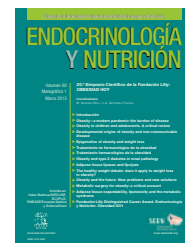


# ENDOCRINOLOGÍA Y NUTRICIÓN

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## 20.º SIMPOSIO CIENTÍFICO OBESIDAD HOY

### Obesity—a modern pandemic: the burden of disease

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It is often not recognised that although obesity was included in the classic listing of diseases when the World Health Organisation (WHO) took over the formal international classification of diseases in 1948 the medical profession dismissed it for decades. It was thought to be either a clinical oddity when it was manifest in children, accompanying such problems as the Prader-Willi syndrome, and in public health terms it was dismissed by epidemiologists as simply a risk factor which could largely be discounted in assessing the causes of cardiovascular disease if one took account of blood cholesterol and blood pressure increases. Some clinicians e.g. Jean Vague in France had recognised the variety of medical conditions induced by different types of obesity—abdominal and gynaecoid types based on the different distributions of fat—and Ethan Sims in Vermont had struggled to explain why some people resisted getting fat even when deliberately overfed for sustained periods. Yet the first technical reports produced in the 1970s primarily relating to the research challenges of understanding this problem recognised it was already a potential public health problem.<sup>1</sup> By 1983 the London Royal College of Physicians was highlighting obesity as a substantial public health problem<sup>2</sup> akin to that of smoking but again the medical profession and governments ignored it. This probably related to the fact that obesity was assumed to be a readily reversible problem if people complaining about the issue would only eat less and do some more exercise. This misunderstanding persists to this day.

### Obesity in the developing world: effects amplified by malnutrition

The beginning of a new approach was evident in the WHO reports on diet and the prevention of chronic diseases which we wrote for Europe<sup>3</sup> and then for WHO global use<sup>4</sup> in the 1980s. But it was only in 1995 that WHO analyses, conducted for a very technical report on trying to use just heights and weights of children and adults to assess the general state of public health, showed to our surprise that in all the Latin America representative surveys we could find there was no serious problem of adult underweight (termed “chronic energy deficiency” or CED by us). Surprisingly overweight and obesity was affecting 20-30% of the population using the then body mass index (BMI) accepted cut-offs of 25 for overweight and 30 for obesity. We then established the International Obesity Task Force (IOTF) in 1996 to try to convince the world that obesity should be taken seriously. We produced a draft and WHO held a major expert Technical meeting in Geneva in 1997 to consider this draft.<sup>5</sup> This became a formal report in the WHO Technical series on the basis that we were clearly showing that obesity was a major public health problem now affecting the so called “third world” or the “developing world”—now referred to more appropriately as comprising the low and middle income countries. At that stage our data showing serious problems of CED in adults were confined to India with a huge 60% prevalence of CED and some African countries affected by famine or war with 20-30% CED prevalence. The original

