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OBESITY

Courtesy: *Big Picture*, a publication of the Wellcome Trust

In this Issue:

This is the era of the expanding waistline. Over the past few decades we have been steadily piling on the pounds. One in five adult men and one in four adult women are obese. A staggering two-thirds of all men and half of all women are either overweight or obese – that's 24 million people. Globally, more than 300 million adults are obese.

Newspapers warn of an 'obesity timebomb': obesity may be about to overtake smoking as the major cause of preventable disease; our children are growing up to be couch potatoes, putting down Playstations only long enough to pick up the TV remote control, or the telephone to order another pizza.

But why is obesity such a problem? Is it just a personal matter? Are we simply prejudiced against heavier people?

And if there is a problem, who should be doing something about it? Is it just down to people to show more self-control?Should food manufacturers be more responsible about what they put in their products or in how they market them? What about schools and parents? Or should governments intervene, slapping on 'fat taxes' or banning fast food advertisements?

And what have science and medicine to say? Are we likely to see wonder drugs that keep us slim no matter what we eat? How well do we understand the human physiology that controls our weight? Or the psychological factors that influence what (and why) we eat?

Dr. Akaninyene Udom
STAN President

MESSAGE FROM THE PRESIDENT

Let's Meet in Awka

As you are aware, the 56th Annual Conference of STAN comes up in Government Science & Technical College, Awka, Anambra State from 17 22 August this year. The theme of the conference is *Towards Effective Application of STEM Education Research*. As part of the conference UNESCO will be partnering with STAN to organize a West African Regional Symposium on the conference theme. Other highlights of the conference include the keynote address, memorial lecture, modular workshops, paper presentations, science fair, and business meetings. And if you want to rub minds with the movers and shakers of science education in this country: Obioha Nwana, Dorayi Aminu, Isaiah Ikeobi,Uduogie Ivowi, Edwin Akusoba, Peter Okebukola, David Itamah, Eunice Okeke,Mamman Wasagu, James Otuka, Nsedu Inyang, Paul Eniayeju, Prince Okorie, Amos Cirfat, Donatus Igbokwe, Mohammed Erena, Barnabas Gankon, Yinka Badare, Umaru Mohammed, Uchenna Nzewi, Bello Gusau, Ben Akpan and several others then the conference is your sure bet.

We have a delightful package for you. If you are not there, you are missing a lot!So let's converge on Awka come 17 August.

Journey mercies.

Akaninyene Udom

SIZE MATTERS

Obesity is a sign of excess fat storage by the body. This can increase the risk of many serious health problems. Obesity is usually classified as a disease, but we seem to have little sympathy for overweight people.

FAST FACT
The demand for ready-meals in the UK grew by **44%** between 1990 and 2002.

