Diabetes Related to Obesity (First Draft)

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Abstract

Being obese or overweight increases the chances of having diabetes especially the most common type II diabetes. A recent report by the World Health Organization indicates high prevalence of obesity from an international scale. It is noteworthy that obesity is linked to metabolic plethora as well as clinical limitations resulting in a higher risk of developing metabolic and cardiovascular illnesses especially type 2 diabetes and insulin resistance. In type 2 diabetes, the body often produces sufficient insulin, but the body cells are resistant to perform the salutary function of the insulin. Conclusions from different studies reveal that there is strong evidence for significant impacts of physical exercises on the cardiovascular health, glycemic regulation and the development of long-term complications related to diabetes.

Keywords: Obesity, Diabetes, Body Mass Index and Fats

Introduction

Concerning patients with insulin challenges and type I diabetes, it is critical to consider higher risks for hypoglycemia associated with exercises. The latter requires sufficient adaptions of insulin dosage among other specific considerations. Notably, the existing intervention framework inadequately address the development of hypoglycemia associated with physical exercises. Nonetheless, diabetic patients should consider having regular physical exercises to support and permit adequate intervention as well as high level of glycemic regulation. It is noteworthy that among other factors, lack of physical exercises increases the chances of becoming overweight and obese. This paper examines the association of obesity with diabetes. While the prevalence of obesity is registering high levels each day, the risk of diabetic population increasing is also inevitable. As such, this paper explains the different types of diabetes related to obesity and the role of physical exercises in reducing the spread of diabetes related to obesity.

**Methodology**

For quality research on diabetes related to obesity, this study examines a range of both qualitative and quantitative study findings on areas related to diabetes and obesity. The paper determines the conclusions for the different studies and compares for accuracy. Further, the research conducts an observation from the surrounding communities particularly on their lifestyle, nutrition and diet.

**Results**

Overweight and obese populations are at increased risk of having insulin-resistant, type 2 diabetes also called adult-onset diabetes. This condition occurs when the body develops persistently high levels of blood glucose. Among people with obesity, fat tissues cells processes higher levels of nutrients than they can control. Usually, the strain experienced by these cells causes inflammations that produce cytokine proteins (Freemantle, Holmes, Hockey & Kumar 2008). Cytokines blocks the insulin receptor signals while rendering the cells to become insulin resistant. Notably, insulin influences the consumption of the glucose (or sugar) by the body cells for energy. When one becomes insulin-resistant, the body can hardly convert sugars into the required energy and thus developing persistently high levels of blood sugars. In addition to suppressing the normal responses to the insulin, the said stress influences cell inflammation that might cause cardiovascular illnesses.

As highlighted above, Diabetes mellitus type 2 (DM2) concerns the combination of insulin malfunctioning and the decreased levels of insulin production in the body. The research shows that type 2 diabetes is on the rise among obese populations reaching the highest levels in history. When one becomes diabetic, the first instruction that the physician gives to the patient is to ensure the control of the blood sugars to avoid serious complications that may affect the functionality of the kidneys and the vision as well as the risk of reduced flow of blood to the legs, possible amputation and stroke. People with diabetes type 2 are highly likely to die because of stroke and heart attacks. While the likelihood of death is twice likely in the latter case, the chances of having amputations are 17 times because of the reduction in the blood flow to the legs compared to people without diabetes type 2 (Wirth, Blake, Hébert, Sui & Blair 2014). Because of possible delays in diagnosis for lack of symptoms of DM2 for a couple of years, DM2 patients are at risk of developing kidney failures. It is also significant to note that patients with diabetes must be able to manage the blood sugar levels to avoid multiple complications and possible death. However, the tools and drugs for managing the blood sugar levels often strains’ ones budget that could otherwise be used for other functions.

Because obesity influences the resistance to insulin, where body makes enough insulin but fails to use it effectively, obesity is thus a driving factor for diabetes type 2 making it highly associated with diabetes type 2 (Borelli, Riden, Bang & Schenker 2018). Among the people with insulin resistance, glucose increases in the blood rather than being absorbed by the specific body cells, a situation that influences pre-diabetes or diabetes type 2. Persons with obesity have excess abdominal fats contributing to the development of between 80 and 90 percent of all diabetes type 2 cases. For instance, most of women with body mass index between 23 and 25 are at risk of developing DM2 four times compared to women with BMI of 18 to 20. On the other hand, individuals with BMI of 24 and 25 are five times at the risk while those with very high BMI of more than 35 are already at diabetic or 95 percent at the risk of becoming patients of type II diabetes.