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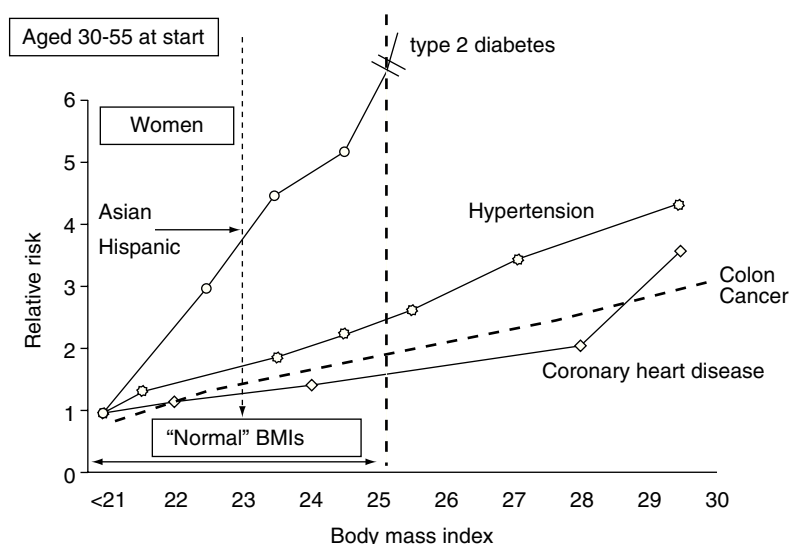
analyses showed that the BMI cut-off of 25 seemed appropriate as a mortality cut-off; although one needed to discriminate the effects of smoking which makes people thinner but die much earlier. Thus when one combines data on smokers and non-smokers it appears advantageous to have a BMI of about 28 when in fact one has to be substantially obese as a non-smoker to have the same risk of dying as a normal weight smoker. What was also obvious was that the risks of diabetes, hypertension and coronary heart disease increased not from a low point at BMI 25 but from a BMI of about 20 and the risk of diabetes was already 5-7 times higher by the time the BMI had risen within the so-called “normal range” to its upper limit of 24.9 (Fig. 1).<sup>6,7</sup> So the BMI cut-off of 25 was in clinical terms an arbitrary cut-off with the risk of illness increasing progressively from very low BMIs.

This first obesity technical report from WHO stimulated two further developments. First was the recognition that Asians were at even greater risks of the comorbidities of weight gain with a new cut-off point of 23 rather than 25 being then rapidly accepted across most of Asia.<sup>8</sup> Only from China, where IOTF helped a collection of societies to do their own analyses, came a proposal for an upper cut-off for “acceptable weights” as a BMI of 24.<sup>9</sup> Given the early work of Barker and our own analyses of the global problem of malnutrition for the Standing Committee of Nutrition of the United Nations (UN)<sup>10</sup> it seemed probable that the marked rates of diabetes and hypertension with only modest degrees of overweight in Asia was a reflection of a susceptibility to these major problems induced by early pandemic foetal and childhood malnutrition. Our later analyses with the Mexican<sup>11</sup> and Barbados governments showed that the same susceptibility applied to them (Fig. 2): Mexico and the Caribbean were also well known for their very high prevalence of malnutrition.

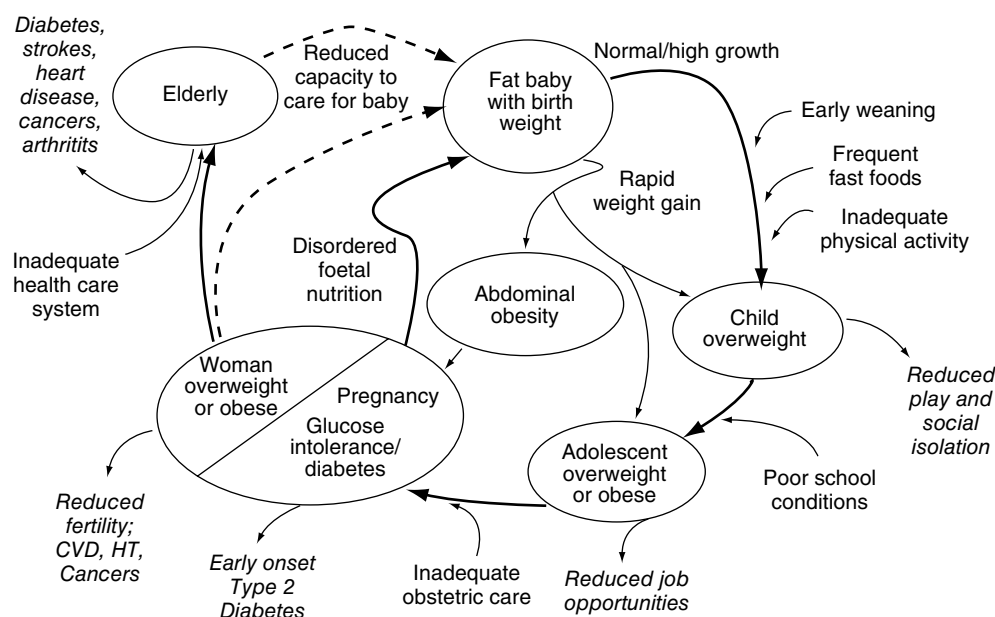
The second development was the development by IOTF of criteria for defining children’s overweight and obesity prevalence. We discovered to our amazement that the Mediterranean countries had the highest prevalence of obesity in Europe and that the lower socio economic groups, as in adults, were particularly affected<sup>12</sup>. It is now widely recognised that children in Europe are showing already higher blood pressures, adolescent type 2 diabetes and dyslipidaemia. This is widely recognized as the result of the loss of the Mediterranean diet as a consequence of the impact of the fast food, confectionary and soft drink companies and the poor or absent policy making by governments.

