



## Diabetes: Need for Transition to A Novel Perspective

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### Abstract

The global increase in the prevalence of diabetes is due to population growth, aging, urbanization and an increase of obesity and physical inactivity. The most important determinants of the epidemic are the rapid epidemiological transition associated with changes in dietary patterns and decreased physical activity. Unlike in the West, where older populations are most affected, the burden of diabetes in Asian countries is inexplicably high in young to middle-aged adults [1,2].

Lifestyle modification is the most cost-effective intervention for prevention of diabetes in high-risk groups in India [3]. However, control of diabetes with diet, weight control and physical activity has been difficult and will not be sufficient for most of the patients. Moreover, the steady increase in the incidence of type 2 diabetes has significant socioeconomic implications [4].

**Keywords:** Diabetes; Lifestyle; Transition

### Introduction

#### Diabetes burden in India: Medical, Social and Economic

The diabetes burden in India results from various factors. Genetic predisposition combined with lifestyle changes and associated with urbanization and globalization; all together contribute to the rapid rise of diabetes in India. Ethnicity plays a role as well, and in one example, there are lower thresholds for the effect of BMI on age-adjusted type 2 diabetes (T2D) prevalence rates among Indians [5]. Moreover, T2D in the Indian population appears to occur at least a decade earlier than in Europeans [6].

Due to these sheer numbers, the economic burden due to diabetes in India is among the highest in the world. However, the real burden of diabetes is due to its micro- and macro vascular complications, which lead to increased morbidity and mortality [7].

#### Epidemiological transition

Currently, India is undergoing a rapid epidemiological transition with increased urbanization. The current urbanization rate is 35% compared to 15% in the 1950's and this could have major implications on the present and future disease patterns in India with particular reference to diabetes and coronary artery disease [8,9].

Socio-economic development over the last 40-50 years has resulted in a dramatic change in lifestyle from traditional to modern,

leading to physical inactivity due to technological advancement, affluence leading to consumption of diets rich in fat, sugar and calories and a high level of mental stress. All these could adversely influence insulin sensitivity and lead to obesity. Since 1970, several studies have been done comparing urban and rural populations in India, which have shown higher prevalence of diabetes among urban residents compared to their rural.

Counter parts both in southern and northern parts of India [10-12].

#### Dietary alteration

Eating well is one of life's greatest pleasures. Fortunately, having diabetes does not prevent you from enjoying a wide variety of foods. People with diabetes have the same nutritional needs as anyone else [13].

Good health depends on eating a variety of foods that contain the right amounts of carbohydrates, protein and healthy fats, as well as vitamins, minerals, fiber and water. Healthy eating helps keep your blood sugar in your target range and can prevent the complications of the disease [14].

In India, as urbanization and economic growth occurs, there are major deviations in the dietary pattern which are influenced by the varied cultural and social customs. Traditional dietary patterns are

disappearing as Indians are adapting themselves to living in the more industrialized, urban environments that are brought about by globalization. The major dietary changes that urbanization and affluence bring about substitution of unrefined wheat, rice or millets by highly polished wheat or rice and increased intakes of fat in higher income groups. High calorie intakes by high-income groups in India are largely due to high intakes of refined cereals and carbohydrates rather than fats and meat as in Europe and North America [15].

By choosing nutrient-rich foods that provide the most nutrients per calorie, you can build a healthier life and start down a path of health and wellness. Small steps can help you create healthy habits that will benefit your health now and for the rest of your life. Studies have shown over the past decade that vitamin D is important for normal immune function, blood vessel health, and organ function (including the pancreas). Low vitamin D levels increase the risk for developing both Type 1 and Type 2 diabetes [16].

### Physical inactivity

Adaptation of western lifestyle with increasing physical inactivity could be an important contributor to these factors. In Fiji, among Melanesian and Indian men, the prevalence of diabetes was more than twice as high in those graded as sedentary or undertaking light activity as in those classified as performing moderate or heavy exercise [17].

### Need for novel remedial perspective

Physical activity plays an important part in preventing type 2 diabetes. A major government study, the Diabetes Prevention Program (DPP), showed that modest weight loss of 5 to 7 per-cent — for example, 10 to 15 pounds for a 200-pound person — can delay and possibly prevent type 2 diabetes. People in the study used diet and exercise to lose weight [18].

Exercise is critical in diabetes because exercise is your body's cue that you need to absorb and use sugar, so without exercise (or strenuous occupational activity) there is no cue and the sugar just stays in your blood stream. Unfortunately, your body doesn't stop absorbing sugar, it just keeps it in the blood after storing a whole lot as fat [19].

Studies in India indicate that more than 50% of people with diabetes have poor glycaemic control (HbA1c > 8%), uncontrolled hypertension and dyslipidaemia, and a large percentage have diabetic vascular complications. Overall, diabetes care in India leaves much to be desired. Increased awareness amongst health professionals to improve the standard of diabetes care is urgently needed, along with the development of novel therapeutic agents that can effectively control diabetes and prevent the development and progression of its complications without compromising on safety [20-23].

### Prevention or delay of diabetes: Life style modification

Research studies have found that lifestyle changes can prevent or delay the onset of type 2 diabetes among high-risk adults. These studies included people with IGT and other high-risk characteristics for developing diabetes. Lifestyle interventions included diet and moderate-intensity physical activity (such as walking for 2 1/2 hours each week). In the Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, the development of diabetes was reduced 58% over 3 years. Studies have shown that medications have been successful in preventing diabetes in some population groups.

In the Diabetes Prevention Program, people treated with the drug metformin reduced their risk of developing diabetes by 31% over 3 years. Treatment with metformin was most effective among younger, heavier people (those 25-40 years of age who were 50 to 80 pounds overweight) and less effective among older people and people who were not as overweight. Similarly, in the STOP-NIDDM Trial, treatment of people with IGT with the drug acarbose reduced the risk of developing diabetes by 25% over 3 years. Other medication studies are ongoing. In addition to preventing progression from IGT to diabetes, both lifestyle changes and medication have also been shown to increase the probability of reverting from IGT to normal glucose tolerance.

State of the art diabetes care should include smoking prevention and cessation as a priority of treatment [24]. By focusing on one of the most prevent-able risk factors for diabetes, health educators can help patients avoid initiating or continuing smoking as a high-risk behavior.

The risk for cardiovascular disease among smokers with diabetes is up to 14 times higher than that for smoking or diabetes alone.

### Conclusion

Research indicates that because diabetics are already at a higher risk of cardiovascular disease, they may face increased risk due to the impact of particle pollution on their cardiovascular systems [25]. You can keep your blood glucose levels on target by making wise food choices, being physically active, and taking medicine if needed.

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