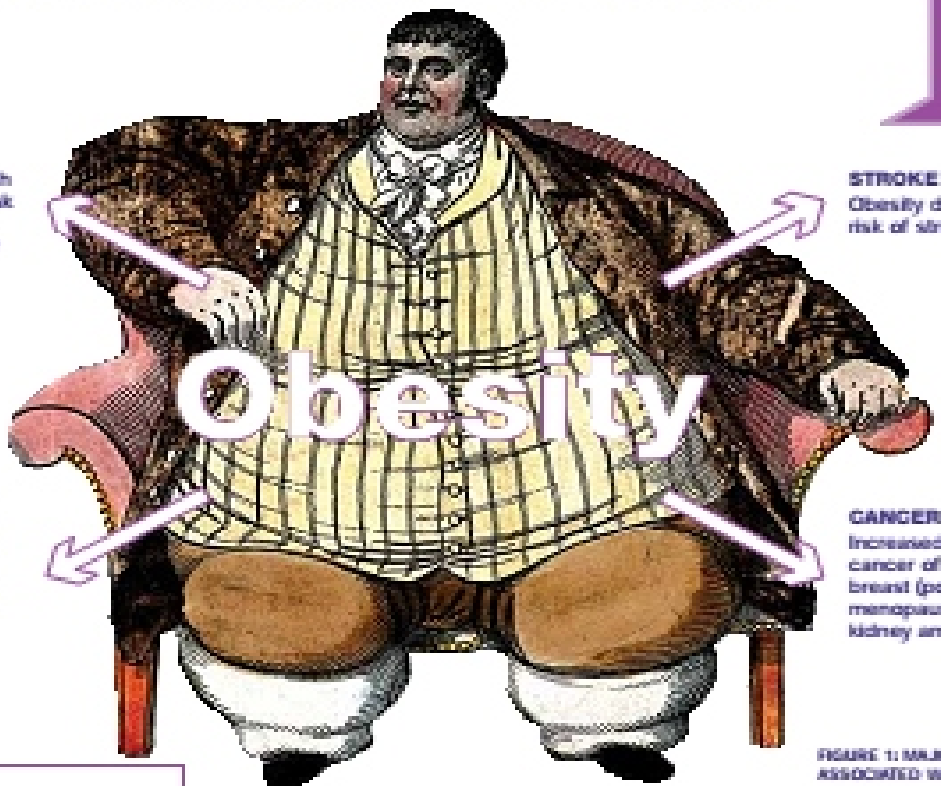


FIGURE 1: MAJOR HEALTH RISKS ASSOCIATED WITH OBESITY.

Does it matter?

The medical consensus is that obesity has serious implications for health. It is associated with increased risk for a variety of disorders, including type 2 diabetes, high blood pressure, stroke, heart disease and cancer (Figure 1).

It can also impact on quality of life (infertility, mobility problems and sleep disorders). And it can have psychological consequences, such as lowered self-esteem, anxiety and clinical depression – though, arguably, these may be more related to the social stigma attached to obesity than obesity itself.

In the USA, the Centers for Disease Control and Prevention have said that obesity is closing in on smoking as the most important cause of premature death.

And it is not just a personal issue. The economic costs are substantial, with recent estimates suggesting that between 2 and 8 per cent of sick care costs in Western countries are attributable to obesity – an amount comparable to that spent on cancer therapy.

The increasing size of people is having other effects. One airline has introduced a policy that larger persons pay for two seats; hospitals have had to purchase larger beds, bigger commodes, and wider wheelchairs for their patients, and finally, with death, comes bigger coffins and wider burial plots.

Clothes sizes are going up: in 2000, Marks and Spencer relabelled its women's size 14 as size 12. Children's clothes now have to be made in larger sizes.

On the other hand...
Some insist that obesity is neither a disease, nor does it necessarily signify poor health. A portly but fit person may well be healthier than somebody who is slim but inactive. The exact amount of ill-health attributable to obesity is not certain.

Others argue that we are unnecessarily obsessed with weight, driven by commercial interests keen to exploit a popular desire to be thin. Finally, many people are "happy to be fat".

BACKGROUND

What is obesity?

How do we know if someone is overweight or obese? The ideal approach would be to measure body fat levels directly. Unfortunately, this is hard to do without specialist equipment, so **body mass index** (BMI) tends to be assessed instead. **BMI is easy to measure and is more useful than other simple measures** (such as waist circumference, waist-hip ratio, skinfold measurements).

$$\text{BMI} = \frac{\text{body mass / kg}}{(\text{height / m})^2}$$

But BMI is best used as a guide to **fat levels in the general population rather than in individuals.** For instance, athletes typically have high BMIs despite having little body fat (muscle is heavier than fat). Also, 'ideal' BMI thresholds may not hold for young children, the elderly, or for people of different ethnic backgrounds.

BMI	
Underweight	Less than 18.5
Normal range	18.5–24.9
Overweight	25–29.9
Obese	>30

THE INCREASING SIZE OF PEOPLE MEANS BIGGER COFFINS ARE NEEDED.
Rex Features

ENERGY

The energy content of food is usually expressed in kilojoules (kJ). These units are superseding the former term, the calorie.

Different parts of food have different energy densities:

Because of its high energy density, fat is an excellent way of storing energy in the body.

Alcohol: 29kJ/g

Carbohydrate: 17 kJ/g

Protein: 17 kJ/g

Fat: 38 kJ/g

OBESITY AND THE MEDIA

The stereotyped view is that fat people eat cakes and crisps all day – they are greedy, slothful and lack self-control. We are hooked on appearances, but are the media to blame?

Images in newspapers, magazines and television glorify slimness. Rake-thin celebrities like Kate Moss and Victoria Beckham exude glamour. Gossip magazines marvel at the svelte figures of actresses and film stars, or their ability to lose weight after giving birth.

Fat is different. The media demonise flab. Celebrities with even a hint of fat are mocked for appearing scantily clad on the beach. Few people manage to overcome fattism: comedian Dawn French is a rare exception.

