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Letter to Editor

Diabesity: Curse of Development

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Sir

India is undergoing a rapid epidemiological transition with increased urbanization and socio-economic development which has resulted in a dramatic change in lifestyle consisting of physical inactivity, diet rich in fat, sugar and salt coupled with a high level of mental stress. This has led to increased incidence of lifestyle diseases like hypertension, type 2 Diabetes Mellitus (DM), dyslipidemias, obesity and ischemic heart diseases.

In India, 41 million people are having type 2 DM and by 2025 the number is expected to be 68 million. As of today, every fifth diabetic person in the world is Indian. Therefore India is called the diabetic capital of the world. It is also projected that out of these diabetics, 20 millions are obese .[1]

According to WHO, pre-obesity and obesity lead to serious health consequences. It also increases insulin resistance and fasting hyperglycemia along with altered lipid profile like increased triglycerides and decreased high density lipoproteins (HDL). As a result, risk for type 2 DM, metabolic syndrome, hypertension and stroke increases linearly with increase in body mass index (BMI).

The connection between obesity and type 2 DM is so strong that attempting to treat diabetes without managing any coexisting obesity is almost futile. Therefore many experts consider obesity and type 2 DM to be different ends of the same spectrum, together called 'diabesity'. For this reason obesity can be considered a pre-diabetic condition.

Insulin resistance is a characteristic feature of type 2 DM and central obesity plays a key role in its development. Central fat depots are viewed as endocrine tissues that secrete various chemicals collectively known as adipokines i.e. leptin, resistin, tumor necrotic factor α, adiponectine, ghrelin, angiotensinogen, plasminogen activator inhibitor & many others. Some of these chemicals like resistin & TNF α promote insulin resistance while others like adiponectin & leptin decrease insulin resistance.[2]

Experimental evidence supports the above observations. When glucose transporters were selectively knocked out in adipose tissue of animals, glucose transport in muscle in vitro was normal but when those animals were tested in vivo, there was an associated decrease in glucose transport in muscle. This could probably be due to release of chemical signals from the adipose tissue which acts on the glucose transporters in the muscle[3]. This indicates that adipokines from fat depots modulate insulin secretion and insulin action & may contribute to insulin resistance. A variety of knockouts of intracellular second messenger systems have been reported to increase insulin resistance.

This underscores the need for mass awareness and screening programmes to detect diabetes and obesity at an early stage & health education of public regarding lifestyle modifications.

The American Diabetes Association (ADA) recommends screening of all individuals who are more than 45 years of age every 3 years and screening of individuals at an earlier age if they are overweight or obese and have one additional risk factor for diabetes like family history of diabetes (i.e. parent or sibling with type 2 DM) or habitual physical inactivity, previously identified impaired fasting glucose or impaired glucose tolerance or history of delivery of a baby having birth weight more than 4 kg or hypertension (blood pressure ≥140/90 mmHg) or HDL cholesterol level ≤35 mg/dL and/or triglyceride level ≥250 mg/dl or polycystic ovary disease or acanthosis nigricans or history of vascular disease .[4]

In India, Mohan et al have developed a simple screening tool namely Indian Diabetes Risk Score (IDRS)[5] to determine the risk of developing type 2 DM for general population. Measuring this score is a simple and inexpensive method, which only requires answers to four simple questions and a waist measurement. (**Table 1**) Using IDRS, individuals who are at high risk of developing diabetes can be detected. Then, for subjects with IDRS score ≥60, Random Capillary Blood Glucose (RCBG) can be done to diagnose diabetes mellitus.

RCBG has an advantage, that it can be undertaken at any time of the day and does not require a venipuncture. People having RCBG ≥140 mg/dl are most likely to have frank diabetes mellitus while those having RCBG above 113 mg/dl are likely to have pre-diabetic status and likely to have impaired fasting glucose (IFG). These subjects can be investigated further by doing fasting & postprandial blood glucose, glucose tolerance test (GTT) & glycosylated hemoglobin to confirm their hyperglycemic status. Thus IDRS can be an economical and reliable measure to screen general population for risk of developing type 2 DM

Table 1: Indian Diabetes Risk Score (IDRS)[5]

Particulars	Score
Age (years)	
• <35	0
• 35-49	20
• ≥50	30
Abdominal obesity	
• Waist <80cm (F), <90cm (M)	0
• Waist ≥80-89cm (F), ≥90-99cm (M)	10
• Waist ≥90cm (F), ≥100cm (M)	20
Physical activity	
• Exercise (regular) + strenuous work	0
• Exercise (regular) or strenuous work	20
• No exercise and sedentary work	30
Family history	
• No family history	0
• Either parent	10
• Both parents	20
Minimum score	0
Maximum score	100
Interpretation of Score	
High risk ≥60; Moderate risk 30-59; High risk <30	

Once a person is warned about his dysglycemic status with the help of these tests, he can be motivated for lifestyle modifications to delay the onset of diabetes especially by reducing body weight. One hopes that with these measures, disease burden can be reduced to a great extent.

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