

Obesity

– a threat to public health?

Charlotte Löndahl



SWEDISH COUNCIL FOR WORKING LIFE
AND SOCIAL RESEARCH

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Foreword



This book provides an up-to-date overview of and insight into current Swedish research into overweight and obesity. It first defines the terms "overweight" and "obese" and discusses various reasons for the population's ballooning weight. The sharpness of the increase has also affected the language of science. These days we talk of an obesity "epidemic" and of obesity as a "public health issue". It is also becoming more common to look for causes outside the purely medical realm: in changes to our movement patterns leading to reduced physical activity, in changes to our eating habits, and in the effects of socioeconomic factors. There is an inequality in obesity, with differences between social classes. There is also a genetic aspect: the children of overweight or obese parents are 10–15 times more likely to be overweight than those whose parents are of normal weight.

Overweight and obesity have become a major public health problem both in Sweden and abroad. It is not just that population numbers and life expectancy are rising in most countries. We are also seeing a very sharp increase in average weight. The proportion of the Swedish population classified as obese (BMI of more than 30) has doubled in the last 25 years. Half of all Swedish men are overweight (BMI of more than 25). As with men, the proportion of obese women has doubled from 5 to 10 per cent, and a third of Swedish women are overweight. The proportion of overweight or obese children has shot

up from 8 to 21 per cent in less than 20 years, which does not bode well for the future.

Part of the reason for childhood obesity can be found in parents' lifestyles, weight and health. However, although the problem is still very serious, the trend is changing: research studies show that the steep upward curve is levelling off.

In the past, excess weight was taken as a sign of prosperity and health. It indicated that you belonged to the upper class and had the means to eat plenty of good food and enjoy life. These days, as Finn Rasmussen points out in the introduction to this book, the opposite applies. The importance of being slim and controlling your weight by going to a gym, eating low-fat meals and leading a healthy lifestyle is becoming imprinted on our brains, thanks not least to the tabloid press's repeated dieting campaigns.

Our working lives and stress may also be part of the reason for the obesity epidemic. Studies of shift workers show that they are more likely to become overweight than colleagues who work days.

Irregular working hours also increase the risk of overweight and obesity. This applies particularly to the risk of abdominal obesity. Individual eating habits are also very important. This book discusses both well-established and less well-established weight-loss diets.

Overweight and obesity are not just a problem for the individual in terms of health. The risk of bullying, harassment and discrimination increases, and the inclination to play an active role in social and cultural activities may decrease. This can apply particularly to children and adolescents. It can also have long-term effects on health and quality of life. Overweight and obesity are also a major and growing problem for society in terms of the labour market, health care and social services. Health economic analyses show that the cost to society of overweight and obesity in Sweden is about EUR 300 million a year, or 2 per cent of total health care costs. The average cost of medication is almost twice as high for the obese as for those of normal weight, and these costs rise more or less in proportion to BMI.

The research into the causes and the general level of scientific understanding seem to be relatively sound. We know which groups are at risk.

We can easily track the long-term effects of excess calorie intake, and we have an overview of the effects of different methods of weight loss – from dieting to surgery. Future research and public health initiatives need not only to halt the general increase in body weight but also to result in the development of effective methods for weight loss in the seriously overweight. The choice of approach in different groups should be based on evidence-based practice, where systematic interventions are tested and evaluated. Greater attention needs to be paid to the psychological, social and cultural factors that contribute to overweight and obesity.

Ultimately it is also a matter of the design of modern society and working life. Sedentary and monotonous jobs are often bad for our health. Working nights or doing shift work has known negative effects. Stress at work with inadequate breaks and rushed mealtimes is another negative factor. Activity levels outside the workplace are also falling in today's convenience-driven world.

Our hope is that this publication will provide a good insight into current research into overweight and obesity. The obesity epidemic is not a uniquely Swedish phenomenon. Obesity is becoming more and more common in most countries. There is therefore considerable scope for closer international contact and collaboration with researchers in this field. Halting the current epidemic is therefore a major challenge for society – above all for employers, unions, the health care system, schools and, last but not least, the individual.

For and on behalf of the Swedish Council for
Working Life and Social Research (FAS)
Kenneth Abrahamsson
Programme Director

Energy balance in a world of plenty



It is now ten years since the World Health Organisation (WHO) announced in the summer of 1997 that obesity had reached global epidemic proportions. The consequences of this epidemic are now beginning to emerge. For the first time in human history, more people in the world are now dying of overeating than of hunger and malnutrition.

Although Sweden has fared relatively well compared to other Western countries (things are much worse in the USA and the UK, for example), the situation here is still very serious. According to Statistics Sweden's latest Living Conditions Survey, published in March 2007, one in two men and more than one in three women in Sweden are overweight or obese. Ten per cent of both men and women are obese, which translates into around 700 000 people aged 16–84.

"There has been a dramatic increase," says Finn Rasmussen, associate professor of epidemiology at Karolinska Institutet.

"Since 1980 the number of obese people in the population has doubled from 5 to 10 per cent."

More obese people

Statistics Sweden has been collecting data on the population's height and weight since 1980. However, the nationwide Living Conditions Survey is based on self-reported information. It is known from

experience that people have a tendency to underreport their weight, especially when they weigh a lot. This means that levels of obesity are probably higher than the survey would suggest. This is supported by Finn Rasmussen's studies of changes in the weight of young men. When Rasmussen looked at how the weight of 18-year-olds starting national service changed between 1969/70 and the year 2000, he found that the proportion of obese recruits increased almost fourfold during those 30 years, while the proportion who were overweight more than doubled.

"These figures are highly reliable because they're based on actual measurements and also include virtually all 18-year-old men in the country," he says.

Chronic disease

For most of human history, weight gain and plumpness were seen as a sign of good health and prosperity. A large waist was indicative of the upper classes. But not today. In today's affluent society where the obesity epidemic now rages, it is instead a slim figure that is associated with success, power and control.

But the ongoing obesity epidemic is not a cosmetic problem. The situation is far more serious than that. Obesity is a matter of life and death. And of major social inequalities in health.

"Previously it was thought that obesity was down to weakness of character," says Rasmussen. "But today we know it's a chronic disease that needs treatment."

Being overweight, on the other hand, is seen not as a disease but as a risk condition.

BMI – an established measure

Human beings are equipped with the ability to store energy in the body in the form of fat. This is a very important ability, as it made it possible for people to survive hard times when there was a shortage of food. Our fat deposits also fulfil other functions: besides serving as an energy reserve and helping us to keep warm, they play a role in the body's metabolism and hormone balance.

A normal amount of body fat is about 10 kg for a middle-aged

man and 15 kg for a middle-aged woman.

It is when we store more fat than normal that we talk about overweight and obesity. Obesity is a condition where the body has stored so much fat that our health is negatively affected.

Measuring body fat is both difficult and expensive. Instead we use the body mass index (BMI), which is an indirect measure of body fat. The BMI is calculated as our weight in kilos divided by the square of our height in metres, in other words kg/m^2 . The BMI has a number of shortcomings, because it does not differentiate between fat and muscle, and it says nothing about how the fat is distributed around the body.

Nevertheless, research shows that the association between BMI and the percentage of fat in the body is very strong. The same applies to the association between BMI and the risk of disease and premature death.

The BMI thresholds for being classified as overweight and obese have been set by the WHO and are based on the relationship between BMI and the risk of disease and premature death. According to the WHO classification, a BMI of 30 kg/m^2 or more indicates obesity, while the cut-off point for overweight is 25 kg/m^2 .

These thresholds are the same for all adults, regardless of gender or age.

”Given that women have less muscle mass, it is conceivable that the thresholds have been set slightly too high for them,” says Finn Rasmussen.

Increased risk of disease

It is well-documented that obesity increases the risk of a number of serious diseases. The disease most closely associated with obesity is type 2 diabetes, which used to be known as adult-onset diabetes but is now affecting more and more younger people. Scientists believe that as many as 90 per cent of all cases of type 2 diabetes are a result of people weighing too much.

Obesity also increases the risk of lipid disorders (such as high cholesterol), insulin resistance, high blood pressure, cardiovascular disease and some forms of cancer. Research has also shown that a high

BMI increases the risk of gallstones, joint problems and infertility.

By linking national service data with the Swedish cause-of-death register, Finn Rasmussen has shown that there is also a clear connection between a high BMI and increased mortality. His study shows, among other things, that the risk of dying from cardiovascular disease is five times higher with a BMI above 32 than with a BMI of 23. "The risk of premature death is lowest with a BMI of between 21 and 23," he says. "The risk then grows quite quickly. Even a BMI of over 25 is enough to increase the risk of premature death. This is very worrying, especially given that half of all Swedish men are now overweight."

The thrifty gene hypothesis

Genetically, we are designed for a hard and active life. For most of our time on Earth, humans were hunter-gatherers, an existence characterised by hard work and an uncertain supply of food. The ability to eat a lot and store energy effectively has very likely been an evolutionary advantage. This has led many scientists to claim that humans have evolved a "thrifty gene". If this hypothesis is correct, it would mean that very many of us carry this gene and so now have a predisposition to obesity.

Scientists cannot pinpoint exactly when the obesity epidemic began because we do not have historical information on the population's height and weight.

"The Danes have data going back slightly further than ours," says Rasmussen. "Judging from these, it appears that people began to gain weight just after the Second World War."

For the first few decades, though, the increase in weight was very modest. Only in the mid-1980s did the rate of increase really take off, making obesity more and more common.

Our genetic inheritance

But this thrifty gene cannot explain the epidemic of recent years.

"Having a predisposition to obesity is not enough," says Rasmussen. "No person, however great their predisposition to obesity, will get fat in a time of famine."

To put on weight, we must have ample access to food. The ideal

conditions are where the availability of energy-dense foods is high and the need for physical activity is low.

In a situation like this, even people with only a moderate predisposition to obesity will grow fat.

But nobody has yet been able to find the much-discussed thrifty gene.

"I find it very hard to believe that we'll find the explanation for the obesity epidemic in a single gene," says Rasmussen. "I think it's more a case of a whole battery of genes working together."

However, whether it is down to a single gene or more than one, we do know today that obesity is hereditary.

Finn Rasmussen has spent many years studying how heredity affects obesity, physical activity, eating habits and cardiovascular disease. By building up a database of twins who have been followed since childhood, he and his colleagues now have a unique opportunity to investigate how our genes affect different medical conditions and behaviours.

"Our studies have shown a clear link between genetic inheritance and the risk of obesity," he says.

Among other things, Finn Rasmussen has studied identical twins who grew up apart. The results show that identical twins tend to weigh the same as adults whatever the environment they were raised in. Rasmussen and his colleagues have seen the same thing when looking at the weight of children who are adopted. Their studies show that adopted children develop obesity in the same way as their biological parents rather than their adoptive parents.

Studies of families, where Rasmussen looked at how men develop obesity relative to their brothers and father, have also shown a major hereditary component.

Many scientists have tried to put a figure on the extent to which obesity can be explained genetically. The results vary considerably, due partly to the use of different methods.

"Our studies indicate that genetic inheritance can explain around 50–60 per cent of obesity," says Rasmussen.

To obtain a better picture of the causes of today's obesity epidemic, we also need to look at how society has changed.

Because research shows that many different factors are involved in the development of obesity. It is a matter not only of genetics, but also of environment and lifestyle.

To become overweight or obese, a positive energy balance is required. In other words, energy intake must exceed energy expenditure. A positive energy balance can be achieved in different ways. We can eat more, which means that we consume more calories, or we can move less, which means that we burn fewer calories. We will put on the most weight if we do both of these – eat more and move less.

A lot has happened in Sweden over the last 30 years – changes that dramatically alter our energy balance if integrated into our lifestyles.

Thirty years ago, fast food meant a boiled sausage with mashed potato from the hot dog stand. Today there are fast food restaurants on virtually every street corner. Sweetened drinks containing large amounts of energy are on sale virtually everywhere. And not only is this energy-dense food and drink readily available – it is also cheap.

Since human beings prefer energy-dense foods to more wholesome alternatives, it is easy to get too much of a good thing.

At the same time as we have been given almost unlimited opportunities to enjoy this abundance, the need for physical activity has decreased drastically. The fact is, we have never before moved as little as we do today. We get about by car, we take the lift rather than the stairs, and we spend our evenings in front of the TV or computer. Put simply, today's affluent society offers the perfect conditions for the development of obesity.

Other risk factors

Scientists believe that other factors may also be associated with the obesity epidemic.

”One factor that can play a major role is stress, which has increased markedly in society,” Finn Rasmussen says. ”We know that stress affects the body in many different ways. One is hormonal, as the production of cortisol increases, favouring the accumulation of fat.”

Another oft-quoted factor is sleep disturbances. Several studies have shown that a lack of sleep affects the development of obesity.

For women, pregnancy is an important risk factor. A study of obese women found that 73 per cent of them retained more than 10 kg after a pregnancy.

”Research has shown that heavy weight gain during pregnancy increases the long-term risk of obesity,” says Rasmussen. ”Women who put on a lot of weight during pregnancy may find it difficult to shed this weight again once the baby is born.”

And those who live in the country are more likely to be overweight and obese than those who live in town.

”We don’t know why, but one explanation might be that distances in rural areas are greater than in an urban environment, with the result that people drive more. City-dwellers often use public transport, which means a lot of walking.”

A class issue

There is a very strong link between socioeconomic factors and obesity, confirmed by many different studies. Sweden’s annual National Public Health Survey shows that obesity is much more common among blue-collar than white-collar workers. Worst hit are women on disability pensions.

Those who have money problems are more likely to be obese than those with better finances.

Finn Rasmussen has found clear links between a low level of education and obesity. One explanation may be eating habits.

”In a study of adolescents’ eating habits, we found that those with poorly educated mothers drank far more soft drinks and ate fatty fast foods more often than those with well-educated mothers,” he says.

The reason why the highly educated eat more healthily and are less likely to become obese may be that they have more knowledge and so find it easier to evaluate information about health, diet and exercise. Another reason may be that being slim is considered more important in the higher socioeconomic strata, resulting in more effort being put into weight control. In social strata with a more tolerant attitude, it is presumably easier for people to accept overweight and obesity.