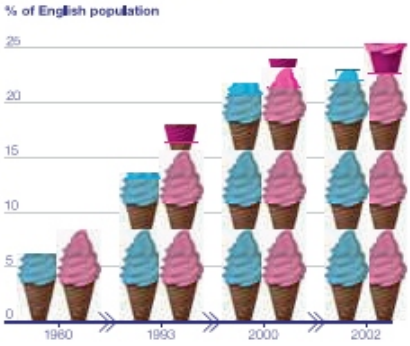
The media have also fuelled the current near-hysteria about obesity. The 'obesity timebomb' makes for good headlines, and there is a strong human interest angle that can sell newspapers. Why has it suddenly become an issue? In 1966, when the US Public Health Service declared obesity a major health problem, it passed unnoticed.

Yet the media's 'war on obesity' presents many difficulties. Newspapers want to increase sales, and that can lead to sensationalism at the expense of accuracy. The media promote slimness predominantly in terms of beauty, rather than as a route to long-term health.

Also, demonising obesity may actually be counterproductive – encouraging feelings of inadequacy or unhappiness that may well affect eating patterns. Promoting unrealistic body forms as desirable could have a similar impact.

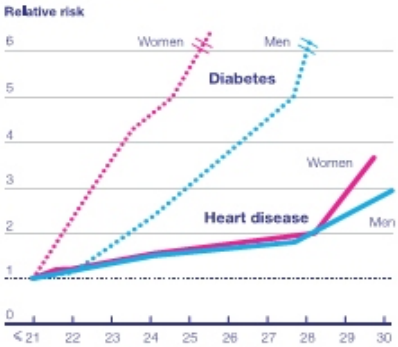
STATS CORNER

The people in England are getting fatter...



Percentage of the male (left) and female (right) population who are obese or severely obese (dark shade).

...and that's not good news for their health

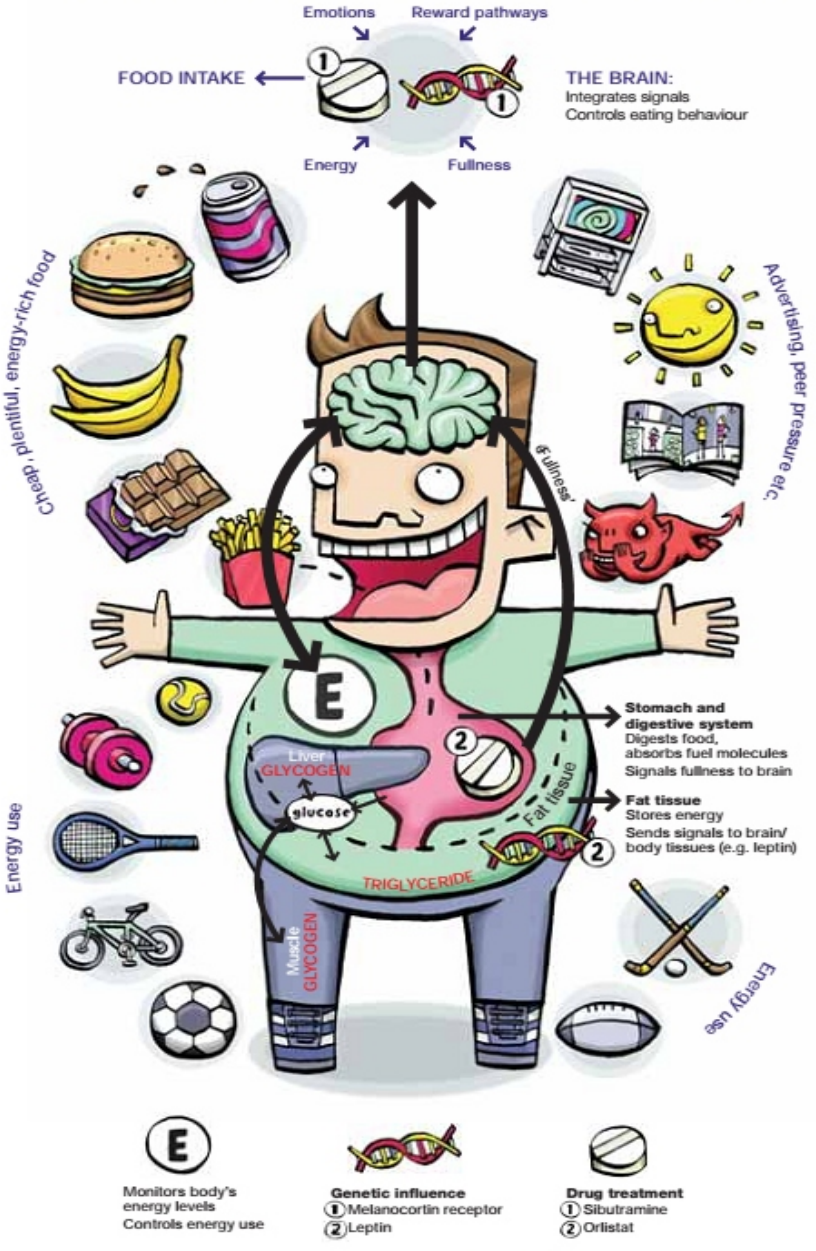


Increased risk for two common diseases as BMI increases.

