Diabetes Management in India – From Ivory Towers to Ground Reality

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Abstract :

There is an Emerging global epidemic of diabetes is at hand .It is predicted to become the 7th leading cause of death in the world by the year 2030. In the year 2012, diabetes was the direct cause of 1.5 million deaths. Surprisingly, 80% of diabetes deaths occur in low- and middle-income countries. In developed countries, age preponderance is >50 years, whereas in developing countries age preponderance is between 35 and 64 years. It is a lifestyle associated disease and largely preventable, diagnosis is easy and if adequately treated most of the complications particularly microvascular can be prevented as seen in Diabetes Control & Complications Trial(DCCT) & United Kingdom Prospective Diabetes Study (UKPDS) and numerous other studies. There are guidelines for diabetes management from different associations like American Diabetes Association, International Diabetes Federation, American Association of Clinical Endocrinologists etc & there is lot of research going on and now many new molecules are available in the market, but in our country all the newer antidiabetic medications and newer Insulins are costly and out of reach for low income group patients .There are barriers at many levels, which prevents proper management of the disease in the community. Ground reality is very different from ideal situation.

Key words : Diabetes, Management

Epidemiology :

As per WHO, the number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. The global prevalence of diabetes has risen from 4.7% in 1980 to 8.5% in 2014. It has been rising more rapidly in middle and low income countries. [1] The International Diabetes Federation (IDF), has raised a serious alarm for India, by saying that nearly 52% of Indians aren't aware that they are suffering from high blood sugar. India & China are the most populated countries of the world and fastest growing major economies but they are also confronting a growing burden of type 2 diabetes. The prevalence of diabetes is highest in China which has tripled, and in India it is doubled in less than twenty years. China has highest number of people with diabetes (109.6 million adults , 11%) at present, and India is second with approximately 69.2 million adults (9%) with diabetes. [2] This is expected to rise to 101.2 million (65% increase) by 2030, resulting in every fifth person with diabetes in the world to be an Indian. An estimated 77.2 million people in India and 280 million world-wide are suffering from pre-diabetes increasing the burden further.

As per ICMR INDiab study, the overall prevalence of diabetes in all the 15 states of India was 7.3%. And it varied from 4.3% in Bihar to 10.0% in Punjab, 8.4% in Andhra Pradesh,7.7% in Karnataka and 7.1% in Gujarat. It was higher in urban areas (11.2 %,) than in rural areas (5·2%, $p<0·0001$) and overall, 1862 (47·3%) of 3938 persons identified as having diabetes were not diagnosed previously. States with higher per-capita GDP had a higher prevalence of diabetes (e.g., Chandigarh, which had the highest GDP of US$ 3433, had the highest prevalence of 13·6%).In rural areas of all states, diabetes was more prevalent in individuals of higher socioeconomic status. However, in urban areas of the more affluent states (Chandigarh, Maharashtra, and Tamil Nadu), diabetes prevalence was higher in people with lower socioeconomic status. [3]

The National Urban Survey conducted across the metropolitan cities of India reported similar trend: 11.7 % in Kolkata (Eastern India), 6.1 % in Kashmir Valley (Northern India),11.6 % in New Delhi (Northern India), and 9.3 % in Mumbai (West India) compared with 13.5 % in Chennai (South India), 16.6 % in Hyderabad (South India), and 12.4 % in Bangalore (South India). [4] As per Data from the A1chieve Study, the mean HbA1c

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of 9.2% indicates the poor glycemic control in our country. [5] High prevalence of complications related to Type 2 diabetes were seen in the patients with long standing diabetes (9.9 ± 5.5 year).Neuropathy (24.6%) was the most common complication seen in these patients, followed by cardiovascular (23.6%), renal (21.1%) and eye complications (16.6%). Many patients had multiple complications. [6]

Why are Indians Highly Susceptible to Diabetes?

Genetic factors are among the greatest contributors to the rapid spread of this disease. On an average, Indians are four times more likely to develop diabetes than Europeans, based solely on genetic outlook. There is susceptibility to early decline in beta cell function and propensity for insulin resistance.

High prevalence of obesity in India is a very important risk factor for diabetes.

Early life factors like in utero under or over nutrition, both lead to epigenic modification. Low birth weight children (estimated 31% in our country) are predisposed to insulin resistance and increased diabetes risk in adult life. Individuals who are born thin but experience rapid weight gain in childhood are also at increased risk for type 2 diabetes and this phenomenon is also observed in India due to nutrition transition. Dietary changes leading to increased consumption of dietary fat, refined carbohydrates and sugar sweetened beverages and decreased consumption of cereals are also contributory. Urban migration and change in lifestyle is another fact. The younger generations are increasingly choosing a sedentary lifestyle. Physical inactivity is also a big risk factor. Smoking increases diabetes risk by 45% and India has second highest number of smokers after China, an estimated 100 million smokers in year 2010.

