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A critical review of obesity and its management

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Abstract
Obesity and overweight are defined as abnormal or excessive fat accumulation that presents a risk to health. Obesity and overweight are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Once considered a problem only in high income countries, obesity and overweight are now dramatically on the rise in low- and middle-income countries, particularly in urban settings.
In 2014, more than 1.9 billion adults aged 18 years and older were overweight. Of these over 600 million adults were obese. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese in 2014. In 2014, 39% of adults aged 18 years and over (38% of men and 40% of women) were overweight.
The worldwide prevalence of obesity more than doubled between 1980 and 2014.
In 2014, an estimated 41 million children under the age of 5 years were overweight or obese. Once considered a high-income country problem, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. Nearly half of the children under 5 who were overweight or obese in 2014 lived in Asia.
Overweight and obesity are linked to more deaths worldwide than underweight. Globally there are more people who are obese than underweight – this occurs in every region except parts of sub-Saharan Africa and Asia.

Keywords: obesity, overweight, BMI, non-communicable disease

Introduction

Aims and Object

Facilitate increased awareness and engage with the public on the issues of childhood and adult obesity. Provide support to parents who feel challenged by their child's or their own weight.
Improve access to appropriate evidence based weight management treatment and prevention programmes for children, young people and adults.

Material and Method

Literature was searched using PubMed, and Google Scholar. Search terms were limited to publication. Papers that addressed obesity in children, women, other age groups under five years and more, obesity and overweight.

Discussion

Obesity is from the Latin *obesitas*, which means "stout, fat, or plump". *Ēsus* is the past participle of *edere* (to eat), with *ob* (over) added to it [1]. *The Oxford English Dictionary* documents its first usage in 1611 by Randle Cotgrave [2].
The Indian surgeon Sushruta (6th century BCE) related obesity to diabetes and heart disorders [3].
Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People are generally considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m^2, with the range 25–30 kg/m^2 defined as overweight [4]. Some East Asian countries use lower values [5]. Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis [6].

Epidemiology

In earlier historical periods obesity was rare, and achievable only by a small elite, although already recognised as a problem for health. But as prosperity increased in the Early Modern period, it affected increasingly larger groups of the population [7]. In 1997 the WHO formally recognized obesity as a global epidemic [8]. As of 2008 the WHO estimates that at least 500 million adults (greater than 10%) are obese, with higher rates among women than men [9]. The rate of obesity also increases with age at least up to 50 or 60 years old [10] and severe obesity in the United States, Australia, and Canada is increasing faster than the overall rate of obesity [11].
Once considered a problem only of high-income countries, obesity rates are raising worldwide and affecting both the developed and developing country [12].

Causes

The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been: an increased intake of energy-dense foods that are high in fat; and an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.
Changes in dietary and physical activity patterns are

often the result of environmental and societal changes associated with development and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing, and education.

Common health concerns

Raised BMI is a major risk factor for noncommunicable diseases such as:cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2012; diabetes; musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints); some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon).

The risk for these noncommunicable diseases increases, with increases in BMI. Childhood obesity is associated with a higher chance of obesity, premature death and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension and early markers of cardiovascular disease, insulin resistance and psychological effects.

Facing a double burden of disease

Many low- and middle-income countries are now facing a "double burden" of disease.

While these countries continue to deal with the problems of infectious diseases and under nutrition, they are also experiencing a rapid upsurge in noncommunicable disease risk factors such as obesity and overweight, particularly in urban settings. It is not uncommon to find under nutrition and obesity co-existing within the same country, the same community and the same household.

Children in low- and middle-income countries are more vulnerable to inadequate pre-natal, infant, and young child nutrition. At the same time, these children are exposed to high-fat, high-sugar, high-salt, energy-dense, and micronutrient-poor foods, which tend to be lower in cost but also lower in nutrient quality. These dietary patterns, in conjunction with lower levels of physical activity, result in sharp increases in childhood obesity while under nutrition issues remain unsolved.

Classification

Obesity is a defined by body mass index (BMI) and further evaluated in terms of fat distribution via the waist–hip ratio and total cardiovascular risk factors [13]. BMI is closely related to both percentage body fat and total body fat [14].

