

Diabetes mellitus: Trends in northern India

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ABSTRACT

Diabetes mellitus is becoming a global health issue with more than 80% diabetics living in developing countries. India accounts for 62.4 million diabetics (2011). Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB) study showed highest weighted prevalence rate in the north India among all studied regions. Diabetes in north India has many peculiarities in all aspects from risk factors to control programmes. North Indians are becoming more prone for diabetes and dyslipidemia because rapid westernization of living style and diet due rapid migration to metropolitan cities for employment. North Indian diabetes is plagued with gender bias against females, poor quality of health services, myths, and lack of disease awareness compounded with small number of prevention and awareness programmes that too are immature to counteract the growing pandemic.

Key words: Diabetes mellitus, diabetic myths, financial burden, northern India, urbanization

GLOBAL VIEW

Diabetes mellitus is a major clinical and public health problem accounting for 4.6 million deaths annually worldwide.^[1] According to the International Diabetes Federation, around 366 million people globally are currently estimated to have diabetes, of which 80% live in low and middle income countries.^[1] The more worrisome fact is that about 50% of those with diabetes remain undiagnosed.^[1] The Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011.^[2] These numbers are projected to increase to 101.2 million by 2030.^[1,3] The ICMR-INDIAB study^[2,3] showed that the weighted prevalence of diabetes in Tamil Nadu was 10.4%, in Maharashtra 8.4%, in Jharkhand 5.3%, and in Chandigarh 13.6%, and that overall 62.4 million people in India had diabetes in 2011. This emphasizes the sheer magnitude of the diabetes epidemic in India.^[2,3]

North Indian perspective

There is a series of epidemiological studies revealing different aspects of the disease in the different parts of the country, but most of these concentrate on the quantitative rather than qualitative aspects. ICMR-INDIAB study (2011) shows the maximum prevalence of type 2 diabetes mellitus (T2DM), insulin-like growth factors (IGFs), and impaired glucose tolerance (IGT) in the north Indian center of Chandigarh among the 4 selected regions.^[2] A previous study shows a steep urban-rural gradient with regards to awareness regarding diabetes in northern India as compared to relatively homogenous awareness in the southern parts of the country.^[3] These aspects—a higher prevalence and lower awareness—underscore the need for multifaceted action to combat diabetes in northern India.

Gender distribution

Gender distribution from community studies in India show conflicting results. While some studies from north India show female predisposition,^[4] others from southern India have reported higher prevalence in males.^[5] Still others have found no gender difference in prevalence.^[4] In a north Indian registry, twice as many as under-30 male diabetics are reported as compared to female diabetics. In most of the north Indian states, male to female ratio is worse because of female feticide due to centuries-old wish to have a male child to carry the family's name forward.

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Because of the social disfavor toward girls, female patients are usually the victims of under reporting, leaving treatment and follow up, and absence of family and social support. Usually diabetes in girls is considered as stigma in the society, and families do not pay attention to their treatment. Besides, females observe religious fasts more frequently as compared to males and remain indoors most of the time, with little or no access to recreational physical activity. Both these factors hinder their diabetic control.^[6]

Socioeconomic distribution

The association of socioeconomic status and diabetes also shows interesting changes. What was earlier considered a disease of the rich and affluent is now also prevalent among the blue collar workers. The study from north India showed that even the slum dwellers had high prevalence of obesity, glucose intolerance, and dyslipidemia.^[7] A study conducted in a north Indian metropolitan slum in 2001 recorded the overall prevalence of diabetes to be 10.3%, with 11.2% in males and 9.9% in females, and the prevalence of obesity noted was 15.6% in females and 13.3% in males.^[8] Moreover, studies show that poor people with diabetes are more prone to complications as they have inadequate access to healthcare.^[7]

Rapid urbanization, especially in NCR, has rapidly changed the lifestyle and diet of rural population and has turned the small scale farmers into urban vendors and factory workers dwelling in slums.^[7]

As more than 50% of Indian population still lives in rural areas where lack of disease awareness, poor health facilities and drug supply, poor drugs storage facilities, especially for insulin, poor logistics make the control of disease difficult, and above all unhealthy lifestyle, like hookah-smoking and tendency to go barefoot, further increase the risk of complications.

Healthcare-seeking behavior and financial constraints

Diabetes is an expensive illness to treat even in developing countries, although the pattern of costs was quite different from that of developed ones. There is a need to increase awareness of these facts among all health professionals involved in the care of diabetes in developing countries as well as health policy makers of these countries. This work also makes it clearly evident that the largest share of costs was being borne by patients and their families. Any efforts at cost reduction should, therefore, have the family as its focus, and relieving the family of this financial burden needs to be prioritized.