In his study of national service conscripts between 1969 and the year 2000, Finn Rasmussen was able to show that this social unequal-

ity in terms of obesity has increased somewhat over the years. Similar trends can be seen in data from Statistics Sweden, which show that the incidence of overweight and obesity is falling among female white-collar workers but is continuing to rise among blue-collar workers.

”It’s incredibly important that the steps society takes reach the entire population and not just the well-educated,” says Rasmussen. ”Otherwise we’ll be seeing increased social inequality in health.”

Finn Rasmussen is associate professor of epidemiology at Karolinska Institutet in Stockholm.

FACTS & FIGURES

How to work out your BMI

If you weigh 70 kg and are 1.70 m tall, your BMI is:

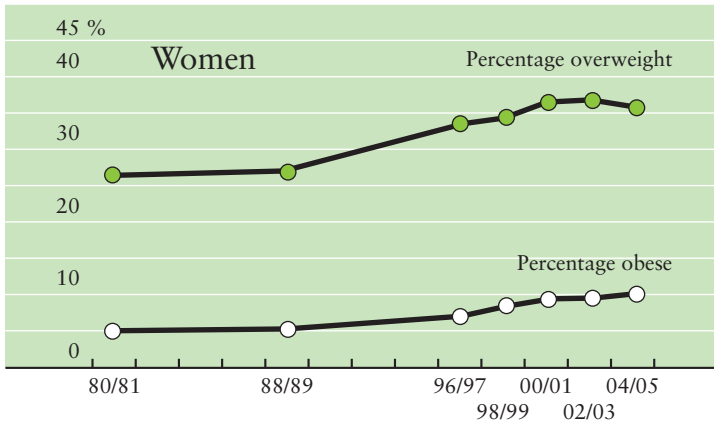
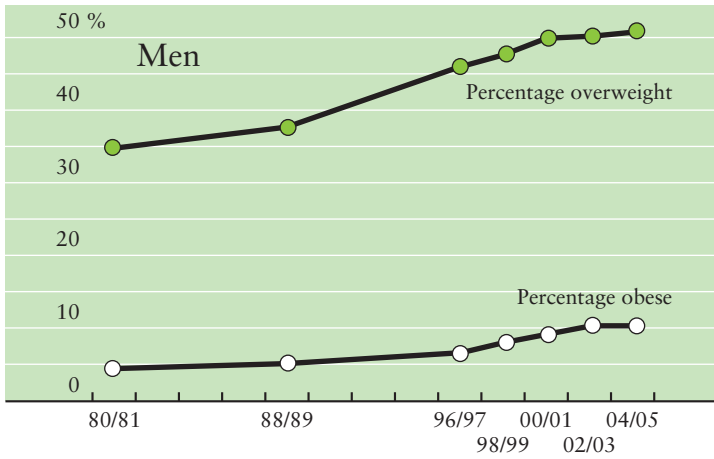
$$\frac{70}{(1.70 \times 1.70)} = 24 \text{ kg/m}^2 = 24$$

WHO’s definitions of obesity

BMI

18.5–24.9	Normal range
25.0–29.9	Overweight
30.0–34.9	Obese, class I
35.0–39.9	Obese, class II
40.0–	Obese, class III

Overweight and obesity in Sweden 1980–2005

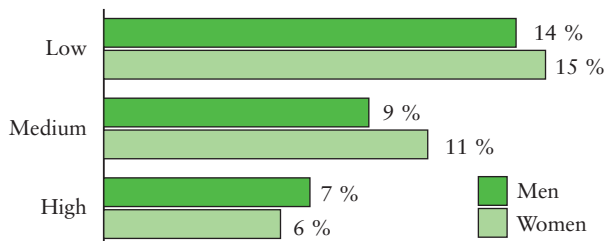


Source: Statistics Sweden, Living Conditions Survey, 2006.

Obesity and level of education

Percentage obese by education, ages 16-74, 2006.

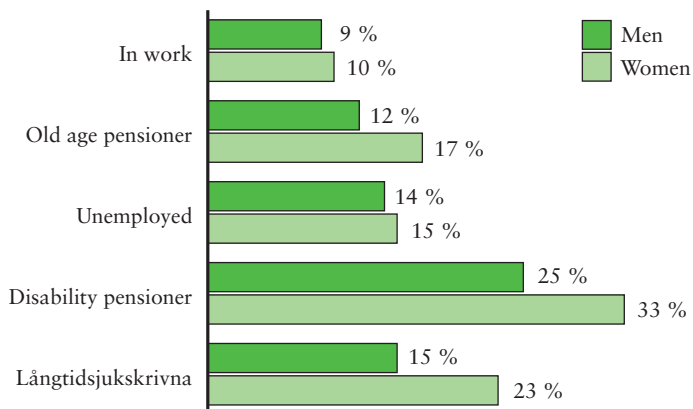
Level of education



Source: Swedish National Institute of Public Health,
National Public Health Survey, 2006.

Obesity and employment status

Employment status



Source: Swedish National Institute of Public Health,
National Public Health Survey, 2006.

Children vulnerable



Only a few decades ago, overweight and obesity were something that affected middle-aged people with sedentary lifestyles. Yes, there was the occasional chubby kid in the playground at schools around the country, but truly fat children were few and far between. Today the situation is very different. In the 21st century there are obese six-year-olds. And we are not talking about isolated cases. Studies show that 15–30 per cent of children in Sweden are now overweight or obese, and 2–6 per cent are obese. This means that roughly one in four children weigh too much. Claude Marcus, professor of paediatrics at Karolinska Institutet, finds this alarming.

”The situation is very serious, as these children are at risk of serious disease due to their obesity,” he says. ”If we don’t turn things around, there is a risk of this generation being the first for many centuries where children live shorter lives than their parents.”

Early obesity increases risk

Not only are there so many overweight and obese children today, but they also have a less favourable prognosis.

”People used to say that fat children would run the weight off,” says Marcus. ”But that isn’t the case today.”

Studies have shown that 80 per cent of children who are overweight

or obese at the age of seven remain so as teenagers. And those who are obese at the age of 15 are almost always obese as adults.

Doctors are now encountering children as young as three or four who are showing signs of obesity. This is serious, as children and teenagers are at risk of developing obesity-related diseases at a much younger age. Only a few decades ago, it was very uncommon for children to be affected by obesity-related diseases, as it takes time to develop these diseases. Today, though, as more and more children are becoming obese at an increasingly young age, the risks are growing.

Greater risk of disease

Claude Marcus, who is head of the National Childhood Obesity Centre at Karolinska University Hospital in Stockholm, often encounters children with a tendency towards metabolic syndrome – in other words, high blood pressure, lipid disorders (such as high cholesterol) or insulin resistance.

”This is very serious, because metabolic syndrome is the most important cause of premature death from cardiovascular disease,” he says.

He also comes across seven-year-olds with thickened arteries (a precursor to atherosclerosis) and teenagers with an enlarged heart.

”Unfortunately many people are unaware of just how dangerous obesity is,” he says.

Many obese children suffer from hormonal disorders, which may lead to absent or early periods in girls, and to boys developing breasts as teenagers.

The number of children and adolescents with type 2 diabetes has increased sharply in the USA, but there have been only a few cases to date in Sweden. Claude Marcus believes that Sweden has a chance of faring better than the USA because Swedish children are still more physically active than American children. Physical activity is an important protective factor when it comes to type 2 diabetes.

But there is more to it than a greater risk of disease. For most overweight children, bullying and low self-esteem are the biggest problems.

”I’ve yet to meet an obese child who hasn’t been teased about their size,” says Marcus.

Numerous studies have shown that obese children feel less socially accepted and have lower self-esteem and a poorer quality of life than those of normal weight.

Separate BMI thresholds for children

Deciding what counts as overweight and obese in children and adolescents is difficult. The BMI thresholds for adults cannot be used for growing children, as a normal BMI in children varies widely with age and gender. In the year 2000 the International Obesity Task Force (IOTF) launched a standardised measurement method to make it possible to compare data from different countries. Using this method, a child's BMI is calculated in exactly the same way as for adults. The doctor then refers to a table showing the cut-off points for overweight and obesity at each age – in other words, the values that correspond to a BMI of 25 or 30 in adults. The threshold for obesity in a six-year-old boy, for example, is a BMI of 19.78, while that for a 12-year-old girl is 26.67.

Possible trend change

Claude Marcus has looked into how common it is for seven-year-olds in Stockholm to be overweight. The first study, carried out in 1989, showed that 8 per cent of seven-year-olds were overweight or obese. Fifteen years later, in 2004, this figure had shot up to 21 per cent – the number of overweight and obese children was two-and-a-half times as high! This is a frightening increase: almost one percentage point a year. But it does not surprise Marcus that overweight and obesity are growing more quickly in children than in adults.

”Growing children are extremely vulnerable,” he says. ”Even very small changes in energy intake will affect a child's weight in time. It's enough for a six-year-old to eat half a meatball too much each day to end up overweight as a ten-year-old.”

There are currently no national statistics on the height and weight of children in Sweden. However, there are a number of regional studies, all of which have had results in line with Claude Marcus's findings. A study from Malmö in southern Sweden shows that the proportion of overweight ten-year-olds increased from 5 per cent in

1988 to 18 per cent in 2000. During the same period, the number of obese ten-year-olds trebled from 1 to 3 per cent. Another study, of schoolchildren in Umeå in northern Sweden, has shown that overweight has doubled since the mid-1980s, and obesity has increased fivefold.

Since 2003/04 the Swedish National Institute of Public Health has put together school health care statistics for ten-year-olds in Karlstad, Umeå, Västerås and Ystad. The latest figures, published in March 2007, offer a glimmer of hope in an otherwise bleak picture of the obesity epidemic. According to these figures, the proportion of obese children fell from 4.9 per cent in 2003/04 to 3.6 per cent in 2005/06, and the proportion of overweight children from 18.7 to 18.3 per cent.

"I think this marks a trend change – the steep upward curve is in the process of levelling off," Claude Marcus says. "This is good news, but we need to remember that the percentage of overweight and obese children is still extremely high. The problem remains very serious."

He believes that the reason for this levelling off has to do with the level of attention childhood obesity has attracted in recent years. This has created an awareness and a willingness to change on the part of parents, nurseries and schools.

"It goes to show that it's possible to do something about the obesity epidemic – the situation is not hopeless," says Marcus. "But now we need to keep the ball rolling. If we're to bring about a substantial decrease, we need to keep going and step up our efforts. If we don't, obesity will continue to accelerate."

Genes an important factor

Part of the explanation for the obesity epidemic lies with children's parents. We know that overweight and obesity are hereditary. The children of overweight or obese parents are 10–15 times more likely to become obese than those whose parents are of normal weight. But scientists do not know for certain how much obesity can be explained genetically.

"Putting an exact figure on the genetic contribution is pointless," says Marcus. "What's important is to recognise that genes play an important role in what we weigh. Some people become overweight

almost no matter what they eat, while others can eat almost anything without putting on a pound.”

But the fact that genes play a key role in what we weigh cannot explain why twice as many children are overweight today as 15 years ago. Our genes do not change from one generation to the next. Instead, just as with adults, it is a matter of an energy imbalance due to a number of external changes.

”An awful lot has happened in society in recent decades,” says Marcus. ”Twenty-five years ago there weren’t McDonald’s restaurants and 7-Eleven stores on virtually every street. And we had a law that prohibited the sale of groceries after 7 pm on weekdays and 3 pm on Saturdays.”

Today people can buy food and drink around the clock. Children have more money and can buy soft drinks, sweets, snacks and fast food whenever they want, wherever they are. Things have also changed in the home. There were no microwave ovens 25–30 years ago. Back then, people had to cook their food on the hob or in the oven, which asked that much more of children. These days, thanks to the microwave, even young children can heat up a pizza or pop a bag of popcorn on their own.

Unhealthy snacks

Eating habits have also changed. Only a few decades ago, the evening meal was a family event where people took their time on both the cooking and the eating.

These days, few families find time to cook. Surveys have shown that today’s families spend an average of 14 minutes preparing food. This is nothing in culinary terms – not even enough time to boil a potato, let alone peel and chop vegetables and prepare meat.

Claude Marcus says that traditional meal patterns have broken down, with disastrous consequences.

”If we don’t eat proper meals at regular times, we lose control over how much we consume,” he says. ”We’re never properly full, but nor are we ever properly hungry. Instead we think that we need to eat and keep on shoving food in our mouths.”

The consequences can be seen from the statistics. A survey from the

Swedish National Food Administration shows that almost a quarter of the energy children consume today comes from soft drinks, sweets, ice cream, snacks and bakery products.

"Many parents seem to think that children need something to eat as soon as they do the slightest bit of exercise, which is simply not true," says Marcus. "Proper meals fully meet a child's energy needs."

Most people who have been to a junior football game will concede that he has a point. The children barely get to play for quarter of an hour before parents launch themselves onto the pitch to try to get their little ones to eat and drink. The same thing can be seen on fun runs, where children are given something to put in their mouths after just a few minutes of running.

"There is this unholy alliance between sport and industry, with industry sponsoring the various competitions and matches," says Marcus. "At one fun run in Stockholm, where the smallest children ran just a kilometre, all of the participants were given a bag of sweets. These sweets contained 600 calories. To have used up that amount of energy, the children would have needed to have run a full half-marathon!"

One of the real villains of the piece when it comes to overweight and obesity in children is soft drinks. Consumption of soft drinks in Sweden has more than trebled since 1980, and children and adolescents account for a large part of this consumption.

A number of studies have shown that energy in liquid form has the ability to bypass the body's mechanisms for feeling full.

"Normally we compensate for a large intake of energy by eating less at the next meal," says Marcus. "With soft drinks and other sweet drinks that contain large amounts of energy, we don't do this. The result is that we consume more energy than we need."

Lack of physical activity

But the obesity epidemic is not just about what children eat and drink. Children need to be physically active for at least 90 minutes a day. The fact that children now get less exercise than ever before naturally also impacts on their weight.

A study from the UK shows that children today are given their

physical freedom three years later than they did 30 years ago. The fact that children are not allowed to cycle, run and play outside on their own to the same extent as before is helping to make them physically passive. Many parents also have a stressful working day, which means that many choose to wheel young children around in pushchairs even though they could easily walk themselves. And we give older children a lift to school because we find it difficult to get everything done in time in the morning.