BMI is defined as the subject's weight divided by the square of their height and is calculated as follows [15].

Table 1

BMI (kg/m^2)		Classification
from	up to	
……	18.5	underweight
18.5	25.0	normal weight
25.0	30.0	overweight
30.0	35.0	class I obesity
35.0	40.0	class II obesity
40.0	……	class III obesity

The most commonly used definitions, established by the World Health Organization (WHO) in 1997 and published in 2000, provide the values listed in the table [16].

Effects on health

Excessive body weight is associated with various diseases, particularly cardiovascular diseases, diabetes mellitus type 2, obstructive sleep apnea, certain types of cancer, osteoarthritis and asthma. As a result, obesity has been found to reduce life expectancy.

Other illnesses

Certain physical and mental illnesses and the pharmaceutical substances used to treat them can increase risk of obesity. Medical illnesses that increase obesity risk include several rare genetic syndromes (listed above) as well as some congenital or acquired conditions: hypothyroidism, Cushing's syndrome, growth hormone deficiency, [17] and the eating disorders: binge eating disorder and night eating syndrome. However, obesity is not regarded as a psychiatric disorder, and therefore is not listed in the DSM-IVR as a psychiatric illness [18]. The risk of overweight and obesity is higher in patients with psychiatric disorders than in persons without psychiatric disorders [19].

Management

Overweight and obesity, as well as their related noncommunicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, by making the choice of healthier foods and regular physical activity the easiest choice (the choice that is the most accessible, available and affordable), and therefore preventing overweight and obesity.

At the individual level, people can: Limit energy intake from total fats and sugars; increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; and engage in regular physical activity (60 minutes a day for children and 150 minutes spread through the week for adults).

Individual responsibility can only have its full effect where people have access to a healthy lifestyle. Therefore, at the societal level it is important to support individuals in following the recommendations above, through sustained implementation of evidence based and population based policies that make regular physical activity and healthier dietary choices available, affordable and easily accessible to everyone, particularly to the poorest individuals. An example of such a policy is a tax on sugar sweetened beverages.

The food industry can play a significant role in promoting healthy diets by: Reducing the fat, sugar and salt content of processed foods; ensuring that healthy and nutritious choices are available and affordable to all consumers; restricting marketing of foods high in sugars, salt and fats, especially those foods aimed at children and teenagers; and ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace [20].

The main treatment for obesity consists of dieting and physical exercise [21].

Diet programs may produce weight loss over the short term, [22] but maintaining this weight loss is frequently difficult and often requires making exercise and a lower calorie diet a permanent part of an individual's lifestyle [23].

Success rates of long-term weight loss maintenance with lifestyle changes are low, ranging from 2 to 20% [24].

Dietary and lifestyle changes are effective in limiting excessive weight gain in pregnancy and improve outcomes for both the mother and the child [25].

One medication, orlistat (Alli; Xenixal), is current widely available and approved for long term use. Weight loss however is modest with an average of 2.9 kg (6.4 lb) at 1 to 4 years and there is little information on how these drugs affect longer-term complications of obesity. Its use is associated with high rates of gastrointestinal side effects [26].

The most effective treatment for obesity is bariatric surgery [27]. Bariatric surgery ("weight loss surgery") is the use of surgical intervention in the treatment of obesity. As every operation may have complications, surgery is only recommended for severely obese people (BMI > 40) who have failed to lose weight following dietary modification and pharmacological treatment.

Conclusion

Obesity has been the most common type of malnutrition and one of the greatest with health hazards to life in the whole world today, and it can be prevented. The solution is as simple as eating the same amount but with healthier choices and a lifelong diet, such as vegetarianism. Exercising is also important to keep fit and use up any extra calories from that ice cream at dessert. Nonetheless, some fat is essential for the body as heat, stored energy, insulation, and padding. No one cannot cure obesity by simply achieving a certain body weight. Eating healthy and keeping active is all a part of a lifelong daily routine. No diet should be promoted as a temporary eating plan, but rather a permanent lifestyle for healthy eating.

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