

Introduction

[Diabetes](#) often referred to by doctors as *diabetes mellitus*, describes a group of metabolic diseases in which the person has high blood glucose (blood sugar), either because insulin production is inadequate, or because the body's cells do not respond properly to insulin, or both.

Patients with high blood sugar will typically experience various symptoms. The most common diabetes [symptoms](#) include frequent urination, intense thirst and hunger, weight gain, unusual weight loss, fatigue, cuts and bruises that do not heal, male sexual dysfunction, numbness and tingling in hands and feet. Diabetes is known as a metabolism disorder. Metabolism refers to the way our bodies use digested food for energy and growth.

There are three main [types](#) of diabetes mellitus:

- Type 1: Diabetes resulting from the pancreas's failure to produce enough insulin.
- Type 2: Diabetes beginning with insulin resistance - a condition in which cells fail to respond to insulin properly
- Type 3: Gestational diabetes - occurs when pregnant women without a previous history of diabetes develop high blood-sugar levels.

Diabetes is one of the most serious non communicable diseases identified by the World Health Organization (WHO), along with cardiovascular disease, cancer and chronic respiratory diseases. It is a chronic, incurable, costly, and increasing but largely preventable non communicable disease which is responsible for millions of deaths across the world annually, creating severe

complications, and incalculable human misery.

Global Status

In 2014 the global prevalence of diabetes was estimated to be around 9% among adults aged more than 18. In 2012, an estimated 1.5 million deaths were directly caused by diabetes .More than 80% of diabetes deaths occur in low- and middle-income countries. [WHO](#) estimates that diabetes will be the 7th leading cause of death in 2030. According to the International Diabetes Federation, diabetes affects at least 285 million people worldwide, and that number is expected to reach 438 million by the year 2030, with two-thirds of all diabetes cases occurring in low- to middle-income countries. The number of adults with impaired glucose tolerance will rise from 344 million in 2010 to an estimated 472 million by 2030.

Globally, it was [estimated](#) that diabetes accounted for 12% of health expenditures in 2010, about \$376 billion, a figure expected to hit \$490 billion by 2030. Its increasing prevalence and associated health complications threaten to reverse economic gains in developing countries. With limited infrastructures in third world countries for diabetes care, many countries are ill-equipped to manage this epidemic.

Status in South Asia

[Asia](#) accounts for 60% of the world's diabetic population. In recent decades, Asia has undergone rapid economic development, urbanization, and transitions in nutritional status. This has led to an 'explosive increase in diabetes prevalence' within a relatively short time. In 1980, less than 1% of Chinese adults had the disease.

By 2008, the prevalence had reached nearly 10%, it was estimated that more than 92 million Chinese adults had diabetes, and another 148 million were pre-diabetic. Imaging technology that measures fat in humans has shown that Asians of a healthy BMI have more fat around organs and in the belly area than Europeans with the same Body Mass Index (BMI) making them prone to diabetes.

People from [South Asian communities](#) can be up to six times more likely to have [diabetes](#) than the general population. Pakistani and Indian women are especially at risk. South Asians are at higher risk for Type 2 diabetes, up to four times higher than other ethnic groups probably due to a combination of genetics and environment. Recent studies have shown that South Asian diets are associated with diabetes risk factors.

Status in Nepal

Nepal is a Himalayan country with a population surpassing approximately 30 million. A study reported the prevalence of pre-diabetes to diabetes in Nepal to be 19.5% to 9.5%. The [Nepal Diabetes Association](#) (NDA) had reported a year back that among people aged 20 years and older living in urban areas, 15% are affected by this disease. Among people aged 40 years and older in urban areas, this number climbed to 19%. Nepal is also facing the consequences of adopting busy and unmanaged urban lifestyle leading to obesity and metabolic syndrome. Studies have shown prevalence of overweight and obesity in certain sections of the population to be as high as 32.9% and 7.2% respectively.

Diabetes is an endemic disease in Nepal, and is bringing new challenges in connection with rapid urbanization and

modernization. A [survey](#) conducted in urban Nepal between 2001 and 2002 showed that 10.8% and 13.2% of males suffered from diabetes and pre-diabetes respectively, in comparison to the figures for females being 6.9% and 10.2%, respectively. The Nepal Diabetes Association reported that diabetes affects approximately 15% of people of more than 20 years and 19% of people of more than 40 years of age in urban areas. According to WHO, diabetes affects more than 436,000 people in Nepal, and this number will rise to 1,328,000 by 2030. The percentage of diabetic patients has increased from 19.04% in 2002 to 25.9% in 2009 in Nepal and is continuously growing ever since.

Diabetes cases have been noticed to be increasingly reported in hospitals in Nepal. In Bir Hospital, the central government hospital, diabetes was reported to be the seventh common disease of medical admission. Analysis of diabetic patients admitted in medical wards of Bir Hospital over a period of 4 years revealed that percentage of diabetic patients is gradually increasing. In TU Teaching Hospital, Kathmandu, diabetes comprised almost 10% of the admissions in the medical ward in 2010. The higher percentage of diabetes seen in Tribhuvan University Teaching Hospital at the same time could be due to the reason that Bir Hospital serves more rural and deprived sections of population. Up to 95% of diabetic patients were reported to be type 2 diabetes.