There also being so many attractive sedentary activities on offer during children's spare time hardly makes things better.

"A few decades ago, there were few quiet sedentary activities around," says Marcus.

"Today there are all kinds of TV and computer games that provide exciting entertainment without the child needing to move an inch. And that's not to mention videos, DVDs and the huge range of TV channels."

So it is not surprising that television viewing has increased sharply among children and teenagers. One in three of those aged 10–18 now watch three or more hours of TV a day. Which is a lot. Especially when studies have demonstrated a clear link between watching TV and being overweight.

"The problem with watching TV compared to other sedentary activities is that we tend to snack as soon as we sit down in front of the box," says Marcus.

Complex interplay

Scientists are divided on whether it is diet or a lack of physical activity that plays the more important role in childhood obesity. Claude Marcus leans towards diet being slightly more important than physical inactivity, but stresses that the obesity epidemic is the result of a complex interplay between many different factors.

"We know, for example, that a lack of sleep and stress affect weight, but the extent to which they can explain the obesity epidemic is something we just don't know."

Another much-discussed factor is the effect of breastfeeding. Research has shown that breastfeeding may have a protective ef-

fect against overweight and obesity later in life. The debate in recent years, though, has been about the role that breastfeeding on demand plays in childhood obesity.

"I don't think that breastfeeding on demand in itself is a danger," says Marcus. "On the other hand, it's conceivable that parents who have got used to feeding on demand continue this pattern after the child is weaned.

This may mean that the parent gives the child something to eat as soon as it complains or gets angry or sad. Naturally that's not good."

A class issue for children too

As we have already seen among adults, childhood obesity is very much a class issue. Children's risk of overweight and obesity is affected by their parents' education and income. In one study, scientists looked at the prevalence of childhood obesity in different parts of Stockholm. The study found that only 5 per cent of children in the most affluent residential areas were overweight or obese. In the poorest areas, the figure was 30 per cent.

The COMPASS study looked at how the mother's level of education affected the incidence of overweight and obesity among teenagers in Stockholm. It found that obesity was three times more common in girls with poorly educated mothers than in the daughters of highly educated women. In boys, obesity was twice as common in those with poorly educated mothers.

"There are probably many different reasons for this," Claude Marcus says. "It could be down to diet, the family's lifestyle, or even stress. A well-to-do family is in a better position financially to let children choose the physical activities they'd like to do, because they can afford to buy the necessary equipment. It is also possible that social requirements vary between the different classes. In a middle-class family, it is perhaps less acceptable for children not to do anything during their spare time. In these families, the parents encourage their children to be active and exercise."

It is also possible that well-to-do families make more of an effort to do things together with their children. Their everyday life is probably under less stressful than that of families with limited resources.

The COMPASS study also looked at how teenagers' eating habits and physical activity are affected by their mother's level of education. The study found that teenagers with poorly educated mothers spent more time doing sedentary activities. They also ate junk food twice as often as teenagers with highly educated mothers.

Difficult to treat

The National Childhood Obesity Centre is currently treating around 500 children and adolescents who are extremely obese, defined as a BMI corresponding to 40 or more for adults.

"We can help some of them, but unfortunately we can only cure a few," says Marcus. "We get the best results with children who come for treatment at an early age, as young as seven to ten. Curing a teenager of obesity is unfortunately very difficult."

Karolinska University Hospital currently offers a number of different treatments for children and adolescents. The standard treatment is a combination of dietary and exercise advice together with behavioural therapy.

If this does not help, drug treatment may be offered as a supplement in some cases, but this is rare.

"We're very restrictive about drug treatment for children and adolescents, especially with new drugs that have not been widely tested on young people. The effect of the drugs is only moderate – the kids still need to make a huge effort themselves if there's to be a lasting improvement. There are also a number of side-effects, including depression."

The past year has seen a national trial of operating on teenagers with persistent serious obesity.

"We'll be operating on 80 adolescents aged 13 to 18," says Marcus. "We've performed 25 procedures to date, and things are looking very promising. At the same time, we mustn't forget that this is a major operation for a person so young. The procedure may prove unnecessary if an effective drug turns up in a few years' time."

Prevention effective

As it is so incredibly difficult to cure obesity, preventive measures

are crucial. For society, this means ensuring that as few children and teenagers as possible become overweight or obese in the first place.

In April 2007 Claude Marcus and his colleagues published the results of the four-year Stockholm Obesity Prevention Project (STOPP) looking into the effect of preventive measures in a school and leisure context.

“Five schools in Stockholm banned soft drinks, buns, sweets, ice cream and so on,” he explains. “At the same time, they introduced more physical activity, laid on a large and attractive vegetable buffet, and served school lunches conforming to the official Swedish Nutrition Recommendations. After four years, we weighed and measured the children and compared the results with five control schools.”

The results show that these preventive measures made a difference. The number of overweight and obese pupils fell by 6 per cent at the schools promoting physical activity and a healthy diet. And this was despite what were actually quite minor changes.

Should it not be a given that children are banned from consuming sweets and soft drinks at school?

“You might think so, but our study showed that it’s difficult to get schools to take that kind of action,” says Marcus. “And that’s despite the schools in our study actively wanting to take part.”

It took a whole year for people to learn to celebrate birthdays without ice cream at school, and to learn that sticky buns have no place in leisure activities.

Some grounds for optimism

The Swedish Council on Technology Assessment in Health Care (SBU) has reviewed a number of studies of preventive measures and concluded that it is not enough to take action at schools and nurseries – families too need to be involved. Claude Marcus and his colleagues are currently preparing a new study. This time they are looking at whether obesity can be prevented by targeting parents at child health centres.

“We know that children with overweight or obese parents are at greater risk,” he says. “By offering these parents an action plan at pre-school level, we hope to be able to make a difference.”

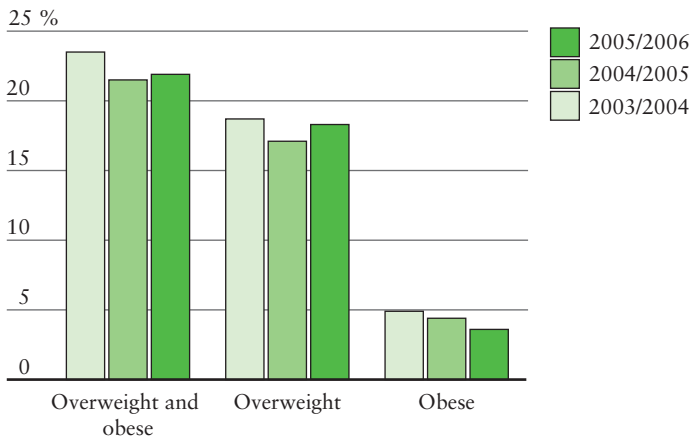
Claude Marcus has worked with childhood obesity for many years and is relatively optimistic about the future.

”It took 50 years from knowing that smoking was harmful for smoking to be banned in public places. When it comes to childhood obesity, the need for action has been recognised much more quickly. We know that preventive action is effective – it’s just a matter of taking it!”

Claude Marcus is professor of paediatrics and head of the National Childhood Obesity Centre at Karolinska University Hospital in Stockholm.

FACTS & FIGURES

Overweight and obese ten-year-olds



Source: Anton Lager, övervikt bland barn – system för nationell uppföljning; 2005/2006 års uppdatering [Overweight children – national follow-up system: 2005/06 update].

How much fat, sugar, fruit and veg children eat

	Saturated fat, percentage of daily intake	Added sugar, percentage of daily energy intake	Fruit and vegetables, g/day
Recommended	Max 10	Max 1	Min 400
Sweden	14	13	239
Denmark	15	13	339
Norway	14	17	243
Iceland	15	13	139

Source: Nordic Council of Ministers, Nordic Plan of Action on better health and quality of life through diet and physical activity, 2006.

Crucial where the fat lies



Obesity increases the risk of a whole number of serious diseases. But recent years' research shows that it is not just the amount or proportion of body fat that affects this risk but also where on the body the fat is deposited. Key to the risk of type 2 diabetes and cardiovascular disease is central body fat, or abdominal obesity.

Whatever our BMI, extra weight around the middle is more dangerous than being seriously overweight.

Abdominal obesity can be measured in a number of different ways. Most common is measuring the waist with a standard tape measure. For women, the risk of disease begins to rise once the waist gets beyond 80 cm. Once the waist passes 88 cm, the risk is substantially increased. The equivalent measurements for men are 94 and 102 cm.

"Waist measurement is an incredibly easy yet very reliable way of assessing abdominal obesity," says Mai-Lis Hellénus, professor of cardiovascular prevention at Karolinska Institutet. "I began measuring my patients' waists back in 1988 and have long argued that we doctors should use the tape measure much more widely than we do.

Relying on BMI alone is not enough. It can even be misleading, as a patient of normal weight with a lot of central body fat may run a higher risk than one who is overweight."

Women and abdominal obesity

Abdominal obesity is traditionally associated with men, while obesity in women is primarily associated with broad hips and big thighs. But this is now changing as women change shape. Instead of haunches, we are now growing paunches. And things are changing fast.

”Abdominal obesity is now more common among women than among men,” says Hellénus.

Post-menopausal women often have a tendency to put on weight around the middle. This is often related to a change in hormone balance, resulting in a less curvy shape.

”We must also remember that many women cut back on physical activity in middle age – hormones are not enough of an explanation in themselves,” says Hellénus, adding that abdominal obesity is on the increase not only in older women but also in younger women.

Lifestyle crucial

The reason why we are changing shape and getting fatter around the middle has to do mainly with lifestyle changes. We are eating too much and doing too little.

”How much we eat affects our weight, and what we eat affects where the fat is deposited,” explains Hellénus. ”Saturated fat, for example, is more likely to be stored around the abdomen than unsaturated fat.”

Physical activity also affects where we store fat. Those who do not exercise become heavier around the middle than those who are more physically active. This applies to people of normal weight as well as the overweight and obese.

Figures from the Swedish National Institute of Public Health suggest that only 20 per cent of Sweden’s adult population are sufficiently active. Research into physical activity over the years confirms that we have become less and less active since the 1960s.

But our waistline is not determined solely by what we eat and how much exercise we take. Developments in society also play a role.

The last decade has seen a marked increase in tempo both in the workplace and in people’s private lives. This has resulted in many people feeling under pressure and struggling to keep up.

”Stress affects us in many ways, both directly and indirectly,” says Hellénus. ”If we’re exposed to stress over a long period, this affects hormone production in the hypothalamus, which is the hub of the body’s hormonal system. This change in hormone production affects the adrenal glands, which in turn begin to produce a number of stress hormones, such as cortisol. High cortisol levels promote the deposition of fat in the abdomen, which means that our waistline expands.”

Metabolic syndrome

The fat deposits in the stomach area are the body’s most readily available. Crucial where the fat lies energy reserve. This reserve played an important role for our forefathers, who needed readily available energy to be able to perform hard physical labour even when there was a shortage of food. As the availability of food varied widely, people did not develop huge bellies. Instead they made use of the body’s ingenious system for storing fat for different needs.

The problem comes when we do not use up our fat deposits but instead continue to top them up. If we go too far, we risk developing what is known as metabolic syndrome.

This involves a number of symptoms associated with disturbances of fat metabolism. Besides abdominal obesity, they include insulin resistance, lipid disorders (such as high cholesterol) and high blood pressure. Anyone with two or more of these symptoms has metabolic syndrome.

”Metabolic syndrome is a precursor to type 2 diabetes,” Mai-Lis Hellénus explains. ”It’s a serious condition because it substantially increases the risk of heart attack, stroke and other forms of cardiovascular disease.”

Active fat

Abdominal obesity’s role in metabolic syndrome is a complicated web of cause and effect. Crucial, however, is that central body fat consists of a very special type of fat tissue.

Human beings have a number of different types of fat deposit in the body. These deposits are all active, albeit to varying degrees, and fulfil a number of different functions in the body. The fact that these

deposits, or fat tissue, are active means that they are forever changing, being broken down and built up again. The deposits around our middle – in other words, the fat surrounding the intestines and internal organs – are the most active fat tissue in the body.

This is because this tissue's cells are more sensitive and react more readily to stimuli such as stress. When fat cells are stimulated, they release fatty acids into the bloodstream. These fatty acids pass through the liver and cause it to step up the production of blood fats, or lipids. This leads to lipid disorders and, often, high blood pressure.

But that is not all that happens. The fatty acids released by the fat cells in the abdomen also affect the body's sensitivity to insulin, leading to an increased risk of insulin resistance. Insulin resistance itself can also affect lipid levels and so further disrupt the balance.

Lipid disorders and high blood pressure are both risk factors for cardiovascular disease. Insulin resistance also increases the risk of type 2 diabetes.

Although abdominal obesity is now more common among women than men, it is primarily men who are affected by metabolic syndrome. Scientists do not yet know why, but many believe that it has to do with the sex hormones.

Physical activity most effective

The key to the treatment of abdominal obesity is lifestyle changes. It is about eating better, doing more exercise and being less stressed. Most effective, research shows, is an increase in physical activity.

"Physical activity has a greater impact on abdominal obesity than a change in diet, even if the decrease in weight is the same," Mai-Lis Hellénus says.

The reason for this is that, when we exercise, the body turns first to the fat stored in the abdomen.

Besides decreasing abdominal obesity, physical activity increases the body's sensitivity to insulin, lowers blood pressure and stabilises lipids.

"You find me a drug that can do all of that!" says Hellénus with a smile.

Research also shows that physical activity affects a number of other

bodily functions. It improves the regulation of appetite, increases energy combustion and protects against stress, depression and anxiety.

Physical activity is not quite the same thing as exercise. Exercise is things that make us short of breath and sweaty, such as keep-fit classes, swimming, aerobics, jogging, football or tennis. Physical activity also includes more leisurely activities such as a brisk walk or a gentle cycle ride.

”We recommend that all adults do 30 minutes of physical activity every day,” says Hellénus. ”On top of this, we need to exercise two to three times a week. A bit of weight training together with something like running or dancing which gets the pulse up is often good.”

Muscle heavier than fat

Some criticism has been levelled at the use of physical activity as a treatment for overweight and obesity. Critics say that far too much activity is needed – several hours of walking every day – to burn off all of the energy that an overweight or obese person needs to be rid of.

Mai-Lis Hellénus rejects this criticism.

