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Introductory Chapter: Obesity – A Worldwide Problem

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1. Introduction

“Adipositas” or “obesity” remains an increasing problem, escalating with alarming speed worldwide. As this introductory chapter is written, it is estimated that there exist between 380 and 500 million obese people worldwide (depending on the definition of obesity). Obesity is normally defined as: “A condition of abnormal or excess body fat (triglycerides), which is associated with a number of disorders of life-threatening or debilitating disorders or diseases”.

2. Obesity: how it is classified

As the direct quantitative and/or qualitative analysis of the body fat contents (i.e. white adipose tissue type, WAT) is associated with some erroneous interpretations, and “body mass index” (BMI), which serves as a simple weight-to-height ratio (measured as kg/m^2), is nevertheless typically used to classify overweight and obese adolescents and adults. Consistent with this concept, the World Health Organization (WHO) has published international standards, by which one may classify, with a certain degree of precision, overweight and obesity in adults. The condition of obesity is measured as a BMI value larger than $30 \text{ kg}/\text{m}^2$; however, it can be further subdivided according to the severity or the “degree” of excessive weight [1].

Even though the BMI value furnishes health professionals with a straightforward and simple estimation of obesity, a far more useful “interpretational” aspect of overweight resides with the regional localization of excessive, white type of body fat (WAT). Both the mortality rate and morbidity incidence vary substantially with the distribution of bodily fat, yielding the highest possible health risk associated with enlarged abdominal fat depots (i.e. so-called central obesity). This type of obesity, which is related to WAT contents, is associated with a plethora of diseases/ailments, encompassing debilitating conditions like cardiovascular disease (CVD), as well as non-insulin-dependent diabetes mellitus (NIDDM). The impact of central obesity, accompanied with a lower amount of brown adipose tissue (BAT, which normally burns and

rarely stores fat as triglycerides), clears in populations (e.g. Asian) who display a tendency towards relatively low BMI values but rather high levels of abdominal fat, which make them particularly prone to NIDDM, high blood pressure (hypertension) and coronary heart disease (CHD). Studies of various Asian populations recently revealed that some 20% of adults, not already classified as being overweight or obese, still displayed marked central obesity, rendering them more prone to develop or incurring these associated disease states. Other methods of analysis measuring abdominal fat are available, such as ultrasound recordings, waist circumference and/or waist-to-hip ratios (WHR). However, unlike BMI values, these are rarely measures routinely, but alterations observed with waist circumference do reflect altered risks for developing CVD, as well as other chronic diseases. As with BMI, cut-off values have been shown to identify enhanced risks; however, for waist circumference observations, these are both sex and population specific. Hence, as the risk prediction varies from one population to another, single global values cannot easily be applied with high precision [2].

3. The global epidemic of obesity

The prevalence of obesity is escalating in most part of the world, affecting men, as well as women and children. Furthermore, obesity is presently no longer just a concern or a problem for developed countries, since it since long has become a growing problem in most developing countries, as well.

3.1. The prevalence of excessive weight gain

One should emphasize that it may often be hard to draw a direct comparison of the prevalence of adiposity between different countries, due to differing or inconsistent classifications used for the assessment of the disease. This problem could be “rectified” adopting the WHO-developed, standardized assessment/classification of obesity in harmonizing surveys in the future. Analysing a large body of available data, the worldwide prevalence of obesity has shown to range from some 5% in China, Japan and a few African countries to levels rising to some 75% of the adult population in urban Samoa. These data speak for themselves and indicate a varying prevalence of obesity within different countries/parts of the world. Furthermore, obesity levels vary, depending on ethnic origin. In the USA, and particularly amongst women, there are marked differences in the prevalence of obesity, when scrutinizing populations of different ethnic origins. However, a growing prevalence of obesity amongst children is also a major concern worldwide. However, a certain discrepancy in the “acknowledged” agreement in defining obesity in both children and adolescents has introduced difficulties in estimating “true” prevalence data [3].

The International Obesity Task Force (IOTF) has launched a novel approach to estimate overweight and obesity amongst children. The intention here is to make it consistent with the definition of adult adiposity (<http://bmj.com/cgi/content/abridged/320/7244/1240>). Nevertheless, by using the existing WHO standards, collected information from some 80 developing countries, as well as a plethora of industrialized countries/areas around the

world, an expert panel has suggested that some 22 million children under 5 years of age, were in fact overweight worldwide, already some 20 years ago. And, there also exists clear evidence that this problem is increasing; within the USA, the percentage of overweight children (aged 5–15 years of age) has more than doubled over the past 30 years, from some 15% to a stunning 30% [4].

4. Trends and predictions

Several countries have, since long, experienced a marked increase in obesity rates during the last 18–20 years, and during the past decade, these levels have risen by an average of 25% (give or take 10%). In Great Britain, the prevalence of obesity was doubled since 1980. And, upon scrutinizing current trends, it was predicted that the levels of obesity would continue to rise unless action is taken now. Some 20 years back, the World Health Organization (WHO) stated that “the growth in the number of severely overweight adults is expected to be double that of underweight during 1995–2025”. Interestingly, crude projections or rough estimates from extrapolating of data newly collected, indicate that, by the year 2025, the prevalence of obesity could affect as many as 45–50% of the population within the US, and between 30 and 40% in Australia, England and Mauritius, and more than 20% in Brazil [5].