**Discussion**

Although not every person with obesity or overweight develops type 2 diabetes the risk of developing the condition is very high among these populations. While other factors such as genetics, age, lifestyle and ethnicity may contribute to the development of DM2, increased body weights and body fats highly influence diabetes mellitus type 2. Also, the development of either diabetes, obesity or both conditions might depend on the genetic susceptibility to diabetes and obesity as well as nutritional factors.

**Managing the risk of diabetes related to obesity**

Various research studies indicate that reducing body weights among the obese and overweight populations decreases the risk of becoming diabetic. For the management of both obesity and diabetes, it is important for individuals to consume a lot of water, engage in physical exercise and consume the recommended servings of vegetables and fruits every day.

According to Satwik, Roy & Sathiyawathie (2019), physical exercises plays a very critical role in the management of body fats and cholesterol in the body. Notably, excess fat influence the production of cytokine which blocks the absorption of the blood sugars by the cells (A., H., P, K., & 2018). Considering a study among the Chinese with pre-diabetes where the exercise involved giving the participants drinks with high sugars and then measuring the blood sugar levels among the participants, the incidence of diabetes was lowered by 36% among the persons with low fats and highly carbohydrate diet. However, physical exercises reduced blood sugar levels by 47% while a regimen of exercises and diet reduced the sugars by 39%.

Another study on the effects of weight loss surgical operations among the obese patients demonstrated a 2 years case of diabetes of 6% diabetes among individual not receiving surgical operations while the populations treated with surgical operations maintained a 0.2% reduction. Most of these benefits were also observed at ten years after the surgery, when the diabetes situation was at a five-fold mark among the patients who had surgeries. The latter corresponds to 80% protection. According to the results and observations from a diabetes prevention pilot program in the United States, a combination of reduced weights of around 7% followed by at least 150 minutes of physical exercises reduced the risk of becoming diabetic by 59% among the participants labeled “at risk” within the first three years.

As observed above, 15 to 20 percent weight reduction within the first year following the diagnosis of diabetes type 2 reversed the excess mortality of developing DM2 and obesity. In addition a recent study shows that deliberate weight reduction reduces the mortality of diabetes at a rate between 30 and 40 percent. The latter also decreases the need for medication either by using pills for insulin or high blood sugars. Further research shows that weight reduction lowers the doses necessary for the treatment of type II diabetes. Weight loss also decreases the treatment for the high blood pressure management and high levels of cholesterol.

While the above concepts are critical for the management of diabetes related to obesity, they contrasts the existing “obesity paradox” suggesting that weight gain decreases early diabetes related mortality. The latter qualifies the need for the repeated research on the association of diabetes with obesity as well as the influence weight gain or loss in the treatment of the condition (Singla, Garg, Singla & Gupta 2018). A very recent study examining almost 15,000 persons with type II diabetes for more than 15 years and the impacts of the condition on the participants’ health established that weight loss significantly is a remedy for type 2 diabetes and that physical exercise helps in maintaining certain body mass index thus overruling the current “obesity paradox” (Wirth, Blake, Hébert, Sui & Blair 2014). Surprisingly, the research observed that obese or overweight persons diagnosed with type 2 diabetes are at increased risk of death than persons with normal weights. In addition, the mortality rate among diabetic persons at the ages from 65 years and above and with increased weights is higher than the mortality rate of persons at the same age brackets with reduced weight (Rossouw 2015). In fact, a federal government’s data report indicated that obese and overweight persons between the ages of 45 and 64 years are at 20 percent risk of death compared to people with normal weights but diagnosed of diabetes. As such, obese and diabetic persons at the ages between 45 and 64 live seven years less than the people at normal weights.

**Lifestyle, obesity and diabetes**

According to the research by Borelli, Riden, Bang & Schenker (2018), different communities have varied prevalence of obesity. Citing the Hispanic community, the researchers observed and argued that this community forms a significant population of the workforce at increased risks of becoming obese and diabetic. While different factors contribute to obesity, lifestyle is the greatest of all factors. In the contemporary world, a greater majority resist from participating in physical exercises while preferring quick rides for small distances. It is apparent that many people no longer prefer walking to their workplaces or walking to school among the students. Recent research shows that cycling, walking and simple jogging are some of easy to perform but very significant towards keeping one’s body fit (Medina-Remón, Kirwan, Lamuela-Raventós, & Estruch 2018). However, many people have neglected any calls for such simple but helpful physical exercises. Although some people dedicate to attending for physical fitness trainings at the gyms, considerable majority especially the youths spend a lot of their time seated while watching television, playing computer games or watching moving series among other less physical activities.