”As soon as you move, you start burning energy. If you walk briskly for 15 minutes longer than you would normally, you will burn about 100 extra calories. Over the course of a year, that’s 36 500 calories!”

But it is true that increased physical activity does not always lead to weight loss.

In some studies, participants’ weight has stayed the same, while in others it has gone down. But all studies show that the amount of body fat decreases. The reason why some people do not lose weight is that muscle weighs more than fat. When we exercise, the body breaks down fat into energy which is used by the muscles.

”It’s sometimes better to use the tape measure than the scales,” says Hellénus. ”Anyone stepping up their level of physical activity will notice the results on their waistline.”

The reason why people are not sufficiently active has largely to do with changes in society in recent decades. For example, the local gro-

cer has gone. Instead of walking to the shops, we drive. Our whole infrastructure has been Americanised, with large out-of-town shopping malls. But there are still many simple tricks we can use to increase the amount of energy we burn in our daily lives.

”Get off the bus one stop earlier than you normally would, use the stairs rather than the lift, or take the dog for a walk – even if you don’t have one!” advises Hellénius.

Physical activity on prescription

As part of her work on preventing and treating cardiovascular disease, Hellénius has spent many years working on lifestyle changes. And much of her work has been about getting patients to exercise more.

”The medical system needs to get better at prevention,” she says. ”By tradition we doctors have become used to treating and curing disease, but our role does actually also include preventing disease in the first place.”

And one way of preventing and treating disease is to prescribe physical activity.

Hellénius began doing this in 1987 when working as a general practitioner in Sollentuna.

”We were among the first in Sweden,” she says. ”For me, it seemed only natural to help people to get started. In Sollentuna we worked with a local sports club and started up a number of different keep-fit programmes tailored to patients’ needs.”

The idea spread to other surgeries in the late 1990s, and now around a third of all surgeries in Sweden prescribe physical activity.

Hellénius believes that formalising advice on physical activity is a major advantage.

”Receiving a written prescription makes more of a difference than me as a doctor simply telling patients about how they would benefit from exercising more.”

Today, doctors, nurses, physiotherapists and midwives in Sweden all prescribe physical activity for a number of different conditions and diseases. Besides overweight and abdominal obesity, physical activity is prescribed in cases of depression, cardiovascular disease, osteoporosis,

diabetes and joint problems.

And it is getting results. Research shows that the likelihood of patients increasing their physical activity is much higher when it is prescribed by medical professionals.

Early prevention important

Prescribing physical activity is largely about motivating and supporting the patient.

”One important task is to help the patient to find the right level,” says Hellénus. ”You mustn’t set the bar too high. If you’re not used to it, start with a five-minute walk and gradually build up from there.

After a while, you’ll start to feel an urge to exercise, and then things will look after themselves.”

These days she encounters mainly patients who already have risk factors or are ill. Ideally she would have wanted this preventive action to have been taken before the symptoms appeared. The benefits would then have been even greater.

”There is now a strong body of scientific evidence showing that physical activity is effective in both the prevention and treatment of disease. We know that it works. It’s also a very cost-effective form of treatment.”

Are there no negative effects?

”No, scientists have not been able to find any. But obviously medical staff need to have the right skills. We’ve worked a lot on this. And it’s important to keep an eye on patients’ progress. If they’re struggling, it’s important to be there for them and provide support. If they can’t manage it, it’s not the end of the world. We just pick up where they left off.”

Mai-Lis Hellénus is professor of cardiovascular prevention at Karolinska Institutet in Stockholm.

FACTS & FIGURES

Physical activity and energy expenditure How many calories you burn in 30 minutes

Activity	kcal
Sitting down	7
Gentle walk	125
Dancing the foxtrot	135
Playing tennis/badminton	140
Keep-fit class	200
Brisk walk	220
Swedish folk dancing	240
Cycling	300
Swimming	350
Skiing	375
Jogging/running	450

Source: Apoteket, Apotekets råd om motion och friskvård
[The Swedish pharmacist's guide to exercise and health].

Food and physical activity How far you need to run to burn off

Type of food/drink	km
150 ml light beer	0.8
150 ml strong beer	1.4
1 toffee	1.5
15 salted nuts	2
1 Danish pastry	4
10 French fries	4
1 iced marzipan bun	5
1 slice of gateau	8
1 hamburger	8
1 pizza	18

Source: Apoteket, Apotekets råd om motion och friskvård
[The Swedish pharmacist's guide to exercise and health].

Disruption of biological clock part of the explanation



Sleep disturbances could be part of the reason for the obesity epidemic sweeping the world, says Berndt Karlsson, researcher and consultant at Norrland University Hospital.

”The obesity epidemic has coincided with the emergence of the global 24-hour society where people’s working hours and lifestyles are becoming more and more irregular,” he explains.

Sleep disturbances and their negative effects on health have been studied by many scientists. Among other things, they have shown that a lack of sleep impairs our performance and reactions. Fewer scientists have looked at the links between sleep disturbances and metabolic symptoms such as abdominal obesity, lipid disorders (such as high cholesterol), insulin resistance and high blood pressure. However, as the extent of the obesity epidemic has grown, so too has interest in lack of sleep and its possible contribution to the epidemic.

Biological clock

Human beings are designed to be awake during the day and sleep at night. Our sleep-wake cycle and biological clock are controlled by light. We function best if we eat at regular times during the day and then sleep for about eight hours at night. These days, however, many of us ignore our biological clock and try instead to be part of a

24-hour society. We fly across time zones, snack between meals, and increasingly eat a large meal late in the evening. We work irregular hours, sometimes during the day and sometimes during the evening and night. We spend some periods working weekdays and others working weekends.

The fact that this puts the body, including our metabolism, under enormous strain is something we often forget. At least, until we have problems. And the risk of problems – obesity, metabolic syndrome, diabetes – increases markedly if we work irregular hours and so disrupt our sleep-wake cycle, as Berndt Karlsson's research has shown.

Eating at night

Karlsson's interest in sleep disturbances and their relationship with metabolic disorders was awakened when he was working as company doctor at a large paper producer.

"I noticed that shift workers were more likely to have things like lipid disorders than those who worked during the day," he says.

When the opportunity arose a few years later, he began to conduct research in this area.

To find out what happens in the body when we eat at different times of the day, he conducted a study on nurses, who were asked to eat a set meal at different times.

"The worst thing is eating very late, just before midnight," he explains. "At that time of day, the body struggles to deal with the food and needs more insulin."

Thus insulin secretion is higher when we eat at night than when we eat the same meal in the middle of the day. Forcing the body to produce more insulin increases the risk of insulin resistance and, in the longer term, the risk of type 2 diabetes. In some studies, scientists have also seen that late meals result in elevated levels of lipids such as cholesterol, which increase the risk of cardiovascular disease.

"When we disrupt our biological clock by staying awake and eating at night, we affect the body's hormonal patterns, which increases the risk of obesity," says Karlsson.

Lack of sleep increases risk of obesity

Berndt Karlsson knows what he is talking about. By carrying out a number of studies of shift workers, he has been able to investigate what disruption of the sleep/wake cycle means for the body.

”Most shift workers suffer from lack of sleep, and this is more pronounced with some shifts. If you work rotating shifts, the body struggles to keep up, and you get sleep disturbances. Worst off are those who begin a shift early in the morning, because they find it difficult to make up for the lost sleep.”

Just like late meals, lack of sleep increases insulin secretion, which may raise the risk of insulin resistance and type 2 diabetes. The body’s hormonal system is also affected. Suffering from lack of sleep is similar to stress.

When the hormonal balance is disturbed, the adrenal glands begin to produce stress hormones such as cortisol. High cortisol levels increase the deposition of fat, especially in the abdomen.

And this is exactly what Berndt Karlsson’s research has shown. Obesity, especially abdominal obesity, is far more common among shift workers than among those who work days. Shift workers are also more likely to have lipid disorders and insulin resistance. This means that they are more likely than others to develop metabolic syndrome.

The more years people work shifts, the greater the risk of them dying from diabetes or cardiovascular disease.

Research also shows that the regulation of appetite is affected by disturbances of the sleep/wake cycle. Our appetite is controlled by a hormone called leptin. Leptin is produced by the fat cells and sends the brain signals about whether our energy reserves are sufficiently large or need to be topped up. When leptin levels are high, we feel full; when they are low, we feel hungry.

”Studies have shown that shift workers’ leptin levels vary far more than those of people who work days,” says Karlsson. ”This means that appetite seems to be related to the time of day you wake up.”

Chaos in the body

The reason why shift work increases the risk of disease is probably related to a number of different factors.

”These might be behavioural disturbances, such as being forced to snack in order to stay awake, as studies have shown that shift workers snack more than those who work days,” says Karlsson. ”But it can also be a matter of the individual not getting on with irregular working hours. Being forced to change your sleep/wake cycle can cause stress in the individual.”

Another explanation could be the conflict between our internal biological clock and external routines.

”If you ignore your biological clock for too long, you’ll end up with your body in chaos,” says Karlsson. ”Your whole system is thrown out of balance.”

Karlsson himself leans mostly towards this last explanation.

”I’ve become more and more convinced that disruption of the sleep/wake cycle is harmful,” he says. ”Our biological clock is more important for our health than we realise.”

24-hour society

Previously humans have always had to adapt their working day to the amount of daylight. It was only during the industrial revolution, when productivity in the factories needed to rise, that shift work was introduced.

Statistics show that 80 000 people in Sweden currently work shifts that include night work. According to Berndt Karlsson, though, there are many more than this in reality.

”Sweden has a very narrow definition of what constitutes night work, which is one reason why Sweden has so few registered night workers compared to other countries.”

As an example he cites the fact that none of the workers who took part in his studies met the criteria for classification as night workers. Yet they worked three shifts including a night shift, which most of us would deem the classic shift pattern.

But these days it is not just about shift workers in factories. Thanks to the 24-hour society, most of us can work almost any time of the

day or night. This is clear from European statistics, which show that only 24 per cent of workers now work normal office hours – in other words, Monday to Friday, 8 am to 5 pm. And the number who do this is falling.

Karlsson does not think it will be long before we begin to see the consequences in the form of further weight gain and metabolic disorders.

”And we mustn’t forget that there are also many voluntary ‘shift workers’,” he says. ”Just think of all those teenagers sitting up playing computer games or chatting with their friends half the night. Not only are they upsetting their sleep/wake cycle, which is bad enough in itself in terms of obesity, but they’re also sitting still and very probably drinking some kind of soft drink.”

Teenagers as voluntary shift workers can change their lifestyle, but in some professions there is no choice. Some people simply have to work irregular hours. So what can they do to minimise the risks?

”It’s important to think about what you eat,” says Karlsson. ”If you have to eat at night, eat slow carbohydrates such as wholegrain products and avoid fast carbohydrates such as soft drinks and sweets. Make sure that you move about regularly and, last but not least, change shifts on a clockwise rotation – in other words, go from a morning shift to an afternoon shift to an evening or night shift.”

Bengt Karlsson is a consulting physician and researcher at the Department of Public Health and Clinical Medicine at Umeå University.

So what should we be eating?



Over the millennia, Mankind has constantly adapted to the prevailing conditions. As omnivores, we can survive in practically any environment. There are people in the tropics who have thrived on a vegetarian diet, while others in the most northerly climes have fared perfectly well on an all-meat diet.

Energy balance

The connection between what we eat and what we weigh is very straightforward. When we eat, we feed the body with energy, which is then used when we move about. This energy is measured in calories (kcal) or kilojoules (kJ).

If we consume the same amount of energy as we burn, we achieve energy balance. A change in weight requires an energy imbalance. This means that those wanting to lose weight need to achieve a negative energy balance, where energy expenditure is greater than energy intake. The bigger the difference, the bigger the weight loss.

”The big problem is that we think there are shortcuts,” says Alicja Wolk, professor of nutritional epidemiology at Karolinska Institutet. ”But there aren’t. Our energy balance determines what we weigh. If we want to lose weight, we need to eat less and do more.”

Wolk has spent many years studying how diet affects our health.

”Obesity is not something that suddenly happens one day,” she says. ”It takes time to get fat, which is something we often forget.”

We gain weight when we feed the body more energy than we need. And often this involves small, seemingly insignificant amounts. Anyone can eat an extra biscuit a day. What we do not realise is that over a five-year period this extra 50 calories a day is enough to make us overweight.

Looking at it the other way around, though, we only need to cut back on a biscuit a day for five years to lose 10 kg!

Not just about calories

Energy balance is the key to understanding how our weight changes. But it tells us nothing about what we need to eat to prevent disease and feel good.

Since the problem of overweight and obesity began to attract attention, there has been an increasingly lively debate about what we should be eating. One day scientists are telling us that we should eat more carbohydrates, and the next that we should eat fewer. As a lay person, you might wonder whether the so-called experts actually know anything at all.

”There are certainly differences of opinion in scientific circles, but these are generally about the finer details,” says Wolk. ”We’re agreed on the big issues.”

So it would be wrong to think that we do not know what we should eat in order to avoid getting fat. The official Swedish Nutrition Recommendations, which do not differ notably from those in other countries, are based on the latest science and research. This means that the recommended diet is designed to provide a basis for good health and minimise the risk of lifestyle diseases such as obesity, diabetes, cardiovascular disease and cancer.

The energy we consume in our food comes from carbohydrates, protein and fat. The nutrition recommendations look at the composition of our diet – in other words, the relative amounts of these nutrients.

The latest nutrition recommendations were adopted in 2004 and are an update of the previous recommendations.

They state that 50–60 per cent of our energy should come from carbohydrates, 10–20 per cent from protein and no more than 30 per cent from fat. Of this fat, no more than 10 per cent should be saturated, and sugar should not account for more than 10 per cent of our total energy intake. We should also eat 25–35 g of fibre each day.

More fish, fewer sweets

So how are these recommendations reflected in our actual eating habits? Do we eat enough carbohydrates?

”No, we don’t,” Alicja Wolk says. ”Generally speaking, most of us should eat more vegetables, fruit and wholegrain products. We should also consume fewer soft drinks and cut back on bakery products, sweets, snacks and other sugar-rich products.”

