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Understanding the Theory of Diabetes and its Relationship with Food

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Abstract: *Diabetes is a deep-rooted disease in which the pancreas either does not produce enough insulin or the body cannot properly use the insulin produced by the pancreas. Insulin is necessary to keep blood glucose level stable in the body. When the pancreas stops producing insulin in the body the glucose level increases as without insulin the sugar cannot be synthesized and the backed-up sugar causes increased the danger of cardiovascular diseases like heart attack, narrowing of arteries called as atherosclerosis, etc. Not only these but a lot of severe problems like blindness, kidney failure, etc are also caused by diabetes. More than 422 million people in the world are diabetic as of 2014 and 46% of the total diabetic patients are undiagnosed. In the year 2016, around 1.61 million deaths were caused due to diabetes and about 2.23 million because of extremely high blood sugar content in 2012. Diabetes causes fluctuation depending upon your hereditary form, family history, ethnicity, health, and various ecological factor. There are importantly two types of diabetes that are Type 1 diabetes and Type 2 diabetes. Hyperglycemia also is known as high blood glucose is a common cause of unstoppable diabetes and after some time it leads to chronic damage to a lot of the systems in the body, especially the nerves and blood vessels. Diabetes cannot be fully treated but it can be controlled or lowered down by a lot of things like a good and healthy diet, physical activity on regular basis, maintaining a good body posture and neglecting things like alcohol and tobacco. The recent study says that diabetes is increasing at a high pace mostly in the countries which are having low- and middle- incomes.*

Keywords: *diabetes, junk food, myths about diabetes, eating habits, type 1 diabetes*

I. RESEARCH METHODOLOGY

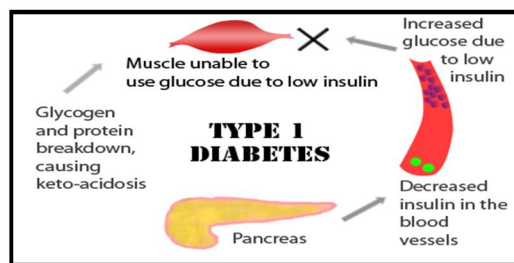
A research methodology is a theoretical examination of the ways and steps applied to a field of study. This involves the process of accumulation of the data and information required for decision making. As this is a kind of secondary paper that's why methodology may have involved the journals, books, surveys, websites, research papers of other researchers, etc. All this has been used to study and know more about diabetes, food helps to control diabetes, the danger of diabetes, etc. Every sort of data that has been used in this research paper will be acknowledged with proper references wherever necessary.

II. INTRODUCTION

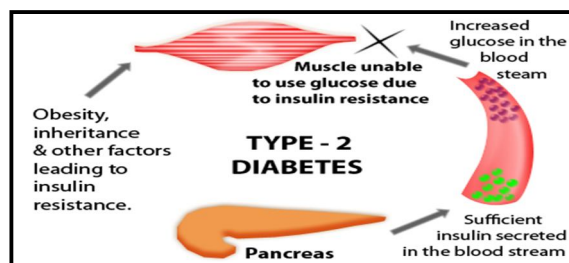
Diabetes is a medicinal condition in which the blood contains sugar level so high that it begins to cause an antagonistic impact on the body. Diabetes treatment is assembling an ever-increasing number of patients with time as diabetes is turning into a plague. At the point when the amount of glucose in the blood increases e.g. after a meal, it triggers the release of the hormone called insulin from the pancreas. Insulin stimulates muscle and fat cells to expel glucose from the blood and enables the liver to metabolize glucose causing the glucose level to decrease to typical levels. In individuals with diabetes, the blood sugar level always stays high because the pancreas stops producing insulin (a hormone which balances glucose in the body) or the amount of insulin produced by the pancreas is not enough to fulfill the need required by the body to balance the glucose. The most basic types of diabetes are Type 1 diabetes (5%) which is an immune system disorder and Type 2 diabetes (95%) which is related with obesity. Gestational diabetes is a type of diabetes that happens during the time of pregnancy and other types of diabetes are exceptionally, not usual and are caused due to a solitary gene mutation. For a couple of years now scientists have been searching for clues in our hereditary that clarifies why a few people are more prone to diabetes than the others.

A. Types Of Diabetes

- 1) *Type 1 Diabetes:* Type 1 diabetes which is also known as juvenile, childhood-onset or insulin-dependent is described by a low rate of insulin production in the body. There is no specific cause of this type of diabetes and at the same time type, 1 diabetes is not treatable. The person with type 1 diabetes is needed to take insulin from an external source regularly. The usual symptoms of type 1 diabetes are overrun urination, huge and sudden weight loss, weakness and fatigue, increased thirst, problems in seeing, mood swings, etc.



