

Obesity in Singapore

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The term “obesity” implies an excess of adipose tissue (fat) and excess adiposity is a health **risk**.^{1,2} All definitions of obesity are arbitrary because the distribution of weight in the population is a curve; the division between the obese and non-obese groups is not clear cut. The most widely used measurement in clinical practice is the Body Mass Index (BMI); the BMI is defined as the ratio of body weight (in kilograms) divided by the square of height (in **metres**).¹ In adults, the normal range of the BMI is 20 to 25; a BMI of 25.1 to 29.9 is overweight and a BMI of 30 and above is obese. Morbid obesity is present when the BMI is 40.0 and **above**.^{1,2}

In Singapore, 3 major **surveys**³⁻⁵ in recent years show that overweight problems and obesity are common in the population and there is a rising trend. The prevalence of obesity in Singapore school children was reported by **Rajan**.³ The BMI in National Service enlistees (**18-year-old** males) spanning 25 years was described by Lim et al.⁴ The prevalence of obesity among adults in the population was reported in the National Health Survey.⁵

Obesity ranks as the second most common health problem among Singapore school children accounting for 16.1% of their health problems in 1993.³ The prevalence of obesity among students (6 to 16 years) has increased from 1.6% in males and 1.1% in females in 1975 to 3.8% and 2.4% in 1983 and 15.2% and 12.9% respectively in 1993. Similar trends were also observed in all age groups with males having a higher prevalence. The highest prevalence rates were among **Malays** (18.5%) followed closely by Indians (17.2%) and Chinese (15.5%). Two-thirds of obese students had at least one obese parent and 27% had one obese sibling. The prevalence of obesity among pre-school children increased from 2.6% in 1988 to 6.8% in 1991, the trend being more marked for those aged 4 to 6 years than for those below 4 years of **age**.³

The height and weight of Singapore National Service enlistees (**18-year-old** males) over a **period** of 25 years (1967 to 1991) were reported by Lim et al.⁴ While the mean height appeared to have stabilised from 1988, the mean weight continued to rise and this was reflected in an increasing BMI mean. The proportion of **18-year-old** male recruits with a **BMI** in the overweight range increased from 1.37% in 1967 to 12.07% in 1994⁴ (i.e. an **8.8-fold** increase over 25 years). The prevalence of overweight male recruits was highest in Chinese (12.36%), followed by **Malays** (11.71 %) and Indians (10.26%).⁴

In the National Health Survey: 3568 Singapore residents aged between 18 and 69 years were surveyed; the surveyed cohort was representative of the population (age groups, sex, and ethnic groups). Overall, 26% of the adult population in Singapore were found to have a BMI above the normal range; 5% were obese (BMI ≥ 30) and 21% were overweight ($25 \leq \text{BMI} < 30$). A higher proportion of men (23%) were overweight compared with women (19%), whereas more women (6%) than men (4%) were obese. There were marked differences in the obesity levels of the 3 ethnic groups. Among men, Indians had the highest prevalence of obesity (10%) followed by **Malays** (6%) and Chinese (3%). Among women, **Malays** had the highest prevalence of obesity (17%) followed by Indians (13%) and Chinese (4%).⁵

Obesity is a health risk and even mild obesity increases the risk of premature death, diabetes mellitus, hypertension, hyperlipidaemia, atherosclerosis, coronary artery disease, gout, gallbladder disease, respiratory disease, arthritis and certain types of **cancer**.^{1,6} Obesity is a chronic disease and a major health **problem**.⁷ In addition, obesity is often an undesirable aesthetic, social and cultural trait.

Although the prevalence of obesity in the adult population of Singapore (5%)⁵ is lower than that reported in France (7%), United Kingdom (9%) and United States of America (15%), there is evidence that obesity is increasing in many areas in Southeast Asia and **Asia**.⁸ A study in Bombay, India found that 10.7% of male students and 53.1% of male doctors were **overweight**.⁹

The treatment of obesity is slow, difficult, frustrating and often unsuccessful;¹⁰ hence prevention is better than cure. The major stumbling block in the treatment and prevention of obesity is that the precise cause of **obesity** is not **clear**.^{1,2}

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In the vast majority of cases, it develops in the absence of any underlying disease process. It is always due to greater caloric intake than is expended; the mystery lies in the cause of the energy imbalance.^{1,2}

The key to prevent the prevalence of obesity in Singapore from increasing is education. The population needs to be convinced of the value and necessity of a prudent life style; in issues such as diet (healthy yet pragmatic), exercise (acceptable and enjoyable) and lifestyle (e.g. using the staircase instead of the lift where possible, not too much fast food, and wherever possible, to use alternatives to consumables that are preserved, canned or bottled). Mothers and grandmothers need to be convinced that a chubby baby or infant is a pretty but unhealthy picture.

In the School Health Service, for the management of childhood obesity, Intervention Clinics and education of parents are being done.³ The School Health Service also carries out public education, a special programme for pre-schoolers and an active programme for schools [Trim and Fit Programme (TAF)]. The TAF programme is a motivational intervention strategy which aims to promote a healthy lifestyle to enhance the quality of life, by starting with the nation's youth.³ A LIFE (Lifetime Investment in Fitness and Exercise) programme exists to encourage military personnel to keep fit and avoid being overweight.

The National Health Survey⁵ found that 64% of Singaporeans did not participate in any exercise and only 14% engaged in regular exercise. To encourage the people in Singapore to exercise more and improve their health, the National Healthy Lifestyle Programme was launched in April 1992.⁴ This programme uses a multi-disciplinary and multi-sectional approach to provide information, impart the necessary skills, and create a supportive environment for healthy living. There is evidence to suggest that modern inactive lifestyles are at least as important as diet in the aetiology of obesity and possibly represent the dominant factor¹² i.e. sloth is possibly more important than gluttony. There is a need to discourage the "couch potato" culture.

Recently, there has been a tremendous surge of interest in understanding the mechanisms controlling energy homeostasis following the identification of the ob gene and its protein product (termed "leptin" from the Greek word "leptos" meaning thin) by Zhang et al.¹³ A better understanding of the mechanisms of energy homeostasis at the molecular level would lead to greater success in the management and prevention of obesity.

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