Since 1980 we have increased our intake of energy from protein and carbohydrates, and reduced our intake of energy from fat and alcohol. So our diet today is a closer match for the nutrition recommendations than it was in 1980. This is strange, because it is during this same period that the obesity epidemic has snowballed. Should it not be the other way around? Should we not have become slimmer now that we are following the recommendations better?

”That’s exactly what the critics tend to say,” says Wolk. ”But they’re overlooking a key factor – energy balance. The nutrition recommendations don’t tell us how large the portions should be, just what the breakdown between the different nutrients should be. If you want to control your weight, you also need to take account of your energy needs.”

How much energy we need is very individual and depends on a number of factors, including gender, weight, age and physical activity. Generally speaking, it is estimated that a man of normal weight with a relatively sedentary job and lifestyle needs between 2 500 and 3 000 calories a day. The equivalent woman needs around 2 000 to 2 500.

Alicja Wolk pulls out some statistics from the Swedish Board of Agriculture showing an upward curve.

”In 1980 average energy consumption in Sweden was 2 940 calories per person per day, but by 2004 this had risen to 3 080 calories. This means that we’ve increased our daily energy intake by 140 calories.”

An extra 140 calories a day might not sound much, but in time this translates into many kilos. To be specific, around 28 kg in five years. Here we have an important explanation for the increase in overweight and obesity in society, says Wolk. Our portions have grown larger, and we are less active. We could not have done anything but get bigger.

Most of us want to avoid becoming overweight or obese. But controlling our weight in today's affluent society, with its abundance of energy-dense foods, is difficult. Even harder is losing weight, as this generally requires major lifestyle changes. To lose half a kilo a week, you need to reduce your energy intake by around 500 calories a day. For many people, this is not a particularly appealing prospect. So it is not hard to understand why they are constantly on the lookout for shortcuts to a slimmer waistline.

Atkins diet no revolution

"The key features of many of today's fad diets tie in well with what the science is saying," says Wolk.

"It's a good idea to replace butter with olive oil, to eat nuts rather than crisps, and to replace some meat with fish. The problem is that fad diets tend to focus very one-sidedly on a particular nutrient or food."

The food we eat consists of a variety of different nutrients and vitamins. It is the balance between them, and the amount of energy we consume over time, that affect our health.

The debate in recent years has been largely about carbohydrates. Critics have claimed that the nutrition recommendations are making us fat because they include too much carbohydrate. But the idea that carbohydrate-rich foods make us fat is nothing new. Back in 1972, an American doctor called Robert Atkins published his book "Dr Atkins' Diet Revolution" where he espoused the idea that a diet high in protein and low in carbohydrate would help us burn off fat more efficiently. The book attracted considerable attention but then fell into obscurity. 20 years later Atkins dusted off his ideas and published a new book on the same topic. By the turn of the millennium, the book had reached Swedish consumers, and Atkins' ideas enjoyed a renaissance here too.

Alicja Wolk, a former guest researcher at the Harvard School of Public Health in the USA, has seen several American studies of the Atkins diet.

”Several of them have had good results,” she says. ”In the short term, those following the Atkins diet lose slightly more weight than those on a traditional low-fat diet.”

But the difference narrows with time. After six months there is still a slight difference, but after a year things have evened out completely.

Like many other scientists, Wolk doubts whether the initial weight loss was due to the participants cutting back specifically on carbohydrates.

”The diet is incredibly low-energy, especially at the beginning,” she says. ”It’s only natural that you’ll lose weight if you eat far fewer calories than you burn.”

The reason why the additional weight loss decreases with time could be that few people manage to stick to such an unbalanced diet. You quite simply have enough of meat and eggs. This idea is supported by studies that have shown that participants’ diets differed only marginally after a year. Those originally on the Atkins diet were quite simply no longer eating a diet lower in carbohydrate than those who had stuck to traditional low-fat diets.

”The Atkins diet is high in both protein and fat,” says Wolk. ”This means that people on this diet should think particularly carefully about what type of fat they choose. Although it makes no difference whether you eat saturated or unsaturated fat in terms of weight loss, it plays a major role when it comes to other health risks.”

No weight loss from GI

Another method that has attracted a lot of interest is the GI diet. Again the focus is on carbohydrates, but unlike the Atkins diet it is not about minimising intake but about choosing the right carbohydrates.

The GI – glycaemic index – concept was launched by a Canadian scientist in the early 1980s. The idea was to develop a tool for the treatment of diabetes.

A few years later French businessman Michel Montignac came

across the method and launched GI as a weight-loss diet.

Montignac has since been followed by many others, including Fredrik Paulún and Ola Lauritzson in Sweden, who all continue to claim that we can lose weight on the GI diet.

So what is GI all about? GI is a measure of how quickly different carbohydrate-rich foods raise our blood sugar levels. The benchmark is white bread, which has been given a GI of 100. The more slowly a food raises our blood sugar levels, the lower its GI value. Those on the GI diet aim to eat foods with as low a GI as possible, as these raise their blood sugar levels slowly. The theory is that if our blood sugar rises rapidly, as it does when we eat foods with a high GI, it will also then fall again rapidly, with the result that we soon feel hungry again.

”Choosing slow, fibre-rich carbohydrates is a good choice if you want to look after your health,” Alicja Wolk says.

In terms of weight loss, however, the GI diet has no effect. Not one study has managed to show that the GI diet is any better at reducing weight than any other diet. In cases where people have lost weight by following, say, Montignac’s diet, this is, as we saw with the Atkins diet, just a result of a low energy intake. We are quite simply back where we started – with energy balance.

Spotlight on sugar

Part of the debate about carbohydrates in recent years has been about sugar and its role in the regulation of appetite and, in the longer term therefore, weight. Charlotte Erlanson-Albertsson, professor of medical and physiological chemistry at Lund University, believes that sugar is a much greater danger than fat when it comes to obesity. She claims that sugar puts the mechanisms for regulating our appetite out of action, with the result that we do not know when we have had enough to eat. And there is some support for her theories in the research.

Studies have shown, for example, that people asked to consume lots of soft drinks for a limited period have rapidly put on weight. This could be explained by sweet drinks giving us large amounts of energy without making us feel full. The soft drink consumer quite simply takes in too much energy. Alicja Wolk has not performed any

studies of how soft drinks affect weight herself, but she is not surprised by these results.

”We know that the consumption of soft drinks has grown sharply,” she says. ”We’re drinking more than four times as much of them as we did in 1960.”

Fat not all bad

Many nutritional scientists have been critical about setting fat and sugar off against each other. Some groups consume too much sugar, others too much fat. The important thing is to restrict our intake of both, especially when they are combined in the same foods – things like bakery products, ice cream and soft-centred chocolate. Products of this kind are extremely energy-dense, and it is an excess of energy that makes us fat.

”There are studies showing that we lose weight if we eat a low-fat diet, as this makes it easier to restrict our energy intake,” says Wolk. ”At the same time, we must remember that we need fat, especially the polyunsaturates found in oily fish. For people who don’t have a weight problem, I see no risk in a diet where 35 per cent of the energy comes from fat, provided that most of this is unsaturated.”

Alicja Wolk and her colleagues recently published a study looking at how women’s BMI is affected by fat consumption.

Very surprisingly, the study found that women who drink full-fat milk or eat full-fat cheese every day put on less weight than those who choose low-fat alternatives.

The best effect on weight came from full-fat cheese. A portion of standard full-fat cheese a day was associated with a 30 per cent lower increase in weight over a ten-year period. Wolk cannot provide an explanation for these findings. Her team wonder whether they may have to do with calcium and various fatty acids, but say that further studies are needed to clarify the relationships.

Wolk points out that there may be a risk of people kidding themselves when they choose light products rather than the full-fat version. This cannot serve as an explanation for this particular study, as it takes account of total energy intake, but it may be significant in other contexts.

”It’s easy to think that you can consume large amounts of light products,” she says. ”But that isn’t the case. Although the light versions contain fewer calories than the full-fat versions, the difference is rarely as big as many people believe. The important thing is to eat the same amount, not more. At least not if you want to stay slim or lose weight.”

A diet that works

Alicja Wolk herself believes in energy balance and the Swedish Nutrition Recommendations. There are no magic shortcuts that enable us to lose weight without making any effort. If we want to control our weight, we need to restrict our energy intake. If we also want to feel good and prevent lifestyle diseases, we need to try to stick to the proportions in the nutrition recommendations. But weighing out food, looking up nutrient tables and calculating energy percentages is over the top.

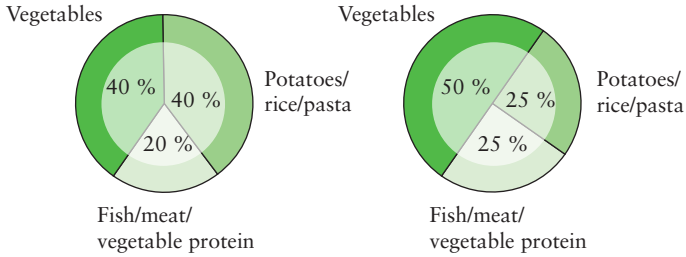
Nobody will stick at weighing everything they eat for long. To make it easier for the individual consumer, Swedish nutritional experts have therefore developed the ”plate model”. This is a simple method that entails dividing your plate into three parts, two of them slightly larger than the third. Fill the first slice, corresponding to about 40 per cent of the plate, with vegetables, and the second, which is the same size, with potatoes, rice or pasta. Then fill the third and smallest slice, corresponding to about 20 per cent of the plate, with fish, meat, egg or vegetarian protein. Those who have low energy needs or want to lose weight can alter the proportions slightly and fill half of the plate with vegetables, a quarter with potatoes, rice or pasta, and the remaining quarter with fish, meat, eggs and vegetable protein.

The plate model may not be that glamorous, but it works – as long as you make sure that you do not consume more energy than you need.

Alicja Wolk is professor of nutritional epidemiology at Karolinska Institutet.

FACTS & FIGURES

The plate model



Source: Anna-Karin Lindroos and Stephan Rössner, *Fetma – från gen till samhällspåverkan* [Obesity – from genes to environment], 2007.

Consumption of non-essentials over the years

Annual consumption in kg per person

	1960	1970	1980	1990	2000	2004
Buns and Danish pastries	10.1	8.0	4.5	3.8	6.3	4.3
Pastries, cakes and other baked food	4.6	4.0	2.7	4.6	6.2	9.1
Crisps	–	2.8	3.8	8.9	13.0	13.5
Cocoa powder, drinking chocolate and chocolate sauce	0.1	0.5	1.2	1.2	1.7	1.4
Chocolate and confectionery	6.7	9.3	9.8	11.1	14.8	15.7
Ice cream (litres)	3.7	7.2	12.8	13.9	12.5	11.7
Soft drinks (litres)	22.3	31.8	29.6	49.8	82.2	88.6
Strong beer (litres)	1.3	3.8	11.0	19.0	25.3	28.4

Source: Swedish Board of Agriculture, Statistics no. 2006:2.

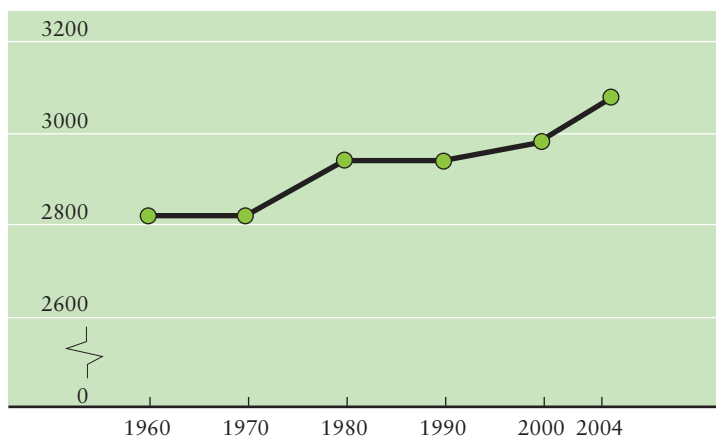
Dietary composition

Protein, fat, carbohydrate and alcohol as a percentage of total energy intake

	1980	1990	2000	2004
Protein	11.8	12.0	13.1	13.4
Fat	38.7	37.2	35.5	34.6
Carbohydrate	46.4	47.8	48.4	49.0

Source: Swedish Board of Agriculture, Statistics no. 2006:2.

Energy intake over the years Calories per person per day



Source: Swedish Board of Agriculture, Statistics no. 2006:2.

Obesity increases risk of cancer



The incidence of cancer has increased sharply since the early 1970s. Each year in Sweden around 50 000 new cases are diagnosed. This means that one in three people will have cancer at some point during their lives. That is a lot, especially considering that almost 40 per cent of cancer patients are children and adults below the age of 65.

So why are more and more people developing cancer? Two important explanations are that we are living longer and longer, and that doctors have got better at detecting and diagnosing different types of cancer. But it is also about our way of life. Scientists estimate that up to 70 per cent of all cases of cancer are down to lifestyle factors. Most people know that smoking increases the risk of cancer. What far fewer people are aware of is the significance of physical activity, diet and weight – or more precisely BMI – for the risk of developing cancer.

Many different factors involved

In 2006 the Swedish Cancer Society went out and asked people what they think affects the risk of cancer. Only 17 per cent thought that obesity and poor diet increase the risk.

In an extensive study carried out on behalf of the society, scientists found that poor diet, overweight and obesity account for as many as 30 per cent of all deaths from cancer. The equivalent figure for smok-

ing, according to the study, is just 20–25 per cent. The World Health Organization (WHO) has also calculated how various lifestyle factors affect the risk of cancer. It estimates that diet causes 30 per cent of all cases of cancer in the industrialised world, and overweight and physical inactivity between 20 and 33 per cent.

It is hard to put an exact figure on the percentage of cancers caused by a specific lifestyle factor. Diet, physical activity, overweight and obesity are all interrelated.

What we can say for certain, though, is that the risk of cancer is greatly affected by what we eat, how active we are, and our BMI. A person with a BMI of 28 runs a greater risk of developing cancer than someone with a BMI of 22. However, this does not apply to all forms of cancer. At least, not as far as we know today.

BMI and breast cancer

It was in the early 1970s that scientists began to make the link between diet and cancer. For many years research suggested a connection between fat consumption and breast cancer, and there was a lengthy debate about which types of fat might increase the risk of breast cancer. It was not until the mid-1990s that research showed that it was not fat consumption per se that affects the risk of breast cancer. It was realised instead that it is the consequences of fat consumption – in other words, overweight and obesity – that increase the risk of breast cancer. This connection between a high BMI and breast cancer has since been confirmed by several large studies around the world.