Caution: Statistics usually hide as much as they reveal. For example, health risks increase at BMI less than 19. And in older people, higher BMI may be an advantage.

METABOLISM

In simple terms, people gain weight when they consume more energy than they use. Over time, the imbalance will lead to extra fat storage. How this plays out will differ between individuals, with environmental, physiological, pyschological and genetic factors all playing a part.



ABOVE
CONTROL OF ENERGY INTAKE. INTERNAL (PHYSIOLOGICAL) AND EXTERNAL FACTORS INFLUENCE OUR INTAKE OF ENERGY (EATING) AND USE OF ENERGY (METABOLISM AND EXERCISE).

HOW IT WORKS...

The energy balance
The number of calories we take in is offset by the number we use up. Anything left over is stored.

Energy (in)
–
Energy (spent)
=
Energy (stored)

A fine balance

Body weight is a **finely controlled system.** We need to have enough stored energy to survive even if we miss a meal or two, but not so much that we carry pounds of excess body fat.

Honed by millions of years of evolution, this system is extraordinarily sophisticated. During a typical year, we consume around a million calories. Generally, our weight at the end of the year is fairly close to what it was at the beginning – so **the body has balanced energy intake and use to an accuracy of less than 1 per cent.** This is far superior to our attempts to consciously regulate calorie intake.

LOSS OF WEIGHT IS RESISTED BY THE BODY PARTICULARLY POWERFULLY.

The key to this monitoring is a **complex network of checks and balances,** involving hormones and the nervous system, that regulates appetite, exercise and rest, storage of energy, and cellular metabolism. We don't fully understand how this system works, but it seems to create two important **feedback loops:** if our weight drops, it promotes greater intake of food; and if our weight goes up, it stimulates changes that should drive weight down, such as speeding up body metabolism.

THE FEEDBACK LOOPS INVOLVED IN BALANCING ENERGY INTAKE AND USE.

Loss of weight is resisted by the body particularly powerfully. This is thought to be an evolutionary survival mechanism, to ensure survival in times of famine. The brain automatically slows down the body's metabolic rate, reducing the number of calories burned. And, of course, we feel more hungry, so seek out food.

From this perspective, it is not surprising that most 'casual' diets end in failure. It may not be a failure of will power but the automatic effect of an **ancient survival mechanism.**

The complex systems controlling body weight and energy use are coordinated by the brain. Like all metabolic systems, they can be disrupted, leading to effects on weight. Some prescribed drugs (e.g. steroids and some antidepressants), for example, can cause weight gain as a side-effect.

A FAMOUS BELGIAN

Adolphe Quetelet – a Belgian astronomer, meteorologist, sociologist, mathematician and statistician – was the first statistician to use the normal distribution curve (used to measure errors in astronomy) to model human variation.

The normal distribution curve takes the shape of a bell or hump of a camel. This reflects the fact that most scores (for height, weight, examination results, or whatever is being measured in a population) cluster around the middle point (the top of the curve). Extreme values are far more infrequent, and are represented by the sides of the curve.

Quetelet used the normal distribution as a basis of his concept of the 'average man', 'l'homme moyen' – the ideal from whom most of us deviate according to the normal distribution.

Quetelet also devised a measure of body mass, now known as Quetelet's index, or the body mass index (BMI; see page 3).

Friend or foe?

Fat gets a bad press. But **fat has important biological roles. It is a way of storing energy.** It also pads and protects our organs and helps us to keep warm. Fat molecules are needed to make cell membranes and to transport vitamins around our body.

But excess body fat in the wrong place can be bad. Fat is laid down to give two main body shapes – **apple** or **pear**. Men tend to be apples, women pears; as **fat tissue around the abdomen is particularly strongly linked to health problems**, men tend to be at greater risk than women. After the menopause, though, women tend to become apple-shaped, increasing their risk.

