# Childhood obesity: a critical Maltese health issue

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**Overweight and obesity are epidemic and worldwide, at all ages, particularly in Westernised societies. Malta is no exception and indeed, leads this trend. The direct, indirect and long term health risks for the individual and population as a whole are indisputable. Unless tackled, the current Maltese obesity trends will result in an astronomical increase in morbidity and mortality from ischaemic heart disease, stroke and cancers with an estimated crippling additional health budget requirement of at least Lm33.6million per annum. Obesity is arguably the greatest current national health crisis, and a seriously-funded, all-front national campaign must be implemented with urgency in order to assess and address the crisis at all levels including prevention, lifestyle issues and therapy, with outcome monitoring of national interventions and campaigns.**

## Introduction

Excessive body weight is caused by food intake surplus to energy requirements with the resultant deposition of adipose tissue, and is heavily influenced by a plethora of interconnected factors that include genetic, physiologic, metabolic, social, behavioral, and cultural factors.[1] Genetic factors are particularly influential with overweight being a 70% inherited trait.[2]

Overweight is defined as body mass index (BMI) between the upper 85$^{th}$ to 95$^{th}$ percentiles while obesity is defined as BMI greater than the 95$^{th}$ percentile.

Being overweight is not a cosmetic issue and indeed, obesity and overweight are better viewed as potentially malignant, chronic health conditions since they are independent risk factors for morbidity and mortality. Unfortunately, this condition is manifesting in epidemic proportions, and at ever younger ages with an estimated worldwide overweight childhood (<5 years of age) population of 22 million.[3] Up to 250 million people worldwide (7% of the global population)are obese.[4]

Childhood obesity is particularly crucial as obese children down to the age of 5-10 years have been shown to manifest one or more cardiovascular risk factors such as hypertension, hyperlididaemia, insulin resistance, frank diabetes (almost a fifth of all type 2 diabetes is being diagnosed in the paediatric age group[5]) or the metabolic syndrome.[6] Specifically, 60% of overweight children have been shown to have one such risk factor and 20% manifest two or more risk factors.[7]

In many ways, obesity is a self-perpetuating condition. It tracks into adulthood in at least a third of cases.[8] Moreover, overweight and obesity in pregnancy predispose to gestational diabetes which tends to produce neonates that are large for gestational age,[9] and high birth weight is itself a predictor of overweight and obesity in adult life, thereby completing the circle.

The association of obesity with cancer is high and should not be eclipsed by cardiovascular complications. In the United States, it has been estimated that overweight and obesity account for up to 20% of all cancer deaths in women and 14% in men. Such cancers include those of the uterus, kidney, esophagus, gallbladder, colon and rectum, breast (in postmenopausal women), liver, pancreas, prostate, cervix, ovary, and stomach (in men), non-Hodgkin lymphoma and multiple myeloma. Obesity compounds cancer by independently increasing cancer mortality.[10]

Overweight and obesity statistics are increasing worldwide, in all age groups, and particularly in the lower socioeconomic groups,[11] where other cardiovascular risk factors, such as smoking, are likelier to be present.[12]

Childhood obesity is caused by two main factors:

1. Poor diet: fast foods are quicker to prepare and cheaper to buy.
2. Lack of exercise: at least 30 minutes of moderate physical activity on most days of the week is the recommended minimum. However, nearly a quarter of children and nearly half of adults get no free-time physical activity at all.

Surprisingly, childhood obesity is also skyrocketing in developing countries, with 8% of Northern African children being overweight. Similarly, in South America, 5% of pre-schoolchildren are overweight while the percentage of undernourished children (< 3rd percentile of weight for age) has dropped to under 2%.[13]

Malta unfortunately leads trends in childhood obesity in that a recent systematic review comparing estimates of the prevalence of overweight and obesity in school-aged youth from 34 countries participating in the 2001-2002 Health Behaviour in School-Aged Children Study showed that Malta topped the list with the highest prevalence of overweight (pre-obese + obese) and obese youth at 25.4% and 7.9% respectively, followed by the United States at 25.1% and 6.8% respectively.[14]