## Obesity now a major burden on society’s health globally

We were then asked by WHO to assess the contribution of excess weight gain to the global burden of disease as part of a series of working groups dealing separately with such risks as high blood pressure, blood cholesterol increases, smoking, unsafe sex, pollution, iron deficiency, etc. This major exercise, based on finding the ideal average population level for each risk factor (e.g. no smoking, a systolic blood pressure of 115 etc.) forced us to recognise that the ideal BMI of a population was about 21. Excess weight gain then proved to be the 6th most important global risk factor for all causes of death and illness in the world! Our own analyses showed that the disabling effects of weight gain in terms of diabetes, hypertension, heart disease etc. as well as cancers of the colon, endometrium and post-menopausal breast were about 10 times greater than the burden of the years of life lost below the age of 75 years and that a substantial burden affected adults from the age of 30 upwards.<sup>13</sup>



**Figure 1** The importance of modest weight gain in precipitating chronic disease: risks markedly increase within “normal” body mass index (BMI) range. Adapted from Willet et al.<sup>6</sup> with additional inputs from World Cancer Research Fund/American Institute of Cancer Research report on dietary causes of cancer,<sup>7</sup> the WHO IASO/IOTF report on Asian weight gain<sup>8</sup> and the analyses of the Mexican National Health Survey.<sup>11</sup>



**Figure 2** The impact of inappropriate United States/Northern European diets on most of the world's populations made susceptible to obesity's comorbidities by previous foetal and childhood malnutrition: health systems already overwhelmed. Adapted from James et al.<sup>10</sup> The propensity to abdominal obesity is conditioned by poor nutrition of the mother before and during pregnancy with inappropriate feeding after birth. These children then in poor environmental conditions grow up overweight and the young women readily develop gestational glucose intolerance and diabetes which then programmes the subsequent generations to macrosomia and magnified risks of non-communicable diseases. CVD: cardiovascular disease; HT: hypertension.

