LETTER TO EDITOR

Prevention of Metabolic Syndrome in Young Population-Public Health Concern

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Sir,

Metabolic syndrome (syndrome X, insulin resistance syndrome) consists of group of interconnected physiological, biochemical, clinical, and metabolic abnormalities that confers risk of cardiovascular disease (CVD), type 2 diabetes mellitus(DM).[1,2] Visceral adiposity, Insulin resistance, atherogenic dyslipidaemia, endothelial dysfunction, hypercoagulable state, genetic susceptibility, elevated blood pressure, and chronic stress are the several contributing factors for Metabolic syndrome (Met S).[2,3] Recent research studies are focussing on leptin resistance , mitochondrial stress and dysfunction, impaired folate-mediated one-carbon metabolism leading to hyperhomocysteinemia as additional risk factors for Met S.[4]

The prevalence of Met S prevalence is rising among the adolescents. Notably, in India, nearly 30% of children and adolescents were reported to have insulin resistance, with a higher prevalence among girls.[5] Similarly another study found prevalence of Met S, 2.6% among adolescents aged 10 to 18 years.[6] A study on Urban Indian population using United States Adult Treatment Panel-3 (ATP-3) guidelines, reported a prevalence of 22.9% in males and 39.9% in females, with a significant age-related increase in females.[7] Additionally, Met S and associated cardiovascular risk factors were more prevalent among economically disadvantaged individuals in urban slums and rural areas, highlighting the need for targeted interventions.[8] Similarly another international study estimated that around 13–15% of India's adult population has Met S, with women being more affected than men.[9] In a population-based study among adolescents in India, Met S was observed in 5.2% with low HDL-cholesterol levels, Hypertriglyceridemia, high blood pressure, central obesity and elevated fasting glucose.[10]

MS is a multifactorial syndrome, sedentary behaviour, physical inactivity, Consumption of high caloric diet, Urbanization, socioeconomic transitions, mechanization and genetic factors are the contributing factors for the raising prevalence in young generation.[7,11,12] Preventing metabolic syndrome primarily requires two key actions: maintaining regular physical activity and following a healthy diet. Therefore, the prime goal in the management of the metabolic syndrome is to alleviate the modifiable underlying risk factors like obesity, physical inactivity, and atherogenic diet through lifestyle modifications.[13] Obesity is the most important risk factor. Weight reduction is obtained by reducing caloric intake and increasing physical activity which intern reduces cardiovascular risk.[14] To achieve optimal health benefits, it is recommended to engage at least thirty minutes of moderate-intensity exercise, such as brisk walking, ideally on all the days of the week or preferably sixty minutes of moderate intensity exercise combined with other activities like use of treadmill, jogging,

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swimming, biking, golf, team sports, and resistance training is recommended.[14]

In addition, Muscle-strengthening exercises should target major muscle groups and be performed 2 to 3 times a week. Flexibility exercises, such as gentle stretches or yoga, should be practiced for 5–10 minutes both before and after each workout session.[9] When calorie reduction is combined with the practice of physical activities, the effect of weight reduction is enhanced, especially in individuals with MS, where the maintenance of lean body mass would increase sensitivity to insulin.[9,15] Lifestyle therapies such as weight control, increased physical activity, alcohol moderation, sodium reduction, smoking cessation and increased consumption of fresh fruits, vegetables and low-fat dairy products, can keep the blood pressure and sugar values under control. Further pharmacotherapy is recommended for uncontrolled cases to prevent long term complications. Recent research reports shows that manipulation of gut microbiota with prebiotic, prebiotic and symbiotic may be a promising strategy for managing Met S.[16]

To conclude, the growing prevalence of metabolic syndrome among the younger population is a critical public health concern worldwide. There is an urgent need to prioritize early screening for metabolic abnormalities, particularly in areas with high prevalence rates. Promoting healthy life style habits among adolescents is essential, as failing to address metabolic syndrome during its early stages increases the likelihood of these individuals developing chronic diseases adulthood.[9] A holistic approach incorporating healthy eating, regular exercise and stress reduction, is vital to tackle the intricate need of young adults with metabolic syndrome and prevent long term complications. It is imperative to implement health education programs at an early stage to raise awareness about metabolic syndrome and its contributing factors. These initiatives can encourage young individuals to adopt healthier lifestyles, aiding in the prevention and early detection of risk factors, ultimately delaying the onset of related diseases. Such efforts could significantly improve future adult health by reducing the incidence of associated illnesses and fatalities. In recent times more importance is given to precision life style medicine, in which individual's genetic makeup along with their environmental conditions and lifestyle habits will be considered.[17] A collaborative and multidisciplinary approach between healthcare professionals, physiotherapists, nutritionist and public health program is required to address modifiable risk factors and to reduce its impact.[17]

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