”But note that this connection applies only to post-menopausal women,” says Maria Feychting, professor of epidemiology at Karolinska Institutet.

Controlling for genetic factors

Feychting has recently completed a major study of how BMI affects the risk of developing cancer of the breast, womb, ovaries, prostate, colon and rectum.

”Many studies have already been performed in this field, but very few have controlled for genetic factors,” she says.

Controlling for genetic factors means ensuring that the cancer is

actually caused by external factors, in this case BMI, rather than hereditary ones. This can be done by studying identical twins. Feychting and her colleagues have used the big registers of twins in Sweden and Finland to investigate how BMI impacts on the risk of cancer.

”We’ve studied sets of twins where one has developed cancer but the other is healthy,” she explains. ”As they are twins and most of them have grown up in the same family, we can rule out factors such as genes, gender, age, upbringing and location. Since we’ve also collected information on how active these people are, we’ve been able to look specifically at how BMI itself affects the risk of cancer.”

Greater risk of several cancers

Feychting and her colleagues found a very strong link between overweight and cancer of the womb.

”An overweight woman runs roughly three times as great a risk of developing womb cancer as a woman of normal weight.”

She also found a connection between overweight and breast cancer in postmenopausal women.

”Among younger women, though, the relationship is reversed – in other words, being overweight protects against breast cancer before the menopause. This doesn’t mean that young women should put on weight in order to avoid breast cancer, though. For one thing, the excess weight increases the risk of being affected later in life. For another, there is a higher risk of womb cancer in women who are overweight or obese whatever their age.”

The study also revealed a link between overweight and cancer of the colon, but it did not find that overweight and obesity affect the risk of prostate cancer, which is the most common form of cancer in men.

”That didn’t surprise me actually,” says Feychting. ”I’ve looked at the research in the field, and yes there are studies that have found a link, but these studies are generally small and the connection is rarely strong.”

Feychting’s study ties in closely with a report published by the International Agency for Research on Cancer (IARC). This report is the result of an extensive review of international research into the

relationship between overweight and cancer. Besides the connections found by Feychting, the IARC concludes that overweight and obesity affect the risk of cancer of the kidney and gullet (oesophagus).

BMI and the risk of cancer

At what BMI does the risk of cancer start to climb? This is a question Maria Feychting is unwilling to answer, because she believes the uncertainty to be too great for her to give a specific figure. Getting hung up on a specific BMI is probably pointless. But it is important to note that you do not have to be particularly overweight to start to run a higher risk of cancer. The IARC report shows the risk of colon cancer is elevated even with a BMI of 23 before increasing gradually up to a BMI of 30.

Oestrogen and leptin

Why the risk of certain forms of cancer increases if you are overweight or obese is something scientists know very little about. Nobody has yet been able to show what exactly happens. But scientists do have a number of hypotheses they are working on.

When it comes to cancer of the breast and womb, there is much to suggest that the elevated risk of cancer is related to the female sex hormone oestrogen.

”Oestrogen stimulates cell division and affects cell death, which promotes the development of tumours,” explains Feychting.

The reason why overweight and oestrogen are being linked lies in the fact that fat tissue – which overweight people have more of – produces oestrogen.

And fat tissue is something in which scientists have been showing a lot of interest in recent years. They know that fat tissue produces 10–20 different active substances, several of which are, or resemble, hormones such as oestrogen.

Another substance scientists are very interested in is leptin, also produced by fat tissue. Scientists have found that leptin stimulates the development of new blood vessels, which is essential for a tumour to feed itself and continue to grow.

Insulin-like growth factor

Another hypothesis concerns a substance called insulin-like growth factor I (IGF-I), produced in the liver. Like oestrogen, IGF-I and insulin stimulate cell division, which promotes the growth of the tumour. IGF-I also inhibits cell death, which means that damaged and deviant cells that would normally have died now survive.

“We know that overweight people produce more IGF-I,” says Feychting.

In normal cases, when the production of IGF-I increases, so does the production of a hormone that binds it. This means that, in a person of normal weight, there is a balance. This is not the case in someone who is overweight. The production of IGF-I is quite simply so great that the body is unable to bind all of it. An overweight person therefore has much more free IGF-I, which is believed to promote the growth of cancer cells. Elevated insulin levels and reduced insulin sensitivity are other possible explanations for the development of cancer.

Weight control and physical activity

Some 50 000 cases of cancer are currently diagnosed each year in Sweden. Whether this figure rises will depend partly on what happens to levels of overweight and obesity in the coming years. If we keep on piling on the pounds, it is likely that even more people will fall ill with cancer.

Cancer is still hard to cure, even though there have been major advances in medical science and many patients who would have died 20 or 30 years ago can now be saved. As ever, it is a matter of being one step ahead and quite simply minimising the risk of being affected. This is where preventive action comes in – something that can save many more lives than medical science. Researchers have calculated that preventive action could cut deaths from cancer by 29 per cent in two decades, which is the equivalent of saving around 6 000 lives a year in Sweden alone.

So what do we need to do? The IARC report concludes that we need to start being more active. Research shows that physical activity protects against cancer, and that these protective effects apply to some

degree whatever our weight. To protect yourself against cancer, you need to do an hour's physical activity a day. Which is not a lot.

But physical activity is not enough on its own. What we weigh also affects the risk of developing cancer, and so keeping an eye on our weight is also important. This means that we need to avoid putting on more than five kilos and stay at normal weight – in other words, have a BMI of between 18.5 and 25. For those who are already overweight or obese, the first thing to do is to avoid further weight gain. Once your weight has stabilised, you can then try to slim down. The aim is to achieve a weight loss of 5–10 per cent in order to reduce the risk of cancer.

Maria Feychting is professor of epidemiology at Karolinska Institutet in Stockholm.

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Overweight and obesity increase the risk of:

- Womb (uterine) cancer
- Breast cancer
- Colon cancer
- Kidney cancer
- Gullet (oesophageal) cancer

Source: International Agency for Research on Cancer (IARC).

Risk factors and mortality

Risk factor	Percentage of all deaths from cancer
Diet, overweight and obesity	30
Smoking	20–25
Alcohol	3
Physical inactivity	3
Radiation	2
Air pollution	2

Source: Swedish Cancer Society, Cancerfundsrapporten 2006 [Swedish Cancer Society Report 2006].

The ten most common forms of cancer in Sweden

Men	Cases per year
Prostate cancer	9 882
Skin cancer	2 028
Lung cancer	1 806
Colon cancer	1 779
Bladder cancer	1 697
Rectal cancer	1 166
Malignant melanoma of the skin	938
Non-Hodgkin's lymphoma	736
Leukaemia	626
Kidney cancer	614
Other	5 608

Women	Cases per year
Breast cancer	6 925
Colon cancer	1 842
Lung cancer	1 439
Skin cancer	1 392
Womb cancer	1 320
Malignant melanoma of the skin	1 012
Rectal cancer	883
Ovarian cancer	766
Brain tumours and cancers in the rest of the nervous system	634
Non-Hodgkin's lymphoma	612
Other	6 679

Source: Swedish Cancer Society, Cancerfundsrapporten 2006
[Swedish Cancer Society Report 2006].

Everything to gain by beating the bulge



Scientists at Sahlgrenska University Hospital in Gothenburg have been running a major study of obesity – the Swedish Obese Subjects (SOS) study – since 1987. Researchers in a variety of disciplines are investigating both the short-term and long-term effects of surgical and traditional treatments for obesity. The SOS study also includes a number of studies of quality of life and mental health in obese patients, a field in which Jan Karlsson has been working since the project began.

”Obese people have a much lower quality of life than those of normal weight,” he says. ”This has been shown not only by the SOS study but also by other studies all around the world.”

Quality of life and BMI

Worst affected of all are obese middle-aged women. Among men, quality of life declines as BMI increases. Among women with a BMI of over 30, quality of life is constantly low.

”This presumably means that obesity is more accepted in men than it is in women,” says Karlsson. ”It’s only when men hit a BMI of more than 40 that their quality of life reaches the same low level as that of women.”

In one study, scientists compared a large group of seriously obese patients with patients who had other serious diseases. The results are

frightening. The obese patients had a lower quality of life than cancer patients and patients paralysed by spinal injuries.

Reduced social contact

"In the SOS study, we saw that obese patients are tired more often than patients of normal weight," says Karlsson. "They're more passive, and feel pain more often than those of normal weight. Most of them also find it difficult to tie their shoelaces, walk and move about, which hinders them in everyday life."

Many also avoid social events, such as going to parties or inviting people home.

"It's very common for obese patients to find it too much effort to go to the cinema or on a course. Many also avoid going on holiday – for example, because they're worried about not fitting into their seat on the plane."

Worst of all is trying on clothes and bathing in a public place. There is a real fear of taking off their clothes in front of other people in case they stare or comment on their weight.

Another area that many find problematic is relationships. Studies have shown that obese men and women are more likely to be single than those of normal weight. The difference is greatest among women.

"There is a tendency for obese people to avoid social situations and stay at home," says Karlsson. "In the long term, this can lead to them becoming isolated and lonely."

This argument is supported by a Swedish study showing that obese men and women have far less contact with friends and acquaintances than people of normal weight. They go to the cinema and restaurants less often, and are more likely to feel lonely. The connection between weight and loneliness is particularly strong among obese women.

Prejudice rife

Jan Karlsson says that fat people are stigmatised.

Numerous studies have shown that many people have prejudices about obesity being caused by laziness, lack of willpower and greediness, all believed to be morally reprehensible character traits. Obes-

ity is quite simply seen as the individual's own fault. If these people would only pull themselves together and stop stuffing themselves with food, their weight would not be a problem. But these days we know that there is also a strong genetic element in the development of obesity.

An American study of the seriously obese found that virtually all the participants felt discriminated against on account of their weight. Most (91 per cent) believed that their work colleagues had a negative attitude towards them due to their weight, and that people talked about them behind their back. And a whole 80 per cent had been offended by doctors and other medical staff. "Society's attitudes play a major role in how the obese feel," says Karlsson. "If you're badly treated enough times, you'll eventually develop a negative self-image."

And that is precisely what many obese patients have. In the aforementioned American study, 97 per cent of the participants thought that they were very unattractive. Many felt depressed, and only 5 per cent claimed to have good self-esteem.

Jan Karlsson believes that the reason why women are troubled far more by their obesity than men are has to do with gender roles and ideals of beauty.

"The plump and curvaceous ideal of beauty that applied to women in the 1950s has been replaced with an increasingly slim ideal," he says. "The women who take part in modern-day beauty contests are very slim, bordering on the skinny."

Weight loss and quality of life

Studies show clearly that it is the obesity that is causing this poor quality of life.

"Patients who lose weight feel much better," says Karlsson.

Together with his colleagues, he has studied how quality of life changes when obese patients lose weight. The patients who took part in the study were all severely obese – men with a BMI of more than 34 and women with a BMI of more than 38. Half of the patients underwent surgical treatment, while the others received traditional treatment through their local surgeries. The researchers then followed these volunteers for ten years. The results are clear.

”On average, those who underwent surgery lost 31 kilos in the first year,” says Karlsson. ”After ten years, they had put on a bit of weight but were still an average of 20 kilos below their original weight.”

This sharp drop in weight brought about a dramatic improvement in quality of life, in terms of physical well-being, social activities and functional ability. The greater the weight loss, the better the patients felt. Those who managed to maintain the large initial weight loss generally felt as good as the population in general.

”There is a virtuous circle, where weight loss results in better functional ability and greater self-esteem, which leads in turn to increased social activities. The reason why patients feel so much better may be that after the weight loss they could change their living patterns so that they now lead a more active life.

Perhaps they’ve found new things that they enjoy doing, things they didn’t previously do.”

Others gained the strength to tackle problems they had not previously done anything about. One lady separated from her husband, with whom she had lived for a long time despite it being a bad marriage. Others became more interested in socialising and started to go out dancing.

”It doesn’t matter how you lose the weight, just as long as you do it,” says Karlsson. ”Those who manage to lose weight with traditional treatment enjoy the same improvement in quality of life.”

Jan Karlsson holds a doctorate in psychology and works at Sahlgrenska University Hospital in Gothenburg.

FACTS & FIGURES

Different ways of treating obesity

Dietary treatment

Help with changing eating habits is part of all treatments for obesity. This treatment means that the patient is given advice on what and how much he or she should eat. This advice can be given either individually or in groups.

Studies of dietary treatment show that weight loss over a period of one year varies between 3 and 10 kg.

Very low calorie diet

Some patients may benefit from a very low calorie diet (VLCD). This involves the use of a protein preparation produced from milk and soya raw materials. The patient can either replace certain meals with this preparation or use it for their entire energy intake for a number of weeks. As a rule, a VLCD treatment lasts 12 weeks.

This treatment results in substantial initial weight loss, often 15–20 kg. However, there is a strong tendency to put this weight back on once the treatment comes to an end.

Physical activity

Increased physical activity, like dietary treatment, is one of the cornerstones of all obesity treatments. Physical activity is generally used in combination with dietary advice.

Studies show that patients treated with a combination of physical activity and dietary advice lose 4 kg more than patients on dietary treatment alone.

Behavioural therapy

Behavioural therapy may be used as a complement to other treatments such as dietary treatment. Research shows that weight loss as a result of dietary treatment is higher if it is supplemented with behavioural therapy.

Drug therapy

There are currently three medicines used in the treatment of obesity:

- Xenical, which blocks the body's ability to absorb fat.
Studies show average weight loss after one year of 8 kg.
- Reducil, which suppresses appetite.
Studies show average weight loss after one year of 8 kg.
- Rimonabant, which also suppresses appetite. This product was launched in 2006/07.

Surgery

Surgery is used only for patients who are severely obese and where other forms of treatment have failed. There are several different types of surgery. The most common in Sweden today is the gastric bypass, which is the method that results in the greatest weight loss.

The SOS study found that average weight loss after ten years for all types of surgery was 16 per cent. For the group who had a gastric bypass, average weight loss after ten years was 25 per cent.

