Review Article

A diabetes free India by 2030

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Small steps make a journey, and the earlier we begin, the sooner we will reach our destination. To prevent diabetes in future, we need to ensure that our children are born with a salutogenic phenotype, and are able to live in a salutogenic environment. A comprehensive health promotive movement, coupled with awareness of the dangers of uncontrolled diabetes, and the relative ease of preventing it, will help us achieve our goal of a diabetes-free India.

[*J Indian Med Assoc* 2018; **116:** 43-4]

Key words **: Diabetes mellitus, prediabetes, diabetes awareness.**

The rising population of diabetes mellitus and prediabetes is a concern for public health. Recent data shows that the incidence is increasing in younger age groups[1]. South Asians develop diabetes mellitus in comparison to Caucasian at least 15 years before and at much lesser body mass index[2]. A diabetogenic phenotype, coupled with a diabetogenic environment, are responsible for the accelerated rise in diabetes in India.

Taking cognizance of this, the Honorable President of India, Shri Pranab Mukherjee, recently called for a diabetes-free India by 2030. To make the country free from diabetes by 2030, we must work on changing both phenotype and environment. While the diabetogenic environment has been discussed at length by experts[3], we focus in this editorial on how to improve our phenotype. The origins of diabetes, we feel, begin with phenotype, rather than with environment. Focusing on a healthy phenotype, right from the start of life, i.e., in utero, will have a beneficial impact on trans generational "transmission" of diabetes[4].

Thin Fat Indian : (Asian Indian Phenotype)

A unique phenotype called the "Asian Indian Phenotype" described as higher degree of central body obesity (higher abdominal girth) and increased body fat despite relatively low rates of generalized obesity, prevails in India[5]. This concept was brought in to focus by the Y-Y paradox, postulated by Yagnik *et al*[6]. These authors stated that an Indian person has higher body fat composition and higher visceral fat than a Caucasian with similar body mass index. The fact that at normal body mass index, there is a higher fat percentage explains the faster decompensation of beta cell function in Indians, and the early development of diabetes.

- **A diabetes-free India by 2030 – called by the Honorable President of India. To achieve the goal we need –**
- **Diabetes awareness, proper health education and training in school along with rewarding and recognizing to healthy students.**
- **Early screening of risk factors for diabetes, with regular exercise and healthy diets to all.**
- **Policies and actions to promote salutogenic phenotype and salutogenic environment with good maternal and child health.**

Foetal Origins :

The unique of thin-fat Indian phenotype starts from life in-utero. This means that the onset of diabetes pathogenesis begins at the fetal stage of life, though it presents in adulthood. The average Indian new born is low in birth weight but higher in fat percentage. The causes for this include maternal malnutrition during pregnancy, and metabolic dysfunction in women of reproductive age[7].

From Theory To Action :

To make India Diabetes free by 2030, we must work towards creating a salutogenic phenotype as well as environment. This can be done by focusing on the girls who are at prepubertal stage today. If we can ensure that they grow into healthy adolescents and women, they will become healthy moms as well[8]. By 2030, they will have

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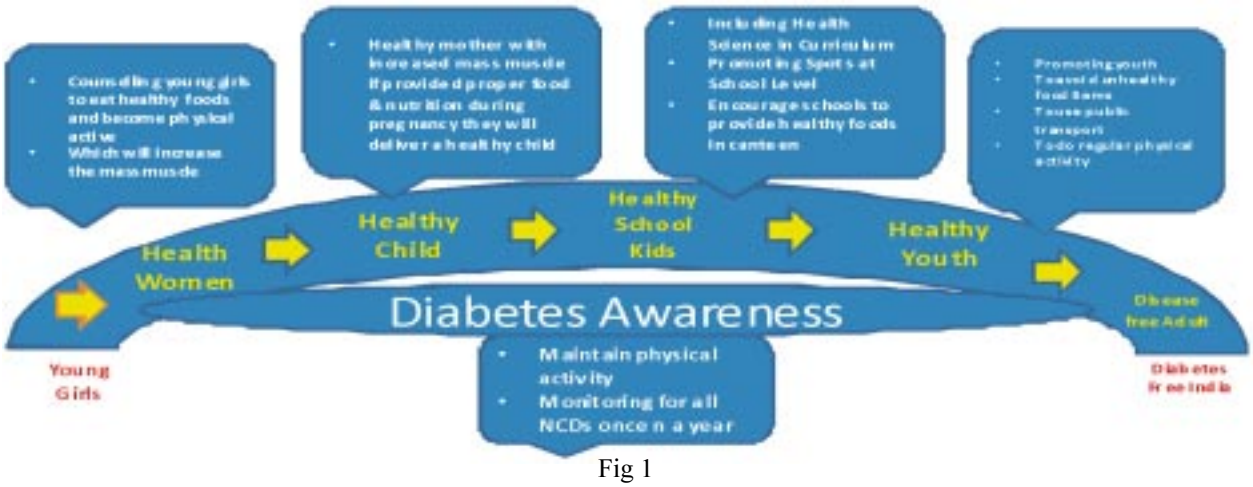

Fig 1

No Child Born After 2030, or Later, Should Develop Diabetes in His/Her Lifetime

healthy children, who will not develop diabetes (Fig 1).

Conceptually we want a new born should be born at full form, with a normal birth weight, with fat percentage of 25%. To get all this:

- Young prepubertal girls should be encouraged to exercise regularly and eat healthy food.
- Post pubertal girls should be screened and treated for PCOS and metabolic syndrome
- Newly married women should postpone pregnancy till age 25-30.
- Women should be encouraged to achieve normal weight, pre-conception.
- Optimal antenatal and natal care should be provided

Small Steps Make A Beginning :

To implement this[9], the diabetes care fraternity should start focusing on school education.

- Health science should be added the curriculum of standard 5-9th. It will teach nutrition, exercise, healthy lifestyle, prevention of NCDs and other aspects of health and diseases.
- School children should be encourage to follow healthy lifestyle, including nutritious (high protein) diet and sports.
- Health should be recognized and rewarded by promoting kids not only the basis of academics, but also on modifiable health parameters.
- For the detection of obesity in pediatric population there has to be a growth chart for plotting their weight according to not just their current age but also their gestational weight. This message has to be propagated to all the teachers as well as the parents.
- School health program should be strengthened to measure body composition apart from height and weight.
- Special attention should be paid to children who are born with low birth weight and high fat percentage

Intervention in youth, targeting postpubertal and young adults, is equally important

- Healthy food choices should be promoted in young adults.
- Aerobic physical activity/exercise, cycling and public transport should be encouraged
- Early detection of metabolic syndrome and early intervention should be made a part of routine health care
- Good health should be awarded, rewarded and recognized through a salutogenic movement.
- Office culture should facilitate activity breaks at regular intervals during work, and discourage prolonged sitting.

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