The so called "Asian Indian Phenotype" or " thin fat Indians "refers to certain unique clinical and biochemical abnormalities in Indians which include increased insulin resistance, greater abdominal adiposity, i.e., higher waist circumference despite lower body mass index, lower adiponectin and higher high sensitivity C-reactive protein levels. This phenotype makes Asian Indians more prone to diabetes and premature coronary artery disease. [6] Air pollution exposure is also an emerging risk factor, though more research is needed to uncover the role.

Main challenges for diabetes mellitus management in India [7]

- Rising prevalence in urban and now also in rural areas.
- High prevalence of prediabetes (IGT) & it remains undiagnosed.
- Genetic and environmental risk factors.
- Increasing prevalence in younger individuals.
- Delayed diagnosis, delayed and improper treatment.
- Low awareness among the public.
- Limited health care facilities in urban & more so in rural areas.
- Diagnosed cases having suboptimal diabetes control.
- High cost of disease management.
- Increasing rate of diabetes complications.

If you look at health care delivery in India, Doctor/population ratio is 0.5/10000 as compared to 1.6/10000 in China, 2.56/10000 in USA, 2.3/10000 in UK & 3.28/10000 in Sweden. In rural area, as per study by Anand et el, it is 1/15800. 80% doctors, 75% dispensaries & 60% hospitals are located in urban areas. Qualified physicians are 11.3/10000 in urban areas and 1.9/10000 in rural areas.

Barriers in diabetic management in India

1) Patient barrier

Lack of awareness, poor motivation,economic constraints, denying risk, having fear & confusion. Immediate benefits are not seen with intensive management, sometimes it is lack of family support or lack of trust in health care providers and modifying behavior and sustaining the behaviour is very difficult as it involves long term change in lifestyle. [1]

2) Societal barriers related to diabetes management [8]

Urban

- Changing trends in the lifestyle.
- Unhealthy eating habits, e.g. high calorie fast foods, sugary beverages etc.

- Increased frequency of eating out in the families.
- Faith in different medical systems and frequent changes in type of treatment.

Rural

- High rates of illiteracy & poverty.
- Multilingual population & varied cultural, religious customs.
- Fear, superstitions and wrong beliefs.
- Faith in alternative systems of medicine.
- Lack of interest to go to doctors or hospitals.

3) Barriers related to medical profession [7]

- Medical training is not focused to treat diabetes, and medical practitioners or government medical officers are not trained to treat diabetes , more so in rural areas.
- No universal screening for diagnosis.
- Lack of available Indian guidelines for General Practitioners.
- Most of the clinical workload in developing societies is due to acute illnesses and infection.
- Lacking team approach for diabetes management.
- Lack of trained paramedical persons like diabetes educators.

Diabetes Attitudes, Wishes and Needs (DAWN) survey reported that Indian physicians delay insulin initiation longer than physicians from among 13 countries.[9]

Cost of Diabetes management:

Diabetes is a costly disease at societal and at personal level. The annual average expenditure by patients for diabetes treatment is Rs 10,000 in urban and Rs. 6, 300 in rural areas, which may increase manifold when complications develop or when hospital admission, surgery or insulin treatment is required. Low income group population spends nearly 25-35% of their annual income on diabetes care. Due to these factors, people tend to neglect health care leading to complications ultimately causing more morbidities and early mortality.

To contain the increasing burden of Non-Communicable Diseases, Ministry of Health and Family Welfare, Government of India, has revised the National Cancer Control Programme (NCCP)and formulated an integrated National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke(NPCDCS) but in the guidelines, only 2 anti diabetic drugs are recommended for type 2 diabetes, Glipizide and Metformin, as only theses two are available in most Government hospitals and Primary Health Centers. Government also has come out with national guidelines for diagnosis and treatment of gestational diabetes but implementation is lacking. [7]

Solution to the problem

The major change to promote primary prevention of diabetes is to improve nutritional status of the community and stressing the importance of physical activity, both of which require major behavioral changes in the community. There are many economic, social, political and administrative obstacles in a country like India for implementation of effective national primary prevention programs.

Large number of grass-root health care workers has to be trained to communicate with the local population and the general public. There should be adequate budget as per health care burden, particularly for the low socioeconomic class of the society. An integrated national system for early detection , treatment and prevention of diabetes has to be developed. Screening and treatment of gestational diabetes should be strictly implemented, which will not only improve maternal and fetal outcome but will prevent obesity and diabetes in the offsprings in their adulthood.

The significant increase in the prevalence of type 2 diabetes in our country in the last two decades is quite alarming and it will continue to increase rapidly if efforts to address this issue are not intensified and eventually may become an even larger threat to health and economic development of our country.

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