifiable risk factors such as sedentary lifestyle or lack of exercise, obesity, unhealthy diet, stress and inadequate sleep are associated

with type 2 diabetes. Genetic predisposition, family history of diabetes, age, race and ethnicity are non-modifiable risk factors for type 2 diabetes. Unhealthy diet is the modifiable risk factor for type-2 diabetes; hence it can be altered to reduce the diabetic burden [1].

III. OBESITY

Due to the intake of an unhealthy diet, obesity is the primary cause of type 2 diabetes, and its worldwide burden is increasing every single day. Between 1998 and 2015, the prevalence of obesity among women in India increased from 2.2% to 5.1%. According to the Global Obesity Atlas, Indian adult women (7.88%) have a greater prevalence of obesity than males (4.48%) [6]. Type 2 diabetes and obesity directly relate to one another. These both relate to insulin resistance. The energy imbalance between calories expended and ingested is the root of the issue [7, 1, 8]. Slight imbalances in energy intake and expenditure that compounded over time led to the worldwide obesity pandemic. The inability of existing strategies to effectively prevent obesity might be attributed to a lack of understanding of the physiologic mechanisms underpinning energy balance. Positive energy balance leads to insulin resistance and pathogenesis of development of diabetes is also associated with impaired glucose control [9]. In low- and middle-income nations, there have been significant dietary changes: In India, this embrace a significant rise in fat intake, which is combined with already high carbohydrate intake, a minor increase in total calories and protein, and a decrease in the consumption of coarse grains, pulses, fruits, and vegetables [10].

IV. JUNK FOODS AND TYPE 2 DIABETES

Junk food is defined as being easily accessible, typically inexpensive, and having low nutritive value. These foods have lesser amounts of iron, calcium, and dietary fiber and are higher in calories, salt, and saturated fat. Unhealthy diet is one of the important lifestyle factors responsible for several health conditions [8]. Junk foods includes deep fried, processed or ultra-processed foods (UPFs) and high sugar containing foodstuffs and beverages such as sugar sweetened beverages (SSBs) are directly linked with higher body mass index (BMI), adiposity and increased insulin resistance (IR). The primary risk factor for type 2 diabetes is obesity and consuming junk foods is strongly associated with being obese [11]. Obesity or high BMI indicate a positive energy balance due to junk food intake. As a result, the recurrent consumption of junk food increases the likelihood of developing the type 2 diabetes. Junk food consequences include an increase in type 2 diabetes cases especially among youths and adult women compared to

men [12;13]. Positive energy balance is the consequence of either higher energy intake from high calorie intake, lower energy expenditure through inactivity, or a combination of both of these [7]. A study found a correlation between increased intake of junk food, such as red/processed meats and sugar-sweetened drinks, and an increased chance of developing diabetes [14]. The risk of type 2 diabetes is dramatically reduced with higher adherence to vegetable-grain patterns and lower adherence to junk diet patterns [15]. Children and young people must be made urgently aware of these negative consequences of junk food and the fact that they should not be used as a substitute for a balanced diet. There has never been a better opportunity than today to create a loving atmosphere that promotes young people's participation in society and also ensuring their health [13].

V. MECHANISM LINKING OBESITY AND TYPE 2 DIABETES

Chronic diseases like diabetes and obesity are becoming more prevalent globally. Body mass index and diabetes and insulin resistance are closely related. It is pretty apparent that being overweight or obese raises the likelihood of getting type 2 diabetes, especially when it comes to carrying extra weight around the stomach (abdomen). The body's responsiveness to the insulin it makes can be decreased by the production of "pro-inflammatory" substances by fat cells as a result of belly obesity by interfering with the function of insulin-responsive cells and their ability to respond to insulin. Insulin resistance is a substantial risk factor for type 2 diabetes. [16].

To maintain normal glucose tolerance, pancreatic beta-cells of the islet of Langerhans normally release enough insulin to counteract drops in insulin levels. Many obese individuals do not have hyperglycaemia but have insulin resistance. Non-esterified fatty acids (NEFA), glycerol, hormones, cytokines, proinflammatory agents, and some other compounds that contribute to the expansion or development of insulin resistance are all existing in grander quantities in people suffering from obesity. Diabetes is caused by insulin resistance coupled with a decline in β -cell function [17]. The key contributing causes include a transition to a highly evolved sedentary lifestyle, consuming meals rich in calories or fat, and not engaging in sufficient physical activity [18]. There is a need for combination treatment approaches for obesity and type 2 diabetes, according to several research [19].

VI. CONCLUSION

Consuming junk food contributes to an energy imbalance and is directly linked to type 2 diabetes. A minor change in eating habits can help prevent it. The risk of developing diabetes has been shown to be reduced with diets rich in cereals (whole grains), pulses (legumes) fruits, vegetables, nuts and alcohol consumption in moderation. These diets also tend to be lower in junk food, such as red and processed meats, and sugar-sweetened drinks. The general people have to be enlightened on the idea of energy balance and given the cognitive tools necessary to combat their propensity for overeating and sitting down too much. A growing inactive population and the obesity pandemic may both be addressed by the idea of regulated and uncontrolled zones of energy balance. The stakeholders should encourage people to comprehend the significance of adopting a healthy lifestyle which may be conducive towards reducing the modern epidemic.

VII. REFERENCES

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