Obesity and genes

'Three-year-old dies of obesity' screamed the newspaper headlines when, in May 2004, a child died from heart failure in a London hospital. She weighed a staggering 40 kg. A media frenzy erupted, and the parents were blamed for 'stuffing her to death'.

Was it fair to accuse her parents? Scientists later confirmed that there was a medical problem behind the child's extreme obesity: a genetic glitch that triggered her immense appetite.

Genes play a crucial role in shaping our weight, but scientists have only recently started to work out how. It is too simple to say that obesity is 'all in the genes' but our genetic inheritance does have a big say in our size.

Researchers can come at obesity from two directions. In a 'classical' approach, the extent to which weight or obesity is inherited can be assessed. This is a difficult area to study, but the consensus is that there is a **high degree of heritability in body weight.**

Obesity genes

A newer approach is to track down the **genes involved in obesity.** Of course, no gene exists just to make people fat. But, on rare occasions, someone may inherit a mutation that leads to excess weight gain. The first evidence of this came from a very fat mouse.

These '*ob*' (obese) mice weigh almost three times as much as normal mice. They were found to be missing a hormone, which was called **leptin** (from 'leptos', the Greek for 'thin'). The defect was down to a mutation in the *ob* gene.

GENES PLAY A CRUCIAL ROLE IN SHAPING OUR WEIGHT

Mice without leptin had an insatiable appetite. But when leptin was injected into ob mice, they returned to normal in less than a month. **Leptin thus appears to switch off hunger.**

So much for mice: what about humans? In Cambridge, researchers had been referred two cousins who had an intense drive to eat; they were exceptionally obese. Sure enough, the children shared the same genetic mutation as the *ob* mice. When given leptin, their appetite went down and they began to lose weight.

Leptin was instantly hailed as an obesity wonder drug. But disappointment soon followed. **Most obese people do not lack leptin** – quite the contrary. They have even more than normal people, but the body does not seem to respond to it. So giving people leptin does not help them lose weight.

Beyond leptin

Digging deeper, scientists have now found more than a dozen genes that, if mutated, may predispose people to obesity.

The gene for the **melanocortin receptor** is a promising candidate, since around six per cent of young children with severe obesity have this gene disrupted. **Five other genetic mutations that cause obesity in children have been pinpointed.**

However, these are still rare cases, in which weight control has gone drastically wrong. They are unlikely to explain most individual differences in weight gain in children and adults.

The likelihood is that there are a small number of genes that have a major impact in a few cases, and a much larger number of genes (perhaps 200–300) that have smaller effects in a larger number of people. The genes could be involved in any part of the body's complex mechanisms of weight regulation. Over time, even minor variations could have a big impact on weight.

ABOVE
THE *OB* MUTANT MOUSE (RIGHT) DWARFS ITS NORMAL RELATIVES.
J Friedman/J Bonner

FAST FACT

Young children whose parents are overweight are **13 to 15 times more likely** to become obese young adults regardless of the child's current weight.

ON THE WEB

In 2002, a London team headed by Professor Steve Bloom caused much excitement when they reported in the journal *Nature* that a molecule called PYY3-36 made rats less hungry; they ate less and got thinner. The molecule even seemed to work on people, in a small clinical trial. But in 2004, another group reported that they could not get the same results with PYY3-36. What was going on? And what does the dispute say about modern science?

WEIGHT GAIN

Why are we getting fatter? The simple answer is that we are consuming too much and exercising too little. Our modern lifestyles are bringing us into conflict with our ancient metabolism.

Money talks

Food producers, distributors and advertisers have all been blamed for obesity, particularly in children. Others, such as the slimming, fitness and pharmaceutical industries, benefit from the problem.

Food producers need to sell their products to survive. But many of their products are high in fat and hidden sugar. The industry is accused of producing too many sweetened and processed convenience items, and of poor food labelling that hinders consumer ability to choose healthy options.

In 2002 a very overweight man filed a lawsuit against several US fast-food chains, claiming these had contributed to his obesity. **Fast-food chains** have been ticked off for 'super-sizing' and encouraging collection of free gifts.

Supermarkets have been blamed for a pricing structure that makes unhealthy food cheaper than healthy food, and for placing unhealthy foods in high profile positions (such as having sweets near checkouts). **Food industry sponsorship** of schoolbooks and sports has also been widely criticised.

MILLIONS OF POUNDS ARE SPENT ENCOURAGING US TO CONSUME ENERGY-DENSE FOOD AND DRINKS

The **advertising industry is another force influencing obesity.** Millions of pounds are spent encouraging us to consume energy-dense food and drinks – often specifically targeting children. The money spent promoting fruit is a tiny fraction of that spent on advertising sweets and snacks.