5. Key patterns describing obesity

A set of factors have been associated with obesity, such as age, gender and social and economic status. In developed countries, the natural pattern seen in the elders is an enhancement in body mass, especially in 50–60-year-old men but in women as well. However, the relationship between “unhealthy” obesity and “old” age is similar in the main part of developing countries. Interestingly, one may observe that maximum rates of weight gain seem to appear at an earlier age (i.e. around 40 years of age). The drop in prevalence, when this obesity peak is reached or passed, seems to be partly attributed to a decline in the survival rate of obese individuals. A clear-cut difference between genders is now emerging in an increasing number of countries, showing that (in fact) more women than men are developing obesity (BMI > 30). Contrastingly, the proportion of men who tend to develop overweight (BMI 25.0–29.9) seems to be greater than for women. Certain patterns also seem to emerge, “transversing” socioeconomic groups. Within developed countries, levels of obesity tend to be elevated in the lower socioeconomic spheres, while in most developing countries/areas around the globe, this relationship is reversed. The transition from rural to urban lifestyles is heavily associated with an increase in the prevalence of obesity, which has been associated with marked and overt changes in lifestyles (e.g. enhanced intake of high-energy-dense alimentary based, as well as a decrease in physical activity, whether NEAT (non-exercise activity thermogenesis) based or exercise “induced”). Furthermore, ethnicity is also believed to feature associated with a marked spectrum, reflecting a large variation in levels of obesity [6].

5.1. Social, health and economic costs of obesity

Obesity comes with a large spectrum of negative health-related, social and economic consequences. The rates of mortality and morbidity tend to be far much higher amongst overweight and obese people than lean individuals. An increased BMI value is closely linked with a greater risk of disease states like CHD, hypertension, hyperlipidaemia, NIDDM and certain cancers. Additionally, obesity has since long (20 years) been established as a major independent risk factor for the development of CHD by the American Heart Association [7]. In this context, modest weight reduction has been shown to significantly reduce the risk of these serious health conditions. Furthermore, as an additional impact on anyone's health, obesity represents a major social burden. The obesity "condition" has been denominated as the "last remaining socially acceptable form of prejudice", which not only exists amongst the general public but also resides within the majority of healthcare professionals. Tragically, negative attitudes of some healthcare professionals may seriously impede or postpone the treatment of overweight and obese individuals.

Often, one may observe that the serious health and social consequences of obesity are overshadowing the economic cost to society and to the individual. For instance, as long back as in 1995 in the USA, the rough cost attributable to obesity was estimated at \$99 billion. Furthermore, in several developed countries, the obesity epidemics have been estimated to account for as much as 2–7% of the total healthcare costs. Additionally, in addition to the direct costs of obesity come financial obligations related to individuals (i.e. health deterioration and reduced life quality = intangible costs) and the society, in terms of productivity loss, with increased sick leave and premature pensions (serving as indirect costs). The prevention incurred turn out to be more cost-effective than offering treatments, as far as economy is concerned. And in addition, healthcare providers, as well as policymakers, should acknowledge the importance of the obesity epidemic and its prevention, as well as develop cost-effective policies and programmes, in order to prevent this increasing worldwide epidemic to conquer the whole world.

6. Is there an imminent need for action?

Obesity has become a serious, debilitating medical condition, which definitely needs imminent attention and an urged action plan, encompassing the entire world. The International Obesity Task Force (IOTF) was established already in 1996, in order to tackle the emerging global epidemic of obesity; however, the expected results have not been met, as defined some 20 years back.

The IOTF serves as a part of the IASO, the International Association for the Study of Obesity, being an organization representing some 45–50 national obesity associations worldwide. Its task force has been composed of top experts on obesity, as well as related disease states from all over the world, including countries like China, Japan, Chile, Australia, Brazil, the USA, Canada and Europe. IASO is an NGO when it comes to formal relations with WHO. However, the IOTF has been collaborating closely with the WHO and thus closely engaged with other international health organizations, for instance, the commonwealth, as well as national governments, in order to increase the awareness and aid in developing of solutions to reduce the spread of global obesity [8].

The IOTF initiative encompassing the prevention and management of obesity sets out to fulfil four major goals:

1. To increase the awareness amongst governmental agencies, healthcare professionals as well as the community sustaining the idea that obesity is a serious medical condition constituting a major health problem evoking substantial economic costs.
2. To collect evidence and guidance in order to develop better prevention and management strategies for weight loss.
3. To secure the commitment of policymakers to strongly act with preventing measures.
4. To foster the development of national, regional and/or international infrastructures, enabling and supporting an implementation of action on both overweight and obesity.

Then, the emerging question is what will come out of the effort put forward by the IOTF? A quick search on the net revealed the following answer or suggestion: <http://www.hse.ie/eng/health/child/healthyeating/taskforceonobesity.pdf>

This report was written around 10–12 years ago, and some of the goals, set out to be reached, have been met. However, it seems that one of the world's most harmful epidemics, threatening the health of mankind, is hard to combat, and extraordinary and "ingenious" measures should be taken.

7. The WHO consultation report on obesity

In 1997, the WHO, in collaboration with the IOTF, arranged an expert consultation on obesity, in order to review the extent of the problem incurred by the obese individuals, as well as examining the need to develop public health policies and programmes, in order to combat the global problem of overweight and obesity. This summon of consultants resulted in a publication of an interim report entitled: "Obesity—preventing and managing the global epidemic" [7], with the subsequent WHO Technical Report Series No. 894 [9].

However, what were the suggestions by the IOTF to combat the obesity problem? The IOTF aimed to engage in a campaign to prevent and manage overweight and obesity, as well as endeavours to encourage and support the development of appropriate public and health policies, as well and programmes aimed at the prevention and management of obesity.

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