- 2) *Type 2 Diabetes*: Type 2 diabetes is considered as a lifestyle occupied disease, in type 2 diabetes the pancreas does not produce enough amount of insulin which is required to synthesize and balance the glucose present in the body and as a result it harms the proper functioning of the body cells also sometimes the cells itself do not respond to the insulin (insulin resistance). Approximately 90%, of all instances of diabetes worldwide, are type 2 diabetes. Some of the symptoms which direct towards type 2 diabetes are like always feeling hungry, feeling lay and tired all the time, anxiety, etc. People with a huge amount of visceral fats also called focal obesity or belly fat or stomach obesity are specifically at risk. Being overweight and obese makes the body discharge chemicals that can destabilize the different kinds of body's cardiovasculars and metabolic frameworks. Type 2 diabetes can be controlled by losing body weight by following a strict diet and a lot of exercises like running etc.



- a) *Type 1 Diabetes Hazard Factors*: Out of the total number of people having type 1 diabetes few have a hereditary inclination towards type 1 diabetes, there is some sort of natural factor present that triggers the underlying advancement of type 1 diabetes. Some of the frequent triggers that have been suggested incorporate are Viral diseases, Immunizations, low levels of vitamin D, Dairy animals' milks, Expanded insulin requests, etc.
- b) *Type 2 Diabetes Hazards Factors Include*: Type 2 diabetes is caused by several factors like lifestyle and genetic changes are the important ones and the amalgamation of these factors causes the resistance of insulin to the cell. Some of the frequent triggers that have been suggested incorporate are Conveying excessively excess body fats, having Hypertensions or Cholesterol, having a nearby relatives with type2 diabetes, having beforehand had Gestational diabetes.

B. Diabetes Through Food

Glycemic-Index (GI) is the computation of how spontaneous a kind of substance taken by us is transformed into glucose. Food that transforms rapidly into glucoses is considered as High GI food. Such nourishments tends to make extraordinary spikes in the glucose levels. High GI Foods includes basic sustenance things like:

- 1) White bread.
- 2) Pasta.
- 3) Basmati.
- 4) Candies.
- 5) Baked sustenance.
- 6) Pastries.
- 7) Carbonated drink.
- 8) Potatoes.
- 9) Noodle.
- 10) Cereal substances.
- 11) Ready-to-eat sustenance.

C. Diabetes Causing Food Habits

Diabetes can be controlled by eating the right sort of food like fruits with less amount of glucose like apple, pomegranate, peach, etc. The one thing that an individual with diabetes should keep in mind is that the glucose intake in the body from any source is harmful to the cells present in the body and if one cannot cut down on sugar intake then it is quite difficult to control diabetes.

Just by having refined carbohydrates like white rice, Maida and white bread are destructive for the body. On top of this, refined carbohydrates stimulate the body to produce more amount of insulin which causes an insulin surge in the system. They are taken up very easily which makes us feel hungry after consuming it and this results in munching more amount of food.

Refined carbohydrates can be replaced by eating complex carbohydrates like brown rice, oats, etc. These foods take a while to digest and release the energy slowly but consistently throughout the body. Refined carbohydrates also keep a count on the calorie intake.

D. Junk food and its Effect on Diabetes

Junk sustenance is everywhere; you see them in distributing machine, rest stops, stadium, hotel, etc. They're sold theatres, gas stations, and bookstores. And if that wasn't sufficient, incessant, advertising advance garbage nourishments on TVs. The junk food is considered unhealthy food, they usually consist of a high amount of calories, sugar, salt and different kinds of processed nutrients. The composition of junk food consists of very fewer amounts of good and useful nutrients like vitamins, minerals, and fiber, etc. Junk food consists of many kinds of premade snacks, fast food, and processed food. Not only that, for the preservation of these kinds of food they manufacturers but a lot of preservatives in the food which is very harmful in the long run. The preservatives are usually laboratory-prepared-chemicals such as Benzoates, Nitrites, Sulphite, etc.

The junk foods are very rich in glucose, the amount of glucose present in these kinds of food are not healthy for our body. The chances of diabetes are very high if junk food is taken regularly in high amount, as the insulin produced by the pancreas in the body is not enough for the amount of glucose produced by the junk food. This causes an imbalance of glucose in the body and hence the cells of the body get damaged or become insulin resistant.