The **fitness and slimming industries** promote the idea that being overweight is a bad thing and should be remedied. While this can lead to health benefits, weight loss is generally promoted for 'beauty' rather than health reasons.

The **pharmaceutical industry benefits from obesity** being recognised as a medical problem as it can market drugs to tackle it. In 2002, the market for anti-obesity drugs reached $520 million (£270 million) in the USA, Europe and Japan. Most analysts believe this will be a multibillion dollar industry within a decade.

All of these depend on a desire for weight loss, so keeping body weight in the public's eye is to their advantage.

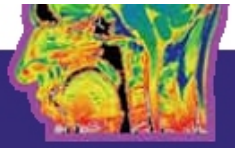
FAST FACT

A 20-year-old obese man can expect to live **13 years** less than the average.

RIGHT
MANY FACTORS ARE CAUSING US TO LEAD LESS ACTIVE LIVES AND TAKE IN TOO MUCH ENERGY.

FAST FACT

You only need to eat **200** extra calories a day (about three digestive biscuits) over a year to put on **10kg** by the end of the year.



GRATIFICATION

Psychological factors undoubtedly influence eating and exercise habits, and hence weight.

Eating is not only necessary but enjoyable. Research has shown that eating carbohydrates boosts levels of serotonin and endorphins in the brain, producing feelings of pleasure. These are part of '**reward pathways**' in the brain that encourage us to do things that we have gained from in the past.

The reward pathways may drive us to one course of action, but we also have brain systems that can over-ride them. These include signals from the 'thinking' areas of the brain, the **frontal cortex**. So we can delay a feeling of reward in favour of a longer-term goal. This psychological mechanism is known as '**delayed gratification**'. We may save now in order to enjoy a relaxed retirement.

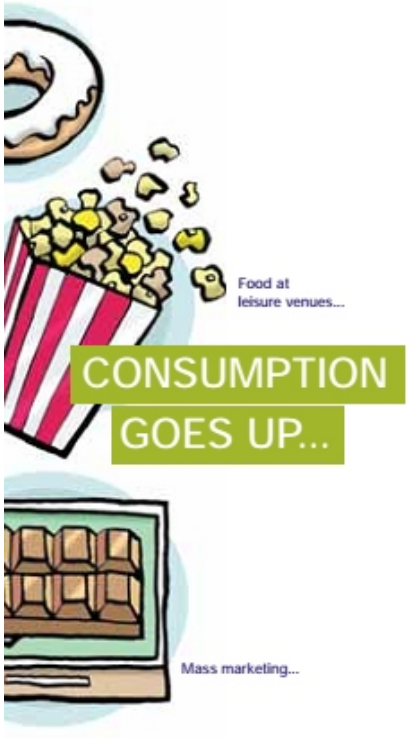
But it appears that we are not actually very good at delayed gratification. In experiments in which subjects are offered a reward immediately or a bigger reward later, most people go for the immediate benefit. We are, perhaps, not as logical in our decision making as we might think. Forgoing a cream cake in order to be slim later may not be in our make up.

Research also suggests **socio-economic factors** are important. In the UK, women from the poorest areas now have almost twice the risk of obesity as women in richest groups.

Some social scientists suggest that families in higher socio-economic groups have a greater **sense of control** over their environment, which helps them take longer-term views. This may extend to a greater emphasis on maintaining health, for example by eating more balanced diets.

Such views are supported by a recent study of 1200 teenagers in the north of England. Students from more affluent families had the highest level of dietary restraint, and used more healthy weight control methods.

The less well off, on the other hand, opt for more immediate pleasures – perhaps, given their circumstances, less able to imagine distant benefits.



EXAMPLES OF ENERGY USE

1 HOUR OF THIS ACTIVITY	=	THIS MUCH FOOD*
	=	
	=	
	=	
	=	

*Approximately!

TEMPTATION: FAST FOOD IS EASY TO FIND IN POOR AREAS OF THE UK.

Money matters

There is a clear **north-south divide** in life expectancy in the UK. According to a 2001 analysis by the Office of National Statistics, those who live longest live in the southwest, southeast and east of England.

There is an **inverse relationship between poverty and life expectancy:** the poorer you are, the sooner you are likely to die. Obesity is also more common in poorer parts of the country. This is a strange reversal – it used to be the rich who grew fat while the poor starved.

Researchers have found that people on low incomes eat