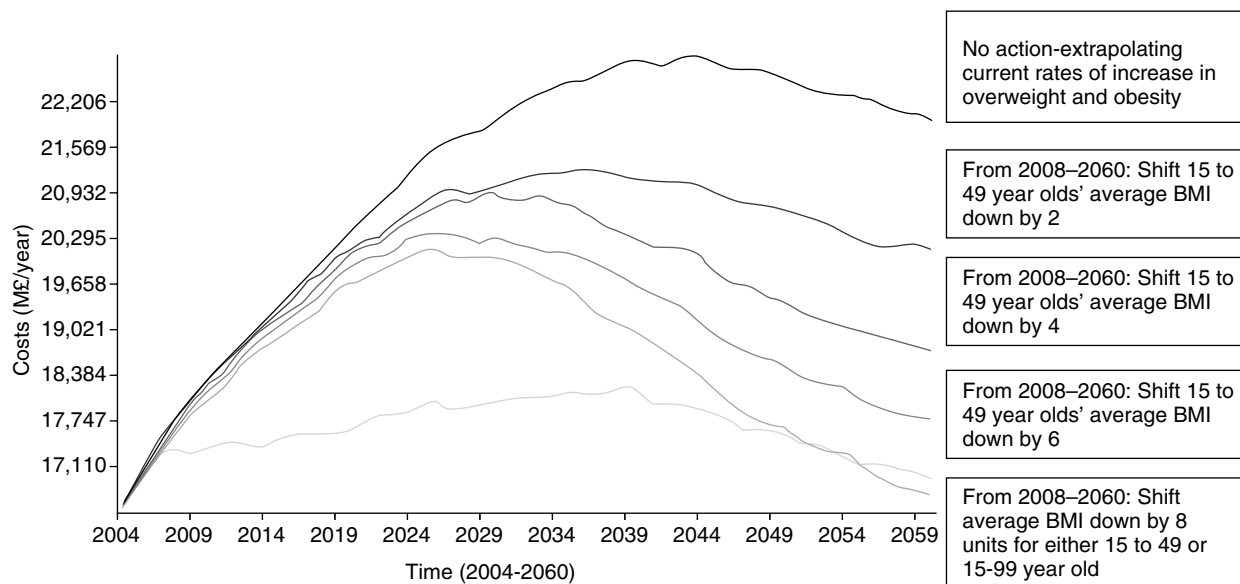
Updated analyses by WHO show that excess weight is now the third greatest risk factor for health in affluent societies with an unrelenting increase in obesity rates in adults and escalating rates of childhood obesity in most countries. Over 1.5 billion adults are overweight and obese and at least 10% of children are affected with rates going up extremely rapidly, especially in poor countries. Some progress in stopping the increase in obesity rates in children is seen in those European countries that have taken radical action to curb the excesses of the food industry but most governments have been feeble so far in their response.

### The escalating medical costs of obesity cannot be handled by any health system

New governmental analyses are showing that there is not a single country on earth which can afford the huge medical and other costs of overweight and obesity.<sup>14</sup> As children and adults develop diabetes earlier, in keeping with their longer duration of pre-existing overweight and obesity, the earlier will people go blind and demand ever more centres for renal dialysis. Medical costs will rise and already the poorest members of society on average are already sick by the time they are 50 years of age.<sup>15</sup> This is up to 20 years before the retirement age which is being increased from 60 towards 70 years of age. So people are being increasingly handicapped at work and becoming unable to earn a living. In Spain, Germany, Italy and Greece and other countries

where poor nutrition and indeed frank semi-starvation occurred after the Civil and Second World Wars, this postwar generation of babies and young children are now reaching the age of maximum vulnerability to diabetes and hypertension. This will only get worse because we already know that even modest increases in weight in children aged 7-13 years predict early cardiovascular disease and death<sup>16</sup> so the earlier the weight gains of families and populations the faster and sicker they will become. It is therefore time to recognise the importance of managing obesity in adults as well as general preventive measures affecting both children and adults. Bringing the weight of the adult population down has dramatic effects on health costs (Fig. 3).

On this basis the recent UN High Level Meeting in September 2011, with more Prime Ministers and governmental input on coping with the non-communicable diseases than ever before, accepted the demand for action. However, governments are still tinkering with the problem, afraid to confront the fast food and soft drink industries by developing new and tight regulations and fiscal policies which will allow big industry to flourish but not at the expense of inducing disease and premature deaths. The medical profession itself faces a new challenge not only in responding to the demand for medical care but also in leading the national call for multi-sectorial action and on a local basis locking in local government as well as society as a whole to take a new approach to what is often now termed a pandemic with potentially appalling societal consequences. We need to act now to prevent major medical as well as financial consequences.



**Figure 3** The impact of different degrees of excess body weight on the direct National Health Service costs only in M£ Sterling/year in England when different degrees of average body mass index (BMI) weight loss are achieved over a 2008-2060 time period. Adapted from Butland et al.<sup>14</sup> Simulations of different degrees of average weight losses from current predictions are expressed as BMI units.

## Conflicts of interest

The author declares that he has no conflicts of interest in this article.

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