Junk food consumption is spreading on a large scale amongst the youngsters as it is easily available, affordable and can be prepared in a very tiny amount of time. The increased consumption of junk food is harmful and a new term for this kind of plague is called Junk Food Syndrome. It is extremely dangerous ailment which triggers an early onset diabetes, hypertension, behavioural problems, and addictions. Also, additives and monounsaturated fats in this sustenance trigger numerous metabolic issues. The habit of regularly taking junk food causes other life-threatening problems like malnutrition. These sustenance likewise causes constipation, urinary problems, renal stones and irritation of the digestive system.

Eating junk sustenance contributes to weight gain. This makes it more difficult for individuals with diabetes to control glucose level. Saturated and Trans fat raises your cholesterol levels. This puts you at more danger of coronary illness heart attack and stroke. People with diabetes can control their admission of unsafe fat and sugar by becoming an educated buyer.

**A survey was conducted amongst the people of age group 32-70 on how you can say that diabetes is caused by food -

- 1) *Mr. A ROY (34)*: Overeating in some instances can cause type 2 diabetes. It depends on what you are eating and what else you are doing. If you are regularly consuming a lot of junk food such as candy, chips, fries, burgers, etc it can lead to obesity, which can make an individual more prone to type 2 diabetes. On the other hand, regular consumption of a lot of vegetable will not typically causes type 2 diabetes. Further, he added that there are people that can eat large amount of pasta, followed by a cookie but are never overweight. These people exercise a lot to burn those calories that is why it is very much fine for them to eat food with high calories without risk of diabetes.
- 2) *Dr. Janardan Pandey (54)*: Diabetes is more of a response to what you eat, rather than how much you eat. Type 2 diabetes is insulin resistance, so eating a lot of food that causes insulin spikes will result in damaging elevated blood sugars. Carbohydrates cause insulin spikes: processed sugars, high fructose corn syrup, bread, pasta, anything made with flour. Fiber moderates insulin spikes - so high fiber fruits and vegetables should be the mainstay of your diet. fat does not trigger insulin, so you should include high levels of good fats.
- 3) *Mr. Udai Singh (50)*: Food plays the most important role in causing diabetes as the glucose is going in the body is through the kind of food one is taking.
- 4) *Dr. Yagvendra Malik (48)*: Eating too much food causes obesity. Obesity is highly related to diabetes. Does it cause diabetes probably but it definitely aggravates it.

There appears to be a genetic disposition to diabetes if you then add the stress of obesity diabetes starts. The production of insulin falls and resistance develops. In type 1 diabetes there is no option but to use insulin. In many type 2 diabetes aggressive dietary

control, exercise, weight loss will almost certainly make it better reducing the need for meds and reducing the risk of eye, kidney and heart disease.

I have several patients who went on an aggressive diet and lost 20-30lb. Their medication requirements for Diabetes were much less and one actually stopped their diabetes meds.

E. Myths and Their Facts Regarding Diabetes

Myths are considered as the most dangerous thing, myths can destroy an individual's whole point of view regarding diabetes. There are so many myths regarding diabetes which are absolute hogwash like individuals with sweet tooth get diabetes, type 1 diabetes is some sort of a family relict, diabetes cannot be controlled etc. Some people tend to believe these myths which lead to disturbance of their lifestyle which ultimately result in anxiety, depression, insecurity etc. It is better to stay away from these kinds of myths and rather just listen to what your doctor has prescribed. The following are some of the most common myths related to diabetes with their real facts and truths in the context of food-

1) *Myth:* Diabetic patients cannot have sugar.

a) *Fact:* In a diabetic person's body the body does not deal with a large quantity of sugar, but that does not restrict sugar intake. The body needs some amount of sugar for energy. For diabetic patients the amount of sugar intake is what matters, the quantity of sugar intake should be calculated and then be taken.

2) *Myth:* Obese people are always diabetic.

a) *Fact:* Extra body weight may tend to diabetes onset, but this is not the only factor that led to diabetes, a lot of other factors are also involved in diabetes.

3) *Myth:* Insulin can lead to Blindness

a) *Fact:* Insulin is considered as a magical drug. Insulin can save lives and the side effects of insulin are really less and barely found. Insulin medication is much better than other diabetic medications as it is spontaneous and works for a long period.

4) *Myth:* Diabetic patients cannot have fruits.

a) *Fact:* There are no such fruits restricted for diabetic patients. Rather fruits are considered a good source of vitamins and nutrients for a person with diabetes as it has natural sugar. Although some fruits have a high amount of sugar content and those fruits can be limited or restricted.

5) *Myth:* All food without sugar content is good and healthy for diabetic patients.

a) *Fact:* There are a lot of food options available that are without sugar but one should keep in mind that a lot of those products are processed food. They may be high in different factors like carbohydrates, fat, calorie, etc, which are also not considered good for diabetic patients.