Non-cardiovascular and non-malignant co-morbidities associated with childhood obesity include:

1. Sleep apnoea with poor attention at school.
2. Orthopaedic problems including tibia vara, slipped femoral capital epiphysis, genu valgum, flat kneecap pressure/pain, flat foot, spondylolisthesis, scoliosis and osteoarthritis.
3. Skin problems particularly fungal skin infections and acanthosis nigricans.
4. Hepatic steatosis, gastro-oesophageal reflux, fatty liver (precursor to cirrhosis) are common gastrointestinal manifestations.
5. 'Benign' intracranial hypertension (pseudotumor cerebri) may independently cause blindness.
6. Psychological and behavioral problems including low self-esteem, depression, anxiety and bullying.

**Practice Points**

1. Obesity and overweight are potentially malignant, chronic health conditions.
2. Obese children become obese adults – 'puppy fat' is a myth.
3. Obese individuals who lose weight tend to relapse.
4. Prevention (particularly in childhood) is therefore the cheapest and most effective strategy. Proper diet and exercise are vital.
5. We must document Maltese childhood BMIs in order to gauge the severity of the local problem and monitor outcomes of national intervention and campaigns.

The cost of obesity can actually be quantified. For example, the direct costs represent approximately 7% of the total US health care expenditure. Preventable morbidity and mortality related to obesity is predicted to exceed those associated with cigarette smoking.[15] For the EU, the direct and indirect annual costs of obesity account for €33 billion.[16] Annual deaths attributable to overweight and obesity totaled 7.7% (1 in 13) of all deaths: 70% were cardiovascular deaths (195 000) and 20% were cancer deaths.[17] A simple calculation shows us that when we completely catch up with the US (i.e. in the very near future), the cost to Maltese taxpayer will be Lm33.6 million per annum (Maltese population 400214, US population 298444215).

On a more positive note, the lifetime health and economic benefits of a sustained 10% reduction in body weight for men and women aged 35 to 64 with any degree of obesity have been calculated and are staggering: for example, a reduction in the expected lifetime incidence of coronary heart disease by 12 - down to 38 cases per 1000.[18] However, an increased risk of cardiovascular disease remains in obese adolescents who lose their excess weight during the adult period.[19]

This paper has attempted to illustrate that it is crucial to tackle obesity in childhood. However, it is impossible to attempt to approach the subject without up-to-date information on national childhood BMI as this baseline information will not only tell us the magnitude of the problem, but will also allow us to gauge the effectiveness of any interventions that we may decide to carry out.

There are three levels of prevention for obesity:[11]

Primordial prevention maintains normal BMI throughout childhood and adolescence

Primary prevention is directed toward preventing overweight children from becoming obese. Secondary prevention is directed at the treatment of obese children in order to reduce co-morbidities and to reverse overweight and obesity.

All must participate. Clinicians should screen all children presenting at routine visits by calculating and graphing BMI with appropriate dietary history and counseling. Parents should be made aware that they are their children's role models and that they themselves must therefore exemplify desired eating habits. Reinforcement is critical as 90% of obese children who lost weight eventually returned to their original weight percentile, further underscoring the importance of prevention.[2] However, primary care clinicians will only undertake obesity prevention and treatment with adequate resources and reimbursement.[20]

## Conclusion

Paediatric cardiology practice with the Maltese Health Division encompasses all paediatric cardiac patients in Malta, with the bulk being comprised of congenital heart disease. These individuals comprise a large followup cohort since the vast majority survive, and result in approximately 20 surgical operations a year and 40 cardiac catheter interventions. And yet, this is as nothing when compared with our obesity epidemic which will immensely deepen national healthcare bills. A baseline anthropometric study is mandatory, now. Prevention of obesity is of paramount importance, particularly in childhood. An interdisciplinary public health campaign at all levels is crucial, stressing the importance

of proper eating and lifestyle habits. Help should also be offered for obese individuals to lose weight and to treat co-morbidities. Only sincere political commitment will produce an impact on this disease.

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