The high cost of obesity – a health economic analysis



There is a high price to pay for the escalation in obesity. As well as physically and mentally, the individual can suffer financially as a result of obesity. For society, obesity is a huge public health problem, resulting in reduced economic output and increased health care costs.

Describing the impact of a disease or public health problem in economic terms is a relatively new idea and a rapidly expanding research field.

”Health economics, like all branches of economics, is ultimately about making good use of scarce resources,” explains Kristina Narbro, a postdoctoral researcher at the University of Gothenburg. ”Analysing health care from an economic perspective can help when setting priorities so that health care resources are deployed in the best possible way. If we distribute resources fairly and use them efficiently, the health care system can give as many people as possible the help they need.”

Health economic analyses

Diseases and health care can be subjected to many different types of economic analysis. However, there are two main approaches in health economics: cost of illness (COI) and cost-effectiveness.

A COI analysis involves calculating the costs to which a particular

health problem or disease gives rise. As a rule, these costs are divided into direct and indirect costs. Direct costs are the cost of prevention, diagnosis and treatment. Indirect costs include the cost of lost economic output as a result of sickness absence, disability pensions and premature death.

COI analyses are used primarily to describe the scale, in economic terms, of a health problem or disease. Traditionally the scale of a disease was described in terms of mortality and morbidity – in other words, how many people were affected. Calculating the cost of a disease to society is an important supplement when trying to gain a full picture of the consequences of the disease.

Cost-effectiveness analyses are a way of evaluating different measures, such as a treatments, in health care. Calculating the cost of a particular outcome – such as 10 per cent weight loss – using a particular treatment makes it possible to compare different approaches.

”This type of analysis is an important aid in prioritising and allocating resources in health care,” Kristina Narbro says. ”By choosing the most cost-effective approach – in other words, the one that has the greatest effect for the lowest cost – we can make the best possible use of resources.”

Direct costs

So what do obesity and obesity-related diseases cost society? According to a report from the Swedish Council on Technology Assessment in Health Care reviewing research in the field, the direct cost of obesity is estimated at 2 per cent of total health care costs. For Sweden, this is equivalent to SEK 3 billion a year, a figure that Kristina Narbro considers reasonable.

”This estimate is in line with the rest of Europe and ties in well with recent years’ research,” she says.

Scientists at Sahlgrenska University Hospital in Gothenburg have been running a major study of obesity – the Swedish Obese Subjects (SOS) study – since 1987. Researchers in a variety of disciplines are investigating both the short-term and long-term effects of surgical and traditional treatments for obesity. The SOS study also includes economic analyses of obesity and treatments for obesity, an area in which

Kristina Narbro has been working for many years. Among other things, she has studied drug costs for patients with obesity compared with a randomly selected population group. The results are frightening. Drug costs for obese patients are 77 per cent higher than for the rest of the population. On average, the Swedish population spends SEK 800 per person per year on medicines. The equivalent figure for obese patients in the SOS study was SEK 1 400.

The study found that the use of diabetes medicines was nine times higher among obese patients than among the rest of the population, while medicines for cardiovascular disease were four times as common, and anti-inflammatories and painkillers were three times as common.

”These results aren’t actually that remarkable,” says Narbro. ”They tie in well with studies from other countries. At the same time, we need to remember that the patients included in the SOS study are relatively healthy. This means that the true cost is definitely not lower than this and probably higher.”

American researchers have looked at how direct costs are affected by the degree of obesity. In a study of health care costs, they found that costs increase with the degree of obesity. For people with a BMI of 30, health care costs were 36 per cent higher than for those of normal weight. At a BMI of 35, costs had increased to 44 per cent higher, and health care costs for people with a BMI of 40 were 69 per cent higher than for those of normal weight.

Kristina Narbro is currently conducting a study of how much hospital care patients with obesity require relative to the population in general. The preliminary results indicate that obese patients spent twice as many days in hospital as the rest of the population during a six-year period.

Indirect costs

It is not hard to understand that the diagnosis, care and treatment of obesity and obesity-related diseases in Sweden can cost around EUR 300 million. But the true cost of obesity is even higher. Because on top of these direct costs come the indirect costs.

Calculating the cost of lost economic output due to sickness ab-

sence, disability pensions and premature death is tricky, though.

Kristina Narbro has studied sickness absence and disability pensions among obese women.

Her study shows that obese women spent almost twice as many days off sick each year as other women. These results are supported by American research showing that the level of sickness absence increases with the degree of obesity.

Disability pensions also proved to be much more common among obese women. They were no less than two to three times more likely to be on a disability pension than the population in general.

A Finnish study has shown that obese women run twice the risk of having to retire early due to disability than those of normal weight. The study also showed that the risk for men is one and a half times as high.

Kristina Narbro's study found that the indirect cost of obesity in women was SEK 3.6 billion a year. The indirect cost of obesity in men then needs to be added to this. Previous research has shown that men spend less time on sick leave than women, so we can assume that the indirect cost for both sexes together will end up somewhere around SEK 6 billion a year. That said, Narbro believes that this figure should be taken with a pinch of salt.

"My study of sickness absence and disability pensions among obese women is based on figures from the 1980s, and much has changed since then both in the labour market and in the regulatory system."

In 2003, two Swedish researchers put the indirect cost of obesity in Sweden at SEK 12.9 billion, but Narbro believes this figure to be too high.

"That study was also based on data from the 1980s, and it assumes that men spend as much time on sick leave as women."

As there are not currently any up-to-date or reliable studies showing just how high the indirect cost of obesity is, we cannot put a definitive price tag on the total cost of the disease. What we can, however, say with complete certainty is that obesity costs society billions every year.

Personal financial consequences

It is not just society that is having to pay the price of the obesity epidemic. The individual also risks being affected financially by his or her weight. For example, the fact that the obese spend more time off work than others naturally affects their personal finances. But the obese also risk being affected in other ways. A new Swedish study shows that obese young men are much less likely to enter and complete higher education than those of normal weight. The study also shows that the few obese men who actually get a place at university are more likely to drop out than those of normal weight. The study covered more than 700 000 young men and found that 19.3 per cent of those who were underweight, 20.2 per cent of those who were of normal weight and just 11.3 per cent of those who were overweight entered and completed higher education. Of those who were obese when they enrolled, only 6.3 per cent actually managed to complete their course. From an economic perspective, this means that these young men risk earning less in the longer term due to a lower level of education. The reason why obese men are less successful than those of normal weight when it comes to education could be because the education system discriminates against obese students. Many studies have shown that discrimination against the obese is rife. In the USA there have been several studies where obese people and those of normal weight with the same qualifications apply for jobs.

The studies show that people of normal weight have a much greater chance of getting a job, especially when it comes to skilled work and jobs involving contact with customers. Other studies have looked at the link between obesity and income. Several of these studies show that there is a negative link between obesity and income, especially when it comes to women.

Whatever way you look at obesity – economically, socially, psychologically or medically – it is a very serious problem. One way of putting a figure on how bad the individual perceives this problem to be is to ask how much he or she would be willing to pay for an effective treatment. Kristina Narbro put this question to obese patients taking part in the SOS study.

These patients were willing to pay two months' wages to be rid of

their obesity.

”This goes to show that patients find obesity a very troublesome disease, which is something we must take very seriously,” she says.

Kristina Narbro is a postdoctoral researcher at the University of Gothenburg.

FACTS & FIGURES

Cost-effectiveness

One important area of health economics is cost-effectiveness. By calculating the cost of a particular outcome – such as 10 per cent weight loss – using a particular treatment method, you get a measure of how cost-effective it is. This can then be used to compare different treatments and measures in health care.

Another approach used in health economics is known as a cost-utility analysis.

This method uses a measure of efficacy that takes account of the effect of a measure on quality of life and life expectancy. These two aspects are then weighted in an index, normally known as quality-adjusted life years (QALYs). To measure QALYs, you give quality of life a weight of between 1 and 0, where 1 denotes perfect health and 0 denotes dead. Multiply this weight by the number of extra years of life in which the treatment or measure can be expected to result, and you have the number of QALYs. By relating the cost of the treatment or measure to the number of QALYs, you get the cost per QALY gained.

In Sweden there is no definitive threshold for what is considered a cost-effective health care measure. In the USA, measures costing USD 50 000–100 000 per QALY gained are deemed cost-effective. In the UK, a figure of GBP 30 000 per QALY gained is often cited as the limit.

”International studies show that both surgery and drug treatment for obesity are cost-effective,” says Kristina Narbro. ”There are currently very few Swedish studies in this area, but it’s a rapidly growing research field. I’m sure we’ll see many Swedish studies too in the years ahead.”

The media, advertising and obesity



It is now ten years since the World Health Organization (WHO) announced that obesity had reached epidemic proportions. During those ten years, the percentage of overweight and obese people in the population has continued to rise. You might well wonder why. Should the WHO's announcement not have created a sufficient sense of awareness for us to have turned things around?

Unfortunately it is not quite as simple as that. It is not enough for the WHO to make an announcement. If we are to be aware of a problem, we need to be told about it and have it explained to us. Only once we have understood what the problem means, and what we can do about it, will we take action. Coverage in the mass media is crucial in this respect.

In today's complex world, the media play an important role in how we view life, which problems and risks we see, and so also how we choose to live and act. The media have become a kind of compass that helps us to navigate our way through life. Scientists talk about "mediated experience", by which they mean experience that we gain via the media and then adopt as our own. We adopt this mediated experience when our own direct experience is not enough. We quite simply carry with us images and perceptions that we have taken from the press, radio and TV.

Obesity in the papers

The Swedes like their newspapers. Newspaper sales per capita are the highest in the world. So it is perhaps not so strange that studies show that newspapers are our most important source of information on diet and health.

“If the papers report on, say, obesity, sufficiently often and well, people will eventually come to perceive obesity as a health risk,” explains Helena Sandberg, a media and communications researcher at Lund University.

Most people probably have the impression that newspapers and magazines are jam-packed with articles about weight and health, but that is not actually true. At least not when it comes to the newspapers. Sandberg has studied how the Swedish newspapers reported on overweight and obesity in the period from 1997 to 2001.

In 2001, coverage of overweight and obesity accounted for just 6 per cent of articles on health risks in the daily papers.

“Although the level of coverage has increased in recent years, it still doesn’t reflect the risk that obesity actually represents,” she says.

Not only are the papers underreporting obesity, their coverage is so contradictory that it is hard for the reader to know what to believe. One day we read that we risk dying prematurely if we weigh too much, while the next day the same paper tells us that it is dangerous to lose weight, that dieting could even kill us. No wonder we get confused.

As readers, we want a clear message. We want to know what is dangerous, how dangerous it is, and what we can do to avoid the danger. If the message is too contradictory, there is a real risk of us ignoring the danger. If even the experts are unable to agree on what is most dangerous – being fat or dieting – we may well opt to do nothing and wait until they can make up their minds.

And the coverage is not only contradictory when it comes to the risks. It is also contradictory when it comes to the solutions – in other words, how we can best avoid becoming overweight and obese. In one newspaper, a consultant says that it is as stupid to believe that eating fat will make you fat as to believe that eating salad will turn you green. In another newspaper, we read that scientists have shown

that it is fatty fast foods that cause abdominal obesity. Reassuring messages alternate with alarming ones.

"There's something for everyone," Helena Sandberg says. "As a reader, you can choose the message that suits you and your lifestyle best."

Those of us who enjoy being couch potatoes and love fatty foods can take on board the reassuring message and continue to live life as normal with a clear conscience, while those who live an active and healthy life can choose a different message that supports their particular choice. The chances of readers actually changing their lifestyles to any notable degree are slim. Instead we become increasingly set on the choices we have already made. In the long term, this could lead to a widening of the health gap, with the unhealthy becoming more unhealthy, and the healthy even more healthy.

Obesity as entertainment

Helena Sandberg's research shows that it is primarily the national dailies that write about overweight and obesity, in particular the evening tabloids. Although things have improved in recent years, there is still little news about obesity that makes the front page, and the problem is rarely covered on the editorial and debate pages.

Although articles presenting obesity as a public health problem are the largest in number, they are generally short and given little space in the newspaper. The opposite holds when it comes to articles looking at obesity as a cosmetic problem. Here the newspapers – especially the evening tabloids – really go to town, splashing headlines and images across their pages. We learn in detail how Lena, 45, agonised about her weight for years, how her children were ashamed of her, and how she finally decided to do something about the problem. In an interview, she tells us how she painstakingly avoided all cakes and biscuits to achieve her target weight. The ugly duckling becomes a beautiful swan. The interview concludes with Lena saying how happy she now is. Her husband is proud of his new slimmer wife, and the kids are no longer ashamed of their mum.

"Success stories like this give us a chance to dream," says Sandberg. "At the same time, research has shown that information in the

form of entertainment often works better with certain groups, primarily those with limited education, than other ways of disseminating information.”

But there is also a downside. The overweight woman is stigmatised in the reporting, and outdated gender stereotypes are reinforced. The woman’s role is to please those around her, and they prefer to see a slim woman than one who is overweight. Overweight becomes a woman’s problem, and as such has low priority.

Better reporting

Helena Sandberg’s study paints a bleak picture of the daily press’s coverage. But there are some rays of light. She says that coverage of obesity has increased in recent years – she estimates that it has doubled since 1997. ”This is due partly to the focus having shifted from adults to children. It’s easier to report on obesity in children, as they cannot be held responsible for their excess weight. It’s we adults who have a duty to protect our children.”

While coverage of overweight and obesity has increased, so has the level of alarm. We are now seeing more articles warning of the consequences of the obesity epidemic. The reassuring messages found primarily in the tabloids have become somewhat fewer in number during the same period. This means that there are now fewer contradictory messages, although they are still around, especially when it comes to how to avoid overweight and obesity.

This may be part of the reason why we are now seeing the first, albeit tentative, signs of the epidemic slowing, at least when it comes to childhood obesity.

Junk food advertising

For a long time there was not a word about food producers’ responsibility for the obesity epidemic. Nobody talked about or reported on advertising for junk foods and how this affects our consumption patterns and, in the longer term, our weight and health.

The fact is, until 2006 not one study of junk food advertising had been published in Sweden. We quite simply had no idea how much advertising of crisps, sweets, soft drinks and other junk foods we were

being exposed to. But now we do. Or, more precisely, we know more than we used to.

