Chapter 34
Diabetes Prevention: Translating Science into Practice

Superior doctors prevent the disease
Mediocre doctors treat the disease before it is evident
Inferior doctors treat the full blown disease

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INTRODUCTION
Dreams of today become reality of tomorrow provided right efforts are made in the right direction. We have eradicated small pox and eliminated many diseases by development of new knowledge and practices. Likewise, disease like diabetes which cause great burden to the society in every aspects can be reduced by translating present and developing knowledge into practice effectively and efficiently.

There were 366 million people with diabetes in 2011; by the year 2030, this will have risen to 552 million. By the year 2025, 75% of all the people with diabetes will be in the developing countries as compared with 62% in 1995. In spite of advanced and extensive diagnostic facilities, in most parts of the world 50-80% of those with type 2 diabetes do not know that they have the condition. A gap of 9-12 years exists between the onset of type 2 diabetes and its clinical diagnosis. Today’s acculturation, modernization and westernization make India the Diabetes Capital of the World with the projection of more than 100 million people with diabetes in India by 2030. Urban India faces more burden of diabetes 12.1% (9.3-16.6%) compared to rural India 2.4%, but the scenario is changing rapidly with burden in the rural area increased up to 6.4%.

Diabetes is slow in onset, most of the people are asymptomatic and as a result of this 66% remain undiagnosed and this cause a delay in the diagnosis by 8-12 years. Fifty percent diabetic patients have complications at the time of diagnosis. Diabetic retinopathy is a leading cause of blindness in working-age adults (ages 20–44). Ten to twenty-one percent of all people with diabetes develop severe kidney diseases. Sixty to seventy percent of people with diabetes have mild-to-severe forms of diabetic nerve damage. There is a 15-40 fold increased risk for leg amputation in the diabetic compared to nondiabetic population. People with diabetes are 2–6 fold more likely to have coronary heart disease. People with diabetes are 2–4 fold more likely to have a stroke.

A huge latent period before the development of diabetes makes it possible to prevent diabetes and its complications in its initial stage and large number of modifiable and preventable risk factors allow prevention of diabetes in general. Although, preventive actions have been initiated, efforts are weak and fragmented. Resource constrains are the most important barrier to improving diabetic care in India. More than 80% patients do not follow advice to change health behavior. Factors like inadequate knowledge, initial nonacceptance (denial) and revolt when diagnosed, no physical discomfort in the early stages, prevent patients from perceiving diabetes as a serious disease. For a vast majority of the public, both patients and health care providers, it is difficult to change dietary habits and lifestyle. Moreover, myths prevalent in the community about the disease, makes the patient noncompliant to diabetes treatment. Higher priority given to communicable diseases and maternal and child health services, and concentration of health care facilities in urban area, along with shortage of trained workforce, make it difficult to prevent diabetes up to the desired extent.

APPROACH FOR THE PREVENTION OF DIABETES

- Risk factor modification
- Pharmacological intervention.

Diabetes prevention program shows 58% reduction in the risk of diabetes by lifestyle modification and risk reduction was even greater (71%) among greater than 60 years aged population (Table 1). Treatment with metformin reduced the risk by 31% and was more effective in younger (aged 25–44 years) and in heavier [body mass index (BMI) > 35] adults. Lifestyle intervention is cost effective, harmless and has beneficial effects on lipids and blood pressure (BP) and improves the cardiovascular (CV) risk and glucose tolerance profile simultaneously, so beneficial for prevention of co-morbidities like coronary heart disease (CHD). For considering pharmacological intervention for an asymptomatic population as a preventive measure, drugs should be virtually nontoxic, effective and economical.

NEW APPROACHES IN THE PREVENTION OF DIABETES

Aim in the management should be: early detection, early intervention and prevention of diabetes and its complications.

- Stop diabetes (diabetes prevention program in the state of Gujarat): Under this program, training is imparted to doctors, health care workers, teachers, school children and volunteers. With their help awareness is spread in the community and identification of high-risk population is done for screening of diabetes. The whole population is given lifestyle modification advice. People who are diagnosed as diabetic are screened for complications. The target is to reach more than 20 million populations through awareness, education and detection campaigns. The program has trained more than 1,200 doctors and 2,000 paramedical workers over the period of 3 years. More than 100% of the target is already reached in less than 2 years.

- Conquer diabetes (improving access to diabetes care for the poor through innovative Public Private Partnership in Gujarat): On the basis of experience of the stop diabetes program and considering poor health care facility for diabetes management in poor and difficult to reach areas, we have started one more program under the title of conquer diabetes, in which we have selected three models: (1) urban poor; (2) rural and (3) tribal. Capacity building
of doctors and paramedical workers of the government health system will be done, by training in diabetes management and follow-up. Further support will be provided via development of telemedicine system. This would help in reducing the extra burden on the poor patient’s head due to direct and indirect cost of management of diabetes and facilitate diabetes management in local areas itself. Awareness will also be created toward the diabetes with the help of paramedical workers and using various communication media. More than 40,000 poor diabetic patients will get benefit from the project over the period of 2 years.

REFERENCES

2. IDF diabetes atlas 2011.
3. WHO Diabetes Fact Sheet August 2011.