IBSA Satellite Symposium

Biological and social determinants of obesity

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1.
What are the dimensions of the obesity epidemic? Obesity is defined by WHO in three categories: Class I: BMI 30-34.9: Class II: 35.0-39.9; and Class III: >40.0, with a corresponding increase in the risk of co-morbidities. Among women age 45-59, more than 15% are obese in all parts of the world except Southeast Asia, the Western Pacific and Africa. In 2002 31% of adults in the United States were obese, compared with 13% in 1962. Among American adolescents, 12% are obese.

2.
What are the biologic causes? Evidence from family, twin and adoption studies indicates a genetic component. Single nucleotide polymorphisms in the leptin and leptin receptor genes, the resistin gene and the adiponectin-related genes could be associated with obesity. The most common form of monogenic obesity is due to 35 different mutations in the MC4R gene. MC4R is a G-protein coupled receptor that modifies feeding behaviour; the prevalence of mutations ranges from 0.5% to 5%. The obesity epidemic is occurring faster than genes can evolve, however, suggesting that underlying physiological mechanisms are susceptible to changes in behaviour that affect energy balance.

3.
What are the social causes? Total energy supply per capita is increasing and energy expenditure is decreasing in most high-income countries. Temporal trends in total energy supply per capita explain 41% of the variation in mean BMI and similar portion of the variability in obesity. Experts identified the most important social trends as increasing reliance on motor vehicles, increasing busy-ness, lack of time, and rising use of convenience and pre-prepared food.

The increase in obesity is greatest in younger age-groups, and therefore the effect on the burden of disease due to type 2 diabetes mellitus and cardiovascular disease will not become apparent until many years have passed.