Nepal is now passing through an epidemiological transition with non-communicable diseases accounting for more than 44% of deaths and 80% of outpatient contacts. Though actual estimation of prevalence of [non-communicable diseases](#) is not available, a hospital based study showed that out of the total admitted

patients in Nepal, 36.5% suffered from non-communicable diseases. Out of them 10% were known to have diabetes. A study conducted in eastern Nepal among the general population showed that 6.3% had diabetes. While the communicable diseases are still an important cause of preventable deaths, the chronic [non communicable diseases](#) emerged as major killers. Nepal has higher age standardized death rates and disability adjusted life years from non-communicable disease than communicable diseases.

Current Interventions/Programmes

Various [programmes](#) have been conducted and different policies have adopted by the government to control diabetes which is one of the major health issue in Nepal. Attempts have been made on revising tobacco taxes and strengthening anti-smuggling measures. Standardization and mandating the food labelling policy by the government has been vital in improving knowledge and awareness of food composition. The government has been heavily involved in the purchase of essential medications to increase the access and affordability of these medicines. Attempts have been made in establishing a regional health technology assessment institution to improve the effectiveness of intervention for diseases. There has also been made use of regional education and training capacity to complement the national needs for human resources in order to improve both staffing and skill levels.

The government has also been participating in establishing a regional network of surveillance and assessment to improve national capacity through knowledge sharing and experience exchange. It has

been working in partnership with UNICEF, WHO as well as various other NGOs and INGOs to prevent and control the problem of diabetes throughout the country.

Existing Challenges and Barriers

The problem of diabetes is reflected by its increasing complications and lack of access to proper and timely treatment.

Many developing nations like Nepal have experienced rapid economic and social development with concomitant shifts in lifestyle habits and dietary structure. These changes promote over nutrition and positive energy balance. In Nepal, traditional dietary patterns are being lost as the population adapts to more industrialized and urban food environments. These changes have a significant impact on type 2 diabetes risk by increasing body weight and central adiposity, and decreasing physical activity. With the rapid pace of nutrition transition, many countries are facing coexisting problems of over and under-nutrition which lead to the double burden of infectious and chronic diseases.

Tobacco use, physical inactivity, unhealthy diet and harmful use of alcohol increase the risk of diabetes. These behaviors lead to four key physiological changes. Use of tobacco and alcohol consumption among adults is higher in Nepal as compared to other South Asian neighbors. The number of female smokers is higher in Nepal compared to other countries.

There is historical deficiency in knowledge about diabetes and inequalities in the quality of education reaching each region in the country. Additionally, the low level of community knowledge of diabetes reflects on the extent of health promotion for most

chronic non-communicable diseases. At the moment, there are no comprehensive primary care programmes for diabetes in the country and diabetes health education is done within health facilities through microteaching and only targets those with diabetes. This therefore leaves the rest the public ignorant of the disease. Most of the diabetes health promotion efforts by different stakeholders are uncoordinated and the messages are not standardized due to lack of clear guidelines regarding diabetes education. There is even low knowledge of diabetes among health care workers who are expected to deliver health education to the community.

Community knowledge, culture and beliefs about diabetes are a prerequisite for individuals and communities to take action to control the disease. This knowledge affects their attitude and uptake of health services, including health education. Research into health knowledge and beliefs around diabetes causation and prevention among the general community in Nepal is lacking.

Way Forward

To address the problem of diabetes, more effective health care system and access to proper medication is required. Awareness regarding diabetes and its prevention should be conducted with a more targeted approach with effective mass media campaigns, reaching out to not only the poor and excluded but also the well-to-do class.

Avoiding diabetes also involves improving the eating habits and maintaining proper diet. Intake of food needs to be balanced. Exercise and physical activities can help control the level of diabetes throughout Nepal. Breast feeding needs to be promoted

especially to rural women to prevent their children from the risk of diabetes.

Various types of promotions and subsidies in medication may be required if this problem is to be tackled effectively. The medications are usually expensive and inaccessible to the poor people. Therefore, the availability of such medicines should be ensured and at a relatively lower cost. Strict punishments and legal provisions are also required to discourage smoking and drinking of alcohol.

To curb this scourge of diabetes, public health interventions are required to prevent diabetes or at least delay its complications. Intensive lifestyle modification is vital for those at risk of diabetes and aggressive treatment is required for those with the disease. A high risk approach targeting individual at risk of diabetes and a population or public health approach aimed at reducing the risk factors for diabetes at the community are necessary.

Knowledge is the greatest weapon in the fight against diabetes. Information can help people assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take care of their health. It is therefore in the interest of the country to design and develop a comprehensive health promotion strategy for diabetes mellitus and its related risk factors. It is equally important to design and implement suitable diagnostic, management and treatment protocols for people with diabetes.