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## Diabetes management with millets

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### Introduction

Diabetes, often referred as 'sugar' or diabetes mellitus in scientific terms, is one of the most common lifestyle disorders. In this disorder the sugar level in our blood becomes higher than normal i.e. more than 126 mg/dl in fasting blood sugar/glucose and 6.5% in HbA1c. In this disorder, the production of a hormone called insulin starts decreasing or even if it is produced, the cells of the body do not utilize it. Insulin is a hormone produced by  $\beta$  cells in the pancreas gland of our body. When we eat food, it gets broken into glucose, which enters our bloodstream utilized by cells for energy. Insulin moves from the pancreas and attaches outside the cells of vital organ where it acts as a key that unlocks the doors of the cells and facilitates the entry of glucose, or sugar, from the blood into the cells, providing them energy and enabling our body to function smoothly. However, in diabetic patients, the body does not produce enough insulin or if present the cells become resistant and does not respond to it properly. In both the cases sugar remains in the bloodstream, leading to excessive sugar levels and leads to diabetes and started affecting the different body organs. If untreated can create worse conditions like diabetic retinopathy (blindness), diabetic neuropathy (numbness and amputation of lower limb), diabetic nephropathy (Kidney failure), cardiovascular disease (heart disease) etc.

### Types of diabetes mellitus

There are majorly two types of diabetes Type 1 and Type 2. Type 1 diabetes occurs due to an autoimmune disease where the immune cells start destroying the insulin-producing cells, leading to cessation of insulin production and an increase in blood sugar levels. More common individuals below 45 years of age.



In Type 2 diabetes, insulin is produced but the cells cannot use it or become insulin resistant. This can be due to several reasons such as excessive obesity, high blood pressure, stress, sedentary lifestyle, lack of exercise, smoking, etc., and it is possibly hereditary and more common in individuals over 45 years.

### **Symptoms of diabetes mellitus**

Symptoms of both types of diabetes include excessive thirst, increased hunger, frequent urination, blurry vision, sudden weight loss or gain, slow healing of wounds, easy infection, fatigue, irritability, weakness, tingling in hands and feet, etc. These symptoms should not be ignored as they can signify a serious disease.

To prevent this problem, we need to pay attention to our diet from the beginning. If we talk about diet, millets are a better option that can prevent diabetes or help manage it after its onset.

### **Role of millets in diabetes management**

Millets have once again become world-famous. Credit goes to the Government of India and the United Nations for deciding to celebrate the year 2023 as the International Year of Millets. Following this, all government and non-government organizations started promoting millets, from distributing free seeds to organizing exhibitions, seminars, conferences, publications, and training on their production, which spread awareness among the public.

Millets like finger millet, pearl millet, barley, sanwa/madira/jhangora, sorghum, etc., are rich in nutrients and contain a balanced amount of all essential nutrients beneficial for our body. Just consuming them can prevent many diseases. For diabetic patients, millets are a good option as they have a lower glycemic index (GI) compared to other grains. Their consumption leads to a slower and more stable increase in blood sugar levels, aiding in diabetes management.



A key beneficial whole grain for diabetes is sanwa, known as barnyard millet in English. Sanwa contains beta-glucan, a soluble fibre that forms a gel-like structure in the intestines and prevents the reabsorption of cholesterol and carbohydrates from digested food. Additionally, sanwa contains GABA (gamma-aminobutyric acid), which regulates insulin production and secretion, helping manage blood sugar levels. Diabetic patients should definitely consume 50 grams of sanwa daily, whether as rice or as dishes like porridge.

Another beneficial whole grain for diabetes is Finger millet or Ragi, a nutritious food effective in managing diabetes. Ragi contains a variety of nutrients such as proteins, vitamins, minerals, and fibers. Its complex carbohydrates result in a lower glycemic index (GI) compared to wheat, helping control blood sugar levels. As often heard, any research before being conducted on humans is first done on rats. One study showed that diabetic rats fed ragi continuously for four weeks experienced faster wound healing, increased antioxidant levels, and a reduction in blood sugar. Ragi, rich in polyphenols, enhances antioxidants in the body, aiding in diabetes control. The fiber in Ragi also helps regulate blood sugar levels. It is advisable to consume roti made from 50% Ragi flour mixed with wheat flour.

Other grains like pearl millet, kangni, and kutki can also help manage diabetes. These grains are rich in nutrients, fibers, and antioxidants. It is recommended to include 90-100 grams of these millets in our daily diet, whether as roti, rice, sattu, or dosa.

### **Current scenario**

The number of people suffering from diabetes in India is increasing day by day, with India being second in the world in terms of diabetes cases after China. The prevalence of diabetes is rising significantly in India, making it a serious public health issue. According to recent surveys, almost 101 million Indians, or 11% of the country's total population, have diabetes. A significant section of the population is at risk for acquiring diabetes, as seen by the 15% of Indians who are pre-diabetic. If we see the gender wise data, approximately 12.1% of males and 10.7 % of females are affected by diabetes. Among the individuals of 15-49 years, the prevalence of affected male and females with diabetes are 5.56% and 4.81 % respectively.

Both sexes indicate a similar incidence of about 4% in the 35-49 age range. This is likely just the reported data; the actual numbers may be much higher. Additionally, according to lifetime risk estimates, Indian men have a 55.5% chance of acquiring diabetes by the age of 20, while Indian women have a 64.6% chance. These numbers demonstrate the critical need for gender-sensitive approaches, early diagnosis, and focused awareness in order to effectively manage and prevent diabetes nationwide.



## **Conclusion**

To protect ourself from this silent yet serious disorder, it is important to regularly monitor the blood glucose levels through blood glucose tests and HbA1c tests which is easily available at nearby hospitals, pharmacies and diagnostic centres. These test helps in early detection of the diabetes.

Managing diabetes isn't about medicines only, lifestyle plays a huge role. While managing diabetes, it's crucial to focus on two important things i.e. diet and exercise. What we eat, how we eat, how often we move or do exercises matters too. Minimize the consumption of sweets, avoid sugar, potatoes, cream- milk, refined flour or maida, tea, and fruit juices. Instead, try to shift towards more wholesome nutrient rich options like millets, that are considered as nutri-cereals and are fantastic alternative to rice and wheat.

Along with millets we can also include sweet potatoes, bitter gourd juice, burans (rhododendron) juice, etc can be added to the diet. Exercise is much important to increase the basal metabolic rate (BMR), a mix strength training, cardio is always beneficial. Above all, do not ignore early signs and symptoms like fatigue, frequent urination or sudden wight changes. Taming actions early can prevent complications later. A healthy lifestyle, timey tests and a mindful diet can go a long way in keeping diabetes at bay.