6) *Myth:* Diabetic patients cannot drink alcohol at all.

a) *Facts:* A diabetic patient can have alcohol but the amount of intake of alcohol should be restricted. On average it is considered that women can have one glass of alcohol and men can have two glasses of alcohol during diabetes.

F. What To Eat More And Eat Less During Diabetes

1) *Eat More*

a) Healthy fats from olive oil, nuts, fish oils, avocados, or flax seeds.

b) Fruits and vegetables which are low in sugar. Rather than taking juices it should be eaten directly if possible.

c) High fibrous bread and oats made using whole wheat.

d) Different kinds of fish, shellfish and organic chicken, turkey, etc.

e) Highly proteinaceous food like eggs, beans, low-fat dairy, and yogurt without or low sugar.

f) Whole grain and higher-fiber foods.

2) *Eat Less*

a) Trans fats that are found in pizza, coffee creams, etc should be avoided.

b) Packaged and quick foods, especially those high in sugar, baked, sweets, chips, sweets

c) White bread, sugary cereals, refined pasta or rice

d) Processed meat and red meat

e) Low-fat items that have supplanted fat with included sugar, such as fat-free, yogurt.

G. How to Control Diabetes?

Avoiding sugar and sugar-rich nourishments like dates, grapes, nectar etc, additionally bland sustenance like potatoes, pasta, bread, and bananas. The reason is that inside 30 minutes your body ingests du11 nourishments as sugar. So adhere to a DASH eat less carbohydrates, which was produced for individuals with hypertension and works extremely well for diabetics. Have 4 to 5 feedings for each day. likewise bear in mind general exercise, which brings down insulin affectability. If you are overweight, loosing 20 to 30 pounds will help a considerable measure. A solid eating routine is critical for anybody, yet its particularly vital for diabetics. Numerous sustenance we devour is transformed into glucose (sugar), which the body utilizes for vitality amid the digestion of starches, proteins, and fats. At the point when the pancreas neglects to create the hormone insulin, glucose can't get into the body's cells.

III. CONCLUSION

Diabetes is a deep-rooted disease in which the pancreas either does not produce enough insulin or the body cannot properly use the insulin produced by the pancreas. Insulin is necessary to keep blood glucose level stable in the body. Diabetes is a life-threatening disease if it is not controlled. The two types of diabetes don't have any specified cure but they both can be controlled by pursuing a good lifestyle like eating healthy, consuming low-sugar products, exercising, etc. Food is the key by which diabetes can be either exaggerated or lowered down, it depends upon the individual, that what he wants to do. Cutting down sugar can be a tough challenge but it is important to do so. Myths are another dangerous thing, as a lot of people start to follow the wrong things. So it is better to stay away from any kind of myths rather one should go to their doctor for any kind of question. Eating more of healthy fats which are generated from olive oil, nuts, fish oils, avocados, or flax seeds, fruits and vegetables which are low in sugar are considered good for a diabetic patient. Try to avoid white bread, sugary cereals, refined pasta, rice, processed meat, and red meat.

REFERENCES

- [1] Chiang JL, Kirkman MS, Laffel LM, Peters AL (July 2014). "Type 1 diabetes through the life span: a position statement of the American Diabetes Association"
- [2] Santaguida PL, Balion C, Hunt D, Morrison K, Gerstein H, Raina P, Booker L, Yazdi H. "Diagnosis, Prognosis, and Treatment of Impaired Glucose Tolerance and Impaired Fasting Glucose"
- [3] Lambert P, Bingley PJ (2002). "What is Type 1 Diabetes?"
- [4] Katsilambros N, Liatis S, Makrilakis K (2006). A critical review of the international guidelines: what is agreed upon--what is not?
- [5] McMacken M, Shah S (May 2017). "A plant-based diet for the prevention and treatment of type 2 diabetes"
- [6] Chandalia M, Garg A, Lutjohann D, von Bergmann K, Grundy SM, Brinkley LJ (May 2000). "Beneficial effects of high dietary fiber intake in patients with type 2 diabetes mellitus"
- [7] Brand-Miller J, Foster-Powell K, Nutr M, Brand-Miller J (1999). "Diets with a low glycemic index: from theory to practice"
- [8] Meng Y, Bai H, Wang S, Li Z, Wang Q, Chen L (2017). "Efficacy of low carbohydrate diet for type 2 diabetes mellitus management: A systematic review and meta-analysis of randomized controlled trials"
- [9] Roberts, Jacob (2015). "Sickening sweet"
- [10] Abdul-Ghani MA, Kher J, Abbas N, Najami T. Association of high body mass index with low age of disease onset among Arab women with type 2 diabetes in a primary care clinic.



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