In autumn 2005, Helena Sandberg studied advertising in comics, on the Internet and on TV aimed at children under 12. Her aim was to see what proportion of food advertising was promoting junk foods such as sweets, soft drinks, crisps and chocolate.

We know from recent years' research that children are more receptive to advertising than adults, especially to suggestive TV advertising.

"Children are at a disadvantage when it comes to interpreting and understanding advertising messages," says Sandberg. "They lack the knowledge and experience that adults possess."

A French study showed recently that children who had seen TV commercials for a particular product wanted it more than other children. And when they got to taste the product, they liked it more than their friends who had not seen the commercials.

In this light, the results of the Swedish studies are frightening. Because they show that our children are absolutely bombarded with junk food advertising.

A lot of advertising on the Internet

Most worrying is Internet advertising, which is often very difficult to distinguish from editorial content.

"This advertising is often disguised and sneaked into games and other activities that tempt kids onto the Net," says Sandberg. "It's also less pushy, as the children themselves are in control and choose to keep on playing."

Her examination of the Internet included not only websites linked to food producers but also proper games sites and popular communities.

The study shows that more than half of food advertising on the Net is for junk food. Most advertising is for sweets, chocolate and crisps, which account for no less than 25 per cent of junk food advertising.

Comics, on the other hand, contained quite a lot of advertising, primarily for various mobile phone accessories, but there was little in the way of food advertising. Sandberg found only occasional adverts for confectionery.

Every third product junk

More junk food could be found in TV commercials, though. Sweden has had a ban on TV advertising aimed at children under 12 since 1991. However, some commercial TV channels have circumvented the ban by broadcasting from the UK.

Sandberg's study shows that food commercials are broadcast mainly during children's programmes, docusoaps and TV series – programmes that many children watch.

"It's quite clear that advertisers are targeting children even if they claim otherwise – it's not by chance that children are depicted in 40 per cent of the commercials," she says, referring to the well-known fact that children like to see other children.

Junk food products accounted for 20 per cent of food advertising on TV. Add in commercials for fast food chains like McDonald's and Burger King, and junk food advertising accounted for no less than 31 per cent of the total. This means that almost one in three foods marketed in TV commercials is junk. The most junk food commercials were shown on Kanal 5, while TV4 did not show any at all during the week covered by the study.

Need for tougher rules

"The ban on TV commercials aimed at children under 12 was introduced because TV advertising is suggestive and difficult for children to defend themselves against," says Sandberg. "The advertising we're now seeing on the Internet is much worse."

More and more people – from medical experts to consumer organisations – have recently been calling for more stringent legislation on advertising targeting children.

"It's a difficult area," says Sandberg. "Advertisers are creative in finding new channels for their marketing. We need to think very seriously about this and decide what we want. We cannot just sit back and do nothing. If we want change, we need to take action."

Helena Sandberg is a media and communications researcher at Lund University.

Concerted effort needed to halt global epidemic



The obesity epidemic is global and is now affecting large parts of both the industrialised world and the developing world. The fact is, there is barely a country in the world that has managed to avoid the epidemic. According to estimates from the World Health Organization (WHO), there are currently around 1.6 billion adults and 20 million children who are overweight or obese. At the same time, around 850 million people are starving. For many countries in the developing world, this means that they are having to do battle with malnutrition and obesity at one and the same time. This is an absurd situation.

When we talk about obesity, most people think first and foremost of the USA. And to some extent this association is justified. It was in the USA that the obesity epidemic first gained a foothold, and the USA is the worst affected of the Western countries. The WHO estimates that 41.8 per cent of American women and 36.5 per cent of American men are obese (BMI over 30). That is a lot of people. But there are also places that have been hit harder, such as the Middle East, where a high proportion of women in particular are obese. Worst of all, though, is the situation in the tiny island nations of the Pacific. Obesity has completely exploded in recent decades, resulting in as many as 80 per cent of the population now being obese in some countries. Topping the list is Nauru, the world's smallest independent

republic, where almost 95 per cent of the population are overweight and more than 80 per cent are obese. But Nauru is no one-off: Tonga, the Cook Islands, Niue and Samoa, all in the same region, have been hit almost as hard.

So what has gone wrong? In his book *Ormen i paradiset* [“Serpent in Paradise”], Miki Agerberg describes how the islands of the Pacific have undergone major changes in recent decades. These have included new eating habits and a more comfortable lifestyle with less physical activity. The combination of a Western lifestyle and a number of cultural factors has led to a rapid increase in obesity and, as a result, an alarming rise in type 2 diabetes.

Sensitivity varies

Although the situation in the Pacific islands is extreme, we can see similar trends in other places all around the world. The Western lifestyle is spreading as countries in the developing world become more urbanised and their populations have more economic resources. The change is being driven by well-to-do city-dwellers who are rapidly adopting a sedentary lifestyle and the Western diet with lots of fatty and energy-dense foods.

Just as in the industrialised world, overweight and obesity are a class issue. But in the developing world, things are the other way around.

While it is low-earners who are hit hardest in the industrialised countries, it is the well-off in the developing world who are now putting on so much weight that they risk becoming seriously ill. It is worrying that things seem to be moving faster in these parts of the world than they have in the West.

“Caucasians – that is, white people in the US and Europe – have some in-built protection against obesity,” says Finn Rasmussen, a physician and associate professor of epidemiology at Karolinska Institutet. “We quite simply run a lower risk of being affected than other population groups.”

Most vulnerable are Asians, Indians and some of the population groups in the Pacific.

“It’s thought that the explanation is in our genes,” he says. “But we don’t yet know which ones.”

Tip of the iceberg

Scientists are most worried about developments in India and China. According to the WHO, approximately 16 per cent of Indians and almost one in three Chinese are now overweight or obese (BMI over 25). Compared with Europe and the USA, these are relatively low levels, but they are rising rapidly, especially in the cities. Even now there are more overweight and obese people in Mumbai than in the whole of Sweden.

It is this rapid increase, combined with the fact that obesity is a greater risk factor for Asians than Caucasians, that is worrying scientists.

Although we are currently seeing only the tip of the iceberg, we can imagine what enormous consequences the global obesity epidemic will have if we do not manage to stem it.

The incidence of type 2 diabetes – the disease with the strongest links to overweight and obesity – has risen so quickly in Asia in recent years that scientists are now talking about an epidemic. In 2003 there were an estimated 194 million diabetics in Asia; two years later this figure had risen to 333 million.

”If we don’t manage to turn things around, we risk a human catastrophe,” says Finn Rasmussen.

International action programmes

A number of initiatives have been launched in recent years to try to turn things around. In 2004 the WHO unveiled a global strategy for diet, physical activity and health where member states’ governments were urged to get to grips with the obesity issue. Among other things, the WHO recommended that governments draw up national action plans and review their tax and subsidy systems. A year later, in 2005, the European Commission launched a platform for diet, physical activity and health bringing together authorities, experts and companies to discuss how to halt the epidemic in Europe.

At the WHO’s European ministerial conference in November 2006, agreement was reached on an action plan to achieve just this. The measures in the plan include promoting breastfeeding, encouraging physical activity, offering better school food, and protecting children from exposure to advertising for foods that cause weight gain.

No plan in Sweden

Although the obesity epidemic has attracted more and more attention, and initiatives have been launched to tackle it, no country has yet managed to reverse the upward trend.

There are now several countries in Europe where more than one in five people are obese. Worst hit are the UK, Malta and Greece. Sweden has coped comparatively well. Nevertheless, experts are worried and believe that it is not enough merely to treat those affected.

”Drastic preventive action is required to avoid further increases,” says Claude Marcus, a professor of paediatrics at Karolinska Institutet.

In 2003 the Swedish government commissioned the National Institute of Public Health and the National Food Administration to produce the basis for an action plan. It was unveiled two years later and included proposals for 79 measures to limit the supply of energy-dense and nutrient-poor food while stimulating physical activity. The document was sent out for consultation, responses were collected – and then everything went quiet.

Public health minister Maria Larsson told newspaper Svenska Dagbladet in an interview in December 2006 that she would review the proposals, but that she would first meet scientists to form an impression of what measures would be most effective.

Political decisions needed

”The action plan lacked teeth – there were far too many measures focusing on information,” says Claude Marcus. ”What we need are clear rules.”

The problem is that rules are often controversial. Many of the measures that scientists and others are calling for require political decisions.

”If we’re to prevent obesity in Sweden, it’s not enough just to inform – information doesn’t reach everybody, and often exacerbates social inequalities in health,” says Finn Rasmussen, who wants to see measures targeting the whole population.

”If people are to have a chance to be active, we need to create an environment that promotes activity. We need green areas, inviting

playgrounds, and safe and well-lit cycle paths and footpaths.”

Economic instruments are often mentioned when it comes to limiting the supply of energy-dense, nutrient-poor food. We currently pay the same amount of value-added tax when we buy an apple as when we buy crisps and sweets. Many have called for differentiated rates of value-added tax or special taxes targeting junk food, but there is a great deal of opposition. In an interview in the journal of the Swedish Medical Association in early 2007, Maria Larsson said that she believes more in consumer power than in taxation. This is despite American studies having shown that consumers buy more fruit and vegetables when prices are lowered.

”In one experiment, the price of healthy food was cut by 20 per cent,” says Finn Rasmussen. ”Consumers reacted immediately, and sales increased. When prices were put up again after three weeks, consumers’ purchasing patterns reverted to normal.”

Focus on children

Rasmussen and Marcus want to see early and far-reaching preventive action. But that alone is not enough – we also need to monitor children.

”School is an important arena, because it’s one of the few places where society can actually reach out to everyone,” says Marcus.

”Clear rules should go without saying. I firmly believe that soft drinks and sweets should be banned from nurseries, schools and after-school clubs. It should be a given that kids don’t take chocolate on outdoor pursuits days.”

Concerted effort needed to halt global epidemic

There is also much to be done when it comes to school dinners.

Sweden is one of few countries in the world to offer all pupils a free lunch. Preserving this system and promoting a good diet should be only natural.

”Swedish schools are doing a lot of good things, but they could do even better,” says Rasmussen.

It is currently recommended that school dinners follow the Swedish Nutrition Recommendations. But this is not compulsory.

”In the STOPP study, we saw that pupils who got a good school dinner and were not allowed to consume soft drinks and sweets at school also ate more healthily at home,” says Marcus. ”The result was a reduction in overweight and obesity.”

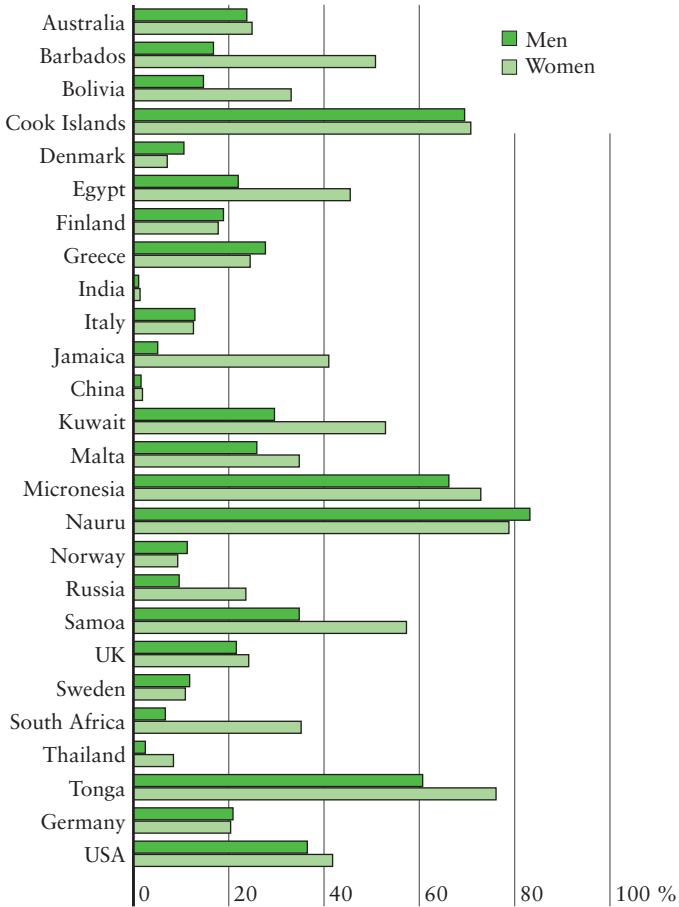
We know that we can turn it around. What we need now is courage and action.

Claude Marcus is professor of paediatrics at Karolinska Institutet.

Finn Rasmussen is associate professor of epidemiology at Karolinska Institutet.

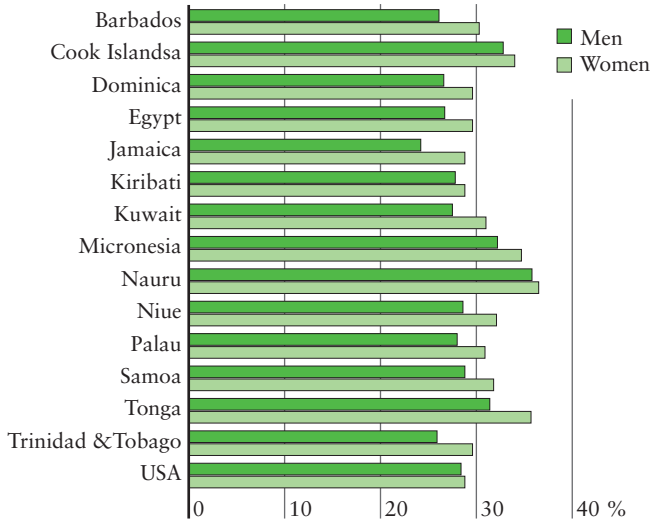
FACTS & FIGURES

Obesity around the world



Source: WHO, 2007. Estimated prevalence of obesity (BMI over 30) in 2005 in the population over the age of 15.

Highest BMI



Source: WHO, 2007. Estimated average BMI in 2005 in the population over the age of 15.

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This is an English version of a selection of papers from "Fetma – vår nya folksjukdom?" [Obesity – a threat to public health?], a popular science survey of knowledge published in 2007 by FAS, the Swedish Council for Working Life and Social Research.

The Swedish Council for Working Life and Social Research initiates and supports basic and applied research with a view to improving our knowledge about working life, public health and welfare.



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