According to a study conducted in a north Indian metropolitan slum, availability of cheap but standard

care (e.g. government hospitals) is often far from the reach of common man because of crowding, non-availability of drugs and equipments, and concentration of healthcare facilities in urban areas. All this leads to treatment by quacks and unqualified personnel further worsening the situation. Furthermore, loss of wages due to disease, its complications, and their expensive treatment creates a vicious circle.^[9]

Myths about diabetes and religion

Diabetes management in north India is plagued with various superstitions and myths, which hinder the patients from seeking medical advice and practicing healthy lifestyle. The most common myth is eating more sugar causes diabetes, while others are soaking feet in water reduces blood sugar level, diabetes is contagious, diabetes is the result of sins of previous life and can be cured by spiritual treatment, and diabetes can occur in old age only. The prevalence of these myths is more common in females, less-educated people, and non-diabetics. Religious practices like fasting and long-distance pilgrimages in worse conditions for long periods can also hinder the diabetes management.^[10] According to a study published in 2012, high altitude, strenuous journey, lack of insulin and oral hypoglycemic agents (OHAs), starvation, and sepsis were the main causes leading to the hyperglycemic emergencies during the Amarnath pilgrimage.^[11] Similarly, fasting for the whole lunar month of Ramadan is considered as an obligatory duty of every healthy Muslim, but fasting in a diabetic person increases the risk for hypoglycemia, hyperglycemia, diabetic ketoacidosis, dehydration, and thrombosis.^[12]

Stress and diabetes

A study conducted in a north Indian metropolitan city reveals that everyday stresses facilitate the onset of diabetes and impede diabetes management. Besides, the prevalence of depression is alarmingly high among diabetics, especially belonging to the poorest strata of the society.^[13] According to a study conducted in 2010 in a north Indian metropolitan city, prevalence of depression was as high as 41% in diabetics.^[14]

Nutrition and physical activity

Higher intakes of refined carbohydrates, saturated fats, and trans-fats have been shown to increase diabetes risk in all populations, while low glycemic index foods and foods high in dietary fiber have been shown to decrease the risk. In general, a typical South Asian meal has a higher caloric intake and a higher percentage of carbohydrate than European meal.^[15] According to a study published in 2009, low intake of monounsaturated fatty acids (MUFA) and n-3 polyunsaturated fatty acids (PUFA) and high intake of saturated fats with wide use of hydrogenated

“vanaspati ghee”, containing >53% trans fatty acids (TFA), and pure ghee leads to insulin resistance and subclinical inflammatory state. Low fruit and vegetable intake is noted in less educated slum dwellers of north India, causing low fiber intake increasing insulin resistance.^[16]

Reductions in physical activity increase the risk of diabetes in all ethnic groups; however, South Asians appear to be even less physically active than their Caucasian counterparts. South Asians have demonstrated physical activity levels that were 50-75% lower than those of Europeans.^[15]

Agriculture and trade policies encourage overconsumption of unhealthy foods while urban design and transport facilities promote sedentary life style.^[15]

Metabolic peculiarities

Lipid abnormalities in the form of high triglyceride levels are the common abnormalities found in some studies along different age groups.^[16-19] These observations are consistent with observations made in other north Indian studies.^[17-19] North Indian population is highly insulin resistant even in the presence of only mild increase of body mass index (BMI) or abdominal adiposity.^[17] Importantly, a higher level of hyperinsulinemia was reported in Indian neonates, as recorded at birth, compared with White Caucasian neonates.^[17]

Initiatives in north India: All stakeholders, patients, their families, NGOs, state governments, and the Government of India have to take an initiative in order to reduce the prevalence of diabetes and its complications. In 1987, the National diabetes control programme was started, which included areas of north India and other parts of the country to identify high risk subjects and manage complications at an early stage, but the project was suspended owing to lack of funds.

Some of the strategy, which targets the north Indian population, is as follows:

In 2007, the MARG project was launched in 3 cities of north India to create awareness about diabetes, obesity, dyslipidemia, and coronary artery disease (CAD) among children and adolescent.^[20] In January 2008, the National programme for prevention and control of diabetes, cardiovascular diseases and stroke was launched in many parts of the country, including the north Indian state of Punjab.^[20] In January 2012, prevention and control of diabetes project was started in 5 cities of Uttar Pradesh by Catholic Health Association of India for prevention and control of diabetes with special emphasis on pregnant women.^[20]

CONCLUSION

The epidemic of diabetes is growing at an alarming rate in northern India. Knowledge and awareness about diabetes in India, particularly in northern rural areas, is very poor. Moreover, numerous factors govern the trend of diabetes in northern India, which should be addressed first in order to achieve prevention and better control of diabetes.

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