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**DIETARY CONSIDERATION IN PREVENTIVE APPROACH FOR PREDIABETES**

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**ABSTRACT**

Pre-diabetes is a condition of individuals with 5-10% prevalence annually. The reversion of pre diabetes to glycaemic state occurs very frequently. A family having a genetic background of diabetes and history should always follow a balanced and healthy diet. As it could lead to the prevention of further complications associated with diabetes. A fundamental strategy used for detecting the prediabetes condition could help the people in prevention of occurrence of diabetes. Modification in life style, diet is main tool for the management of diabetes. Balanced amount of carbohydrates, fats and proteins should be included in the diet. Not only diet is helpful in fulfilling the stomach of patient but it is also helpful in normalizing the blood sugar level. Diabetes is a condition in which strict control should be done in diet for the patients. In this paper, an attempt is made to evaluate the effectiveness of diet in the management of diabetes.

**Keywords: Prediabetes, Diet, Management, Lifestyle modification**

**INTRODUCTION**

An estimation in the year 2000, shown that world. Out of which India has about 30 million diabetic patients. India has the 17 crore people are diabetic patients in the

highest number of diabetic patients. Another research states that in the coming 30 years, the patients of diabetes will exceed up to 36 crores and 8 crore patients will be from India. Every year on November 14, World Diabetes Day, is celebrated as awareness day for the effects and complications which occurs from diabetes [1].

Diabetes mellitus is a group of metabolic disorders in which blood sugar levels remain high for long periods. The body to utilize glucose completely or partially. It is raised glucose concentration in the blood and alterations in carbohydrate, protein and fat metabolism. Due to failure in the formation of action or liberation or action. Since insulin is produced by the B-cells of the islets of Langerhans, any receding in the number of functioning cells will decrease the amount of insulin that can be synthesized [2].

The hormones of the anterior pituitary, adrenal cortex, thyroid and a-cells of the islets of Langerhans are glucogenic, that is, they increase the supply of glucose. The increase the demand, decrease the secretion or antagonize and inhibit the action of insulin. High blood sugar often results in increased urination, increased thirst, and increased appetite [3].

### **Prevalence-**

Diabetes is on increase in India. The multicenter ICMR study showed a prevalence of 2.5% in the urban and 1.8% in the rural population above the age of 15years. The prevalence is 2.8% among those who are still engaged in strenuous physical activity compared to 48.3% living a near sedentary life. Infections, atmospheric pollution and psychological stress are three major accompaniments of urbanization [4]. These could have important role to play in this epidemic through release of proinflammatory cytokines (TNF and IL-6) from the adipose tissues. One in every eight individuals in India is a diabetic. The revised WHO figures for the year 2025 is 57.2 million diabetics in India. For the onset of diabetes the age is around 40 years while it is around 55 years in other countries [5].

### **Diagnosis**

Diabetes is a disease that gradually weakens our entire body, and continues to grow slowly for months to years without any symptoms [6]. This is called Window period and during this duration, there is a good window of opportunity for prevention of diabetes and its co-morbidity. A family had a genetic background then the family should follow a healthy routine and try to prevent diabetes. And even if the family do not

history of diabetes, it is advisable to periodically check blood sugar levels [7].

#### **Symptoms –**

1. If there is excessive thirst,
2. Have a tendency to excessive urination,
3. Tends to be very hungry,
4. Loss of weight or feeling tired,
5. If any wound does not heal quickly.

#### **Pre-diabetes-**

Prediabetes means your blood glucose (also called blood sugar) levels are higher than normal. It is a condition when your blood glucose levels are higher than normal levels or too high, but not high amount to be called diabetes. Generally people who develop type 2 diabetes are usually have prediabetes first [8]. Although criteria for prediabetes is not clear in various international professional agencies, it is shown as one of the state of high risk for the development of diabetes with the rate of conversion as 5% to 10% [9]. Many evidences also suggested about the link between complications which occurs in diabetes such as nephropathy, neuropathy, and early retinopathy with prediabetes [10].

#### **Management of Diabetes-**

The main modes of treatment of diabetes are-

1. Diet
2. Oral hypoglycemic drugs
3. Physical Activity

#### 4. Education

**Diet-** Diet measures are an essential part of the treatment of diabetic patients, whether they are on diet alone or on sulphonylurea drug or insulin. If a fixed daily diet is recommended and adopted by the patient, then up to certain extent diabetes can be controlled. For a diabetic patient balance diet is very important [11]. The excess amount of sugar can be controlled through balance diet to a large extent and limitation of medicines can also be done through it.

Generally patients become very careless whenever report of blood sugar becomes normal. If there is incidence of pre-diabetes in family, one should always be careful and balance diet should be incorporated [12].

#### **Nutritional Requirements for prediabetic patients-**

**Carbohydrates-** Insulin sensitivity is impaired through the restriction of carbohydrates and vice-versa. The diet which is rich in carbohydrates and fibers helps in the improvement of insulin binding it also helped in the binding of insulin receptors. Elevation of serum triglycerides levels which is also called as endogenous cholesterol also occurs due to the high carbohydrate diet. **60-65%** carbohydrates should be maintained in pre-diabetic diet.

Studies also shown about the increment in intake of carbohydrates did not affect the fasting glucose levels adversely. The correlation between insulin need with the calorie intake are much related then only with carbohydrate diet. Examples- whole grains, oats, gram flour, millet and other high fiber foods [3].

**Proteins-** A diet high in protein approx 20% is good for the health of diabetics because it supplies the essential amino acids needed for tissue repairment. Proteins do not raise blood sugar during absorption as do carbohydrates and it does not supply as many calories as fats. Sources of proteins are pulses. And when we talk about non-veg sources, sea foods and chicken should be eaten and red meat should be avoided. Because red meat contains high amount of saturated fats. And it also leads in the increment of cholesterol [2].

**Fats-** Fat is necessary for the body to function smoothly. They are stored in the body as energy stores. Low fat diet increases insulin binding and also reduces LDL and VLDL levels. It also reduces the incidence of atherosclerosis which is more common in diabetics. The fat content in the diet should be 15-25% of total calories [4].

**Vitamins and Minerals-** Vitamins supplementation is also helpful to overcome oxidative stress and deficiency. Diets rich in

all vitamins particularly in vitamin C and E antioxidants in fruits and vegetables. Minerals are specially magnesium and zinc [4, 5].

**Fibers-** Dietary fibers and complex carbohydrates benefits both type 1 and type 2 diabetics. Generally fibers is not digested and converted to glucose and therefore it does not raise blood sugar. For a better control of diabetes, a diet with atleast 5gm of fiber should be included in the diet [13].

## CONCLUSION

Balanced amount of carbohydrates, proteins and fat should be included in the diet of diabetic patient. Not only a balanced diet fulfills the stomach but the sugar level of patient is also controlled by the incorporation of balanced diet. Although diet plays a vital role in curing the diseases but in diabetes diet occupied more important place then medicines. Hence, it is recommended to diabetes patient that they should eat very consciously whatever they eat. A strict control should be done over diet to cure diabetes. Many studies have shown that through the incorporation of balanced diet helps in prevention of prediabetes. Thus for the prevention of diabetes, modification of life style and diet should be mainly focused.

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