When one spend much of the time seated, his or her body uses less energy and thus converting a lot of the carbohydrates in to fats. With increased fats, people start to gain weights and eventually become either overweight or obese (Kyoung 2017). As earlier stated fats are influencers of for cytokine production which further blocks the absorption of blood sugars in to the cells. The latter triggers resistance or malfunctioning of insulin a condition that brings type 2 diabetes. Besides, many people are overly consuming junk foods, sugary and fatty foods. According to Mandal (2019), many people in different parts of the world including the United States are fond of purchasing fast foods that are often fatty such as chips and chicken. For example, a lot of university and college students or majorly the youth and young adults are highly attracted to junk foods and thus spend most of their money on such foods mainly because of their portability. In addition to these junk and fatty foods, very few youths and young adults spend at least three hours without taking considerable amounts of sugars ranging from sweets, chocolates and cookies as well as sodas and processed juices. All these foods and drinks increases body fats thus the development of obesity and overweight. The latter permits the resistance to insulin and thus the development of diabetes from obesity (Satwik, Roy & Sathiyawathie 2019). All though these habits are distributed across different classes and communities, some communities are at higher risk of engaging in such habits because of the influence of their culture despite the overly experienced acculturation and assimilation especially in the United States.

Examining the Hispanic community, most of them work in farms and there is no published intervention framework that targets the population at agricultural sites to help in lifestyle change. A worksite intervention framework is necessary and significant towards promotion of behavior change and awareness creation regarding the lifestyle risk factors for obesity and diabetes. Mandal (2019) asserts that the worksite interventions help to achieve the management of body mass index by avoiding high sugars. The latter influences a reduction in waist circumferences, reduction of body weights and the control of sugar uptake. Also, worksite interventions improve on matters relating to physical exercises and overall physical fitness as well as dietary measures and controls. Notably, women are highly likely to achieve greater results in body weight reduction than their male counterparts majorly because of their practical and excessive consumption of junk foods compared to men.

For the management of both obesity and diabetes, it is important for individuals to consume a lot of water, engage in physical exercise and consume the recommended servings of vegetables and fruits every day. According to the study by Freemantle, Holmes, Hockey & Kumar (2008), there is great relationship between hyperglycemia and abdominal obesity as influenced by the increased resistance to insulin as opposed to the causal link between the secretion of insulin and the overall obesity. While the increase in abdominal fats increases the risk of abdominal obesity, the researchers recommended the reduction of abdominal fats for improved glucose levels control. Rossouw (2015) argues that changes in quality fat diet increases the production of low-density lipoproteins (LDL) cholesterol and that decreased weights influence metabolic benefits such as enhanced glucose hemostasis showing that obesity is a risk factor for diabetes. Enhancing glucose hemostasis prevents diabetes. Most of the researchers and expert agree that excessive calories intake for prolonged duration together with inactivity or reduced physical exercises slowly increases body weights. Further, sugar sweetened beverages increases the risk of diabetes and obesity as well as cardiovascular illnesses. However, consumption of energy restricted diets such as low carbohydrates and low fat diets can highly achieve weight reduction. It is important to concentrate on quality fats rather than consumption of high amount of fats.

Conclusion

From the above investigation and analysis, it is apparent that obesity increased the risk of developing diabetes. In light of this, it is important to deal with obesity while providing intervention measures among the persons at risk of obesity. Both the governments, local authorities, not-for-profit organizations and healthcare practitioners should join hands in creating awareness and fighting the experienced rise of populations with overweight and obesity to minimize the risk of having greater population of diabetic patients. Therefore, the society should be aware of the risks associated with the high consumption of fatty foods, sugary products and junk foods as well as the importance of high uptake of water and consuming recommended servings of vegetables, proteins and fruits. Further, the society should understand the importance of physical exercises towards the reduction of excess fat and protein production. Adherence to simple social behaviors and nutrition is a home remedy for obesity related diabetes.

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