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## A review on Diabetes Mellitus with their types, complications, treatment, and research approach

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### ABSTRACT

*This paper has presented about Diabetes Mellitus and its types. It also discussed cure and treatment of diabetes, and complications which are linked to badly controlled diabetes. It is a common misconception among the people that diabetes is not a serious disease, but in reality, it affects overall life expectancy. In recent years, many types of research in the field of Biomedical describe the effect of Diabetes, and due to this disease life rate decreases. Diabetes is a group of metabolic disease in which a person has high blood glucose over a long period of time, because of inadequate production of insulin hormone from the pancreas. Many of the complications are arises due to badly controlled diabetes so better and proper cure is very necessary. Nowadays many researcher and scientist are working to find the best technique for controlling this disease and this may be helpful for better treatment for the diabetes mellitus in the future.*

**Keywords:** Pancreas, Blood glucose, Carbohydrate metabolism, Insulin hormone

### 1. INTRODUCTION

Diabetes mellitus is the Latin name of the Diabetes. This is the disorder of carbohydrate metabolism. In which there is a high blood sugar level over a prolonged period. Diabetes is due to either the body cannot produce sufficient insulin to absorb blood sugar or the cell of the body not responding properly for production of insulin. In 2013, it was estimated that 382 million people facing the problem of diabetes throughout the world and it also increases the risk of cardiovascular disease. Patient with high blood glucose or blood sugar will become increasingly hungry and thirsty and they typically experience frequent urination.

People with Diabetes must take responsibility for their day to day care including dietary management, monitoring blood glucose level, use proper medicine, and avoid food like sugar and grains. Many other symptoms can mark the onset, they include blurry vision, headache, itchy skin, slow healing of cuts, fatigue, and longtime high blood sugar can cause absorption in the lens of the eye. Diabetes at least doubles a person's risk of early death. As of 2015, an estimated 415 million people had diabetes worldwide.

### 2. TYPES OF DIABETES MELLITUS

There are three types of diabetes are as follows:

1. Type 1 diabetes
2. Type 2 diabetes
3. Gestational diabetes

#### 2.1 Type 1 Diabetes

Type 1 Diabetes once known as insulin-dependent diabetes and usually diagnosed in children and young adults. It happens when your immune system destroys the beta cell in the pancreas which produces insulin, and the pancreas does not produce insulin, causing the blood sugar level is too high. Type 1 diabetes also described as a chronic condition in which pancreas produces no insulin. Insulin is a hormone needed to control the level of blood glucose. Various factors like genetics, exposure to the virus and environmental factor may contribute to type 1 diabetes.

Despite active research, there has no proper cure for this disease, it has some symptoms like increased thirst, unintended weight loss, blurred vision, bed wetting in children, and frequent urination. The exact cause of type 1 diabetes is unknown and it happens generally when no insulin produces to let glucose into cells, so sugar builds up in the bloodstream and causes life-threatening complications which effect on major organs in the body such as heart, eyes, kidney, and nerves systems.

Types 1 diabetes makes up an estimated 5%-10% of all-cause of diabetes and around 1.25 million children and adults facing this problem, although it is estimated that 80,000 children develop this disease every year. So, treatment with insulin is required for survival.

## **2.2 Type 2 Diabetes**

Type 2 Diabetes is called as insulin resistance diabetes which is a long-term metabolic disorder that is characterized by high blood sugar and relative lack of insulin, this is, where the insulin increasingly ineffective for controlling the blood glucose level. There is a vast majority of patients with this disease initially had a pre-diabetes stage.

As of 2015, there were approx 392 million people facing type 2 diabetes, and this disease is continually increasing in young people. Around 90% of all cases of diabetes mellitus are of type 2 diabetes worldwide, and associates with a ten year shorter life expectancy. Type 2 diabetes is a condition in which cells cannot use blood glucose efficiently for energy, and causes by being overweight, family history of diabetes, bad communications between cells and more glucose from the liver. It can often be managed with a healthy diet, and regular physical activities like walking, and exercise.

## **2.3 Gestational Diabetes**

Gestational Diabetes only happens in females during pregnancy, and usually disappears after giving birth. It is more common in the second half stage of pregnancy which occurs if the body cannot produce enough insulin to meet the extra need in pregnancy, and create the problem for women and their newly born baby during and after birth. Gestational Diabetes develops due to high body mass index mainly. Gestational diabetes can cause the problem such as pre-eclampsia which can cause premature baby or problem at delivery.

Gestational diabetes patient can control their diabetes with proper cure like healthy diet and exercise and 10%-20% female needed to take some kind of blood sugar controlling medications.

## **3. COMPLICATIONS DUE TO DIABETES**

Diabetes increases the risk for many serious health problems, there are some possible complications due to badly control diabetes are as follows:

- **Nephropathy:** Nephropathy is basically kidney damage. Kidney contains millions of tiny blood vessels for filtration of blood and Diabetes can damage this blood filtering system.
- **Hypertension:** Diabetes leads to high blood- pressure, and stress in the body and causing hypertension.
- **Neuropathy:** Neuropathy is also known as nerve damage. Diabetes can affect the tiny blood capillaries that nourish your nerves and causes nausea, vomiting, and constipation.
- **Retinopathy:** Diabetes can damage the cell of the retina and lead to diabetic retinopathy and blindness.
- **Cardiovascular problem:** Diabetes increases the risk of coronary artery disease, angina or chest pain, stroke, and heart attack.
- **Excess growth:** Gestational diabetes causes the excess growth.
- **Preeclampsia:** Diabetes leads to preeclampsia in which diabetic patient facing the problem like high blood pressure, excess protein in the urine, and swelling in legs.
- **Gastroparesis:** This is the condition due to diabetes, where the nucleus of the stomach stops working properly.
- **Healing of wounds:** Due to the effect of diabetes, cuts and lesions take more time to heal.

## **4. TREATMENTS AND RESEARCH APPROACH OF DIABETES**

### **4.1 Treatments**

All types of diabetes are treatable, and there is the main goal to keep maintain the blood sugar level. Treatment for type 1 diabetes includes taking carbohydrates, insulin, eating healthy food, and monitoring blood sugar, this type of diabetes needs lifelong insulin therapy which includes insulin injections, and insulin pump. Additional medications also include for type 1 diabetes such as high blood pressure medication, aspirin, and cholesterol-lowering drugs.

Type 2 diabetes needs healthy eating, regular exercise, diabetes medication and blood sugar monitoring. Other possible treatments for type 2 diabetes include metformin which is the first medication prescribed for type 2 diabetes, sulfonylurea is also a medication which helps to secrete more insulin.

Gestational diabetes includes monitoring blood glucose, healthy diet plan, proper exercise, medication, and close monitoring to your baby because it is essential to monitor and control your blood sugar to keep your baby healthy, and for avoiding all complications during pregnancy.

### **4.2 Research Approach**

According to recent research of diabetes in the field of biomedical this is not sure that how many diseases the label Diabetes covers, but it is a serious condition which required daily care. There is some latest development in the diabetes treatments which may be implemented in future diabetes treatment such as, insulin-producing implants made from the stem cell, brand new beta cell or cell transplantation, pancreas transplantation, and islet cell therapy.

## **5. CONCLUSION**

There is the description of diabetes mellitus and its types with treatment and research approach. Diabetes is not an exceptional disease; it affects millions of people all over the world. According to the world health organization, it estimated that 200 million people suffer from diabetes worldwide, and this may be doubled by 2030. So it is very necessary to prevent or minimize the

problem of diabetes, deep research is needed and advance research adopting new technique in the field of biomedical for the treatment of diabetes may improve the efficiency of research and helps to reduce the no of the patient of diabetes.

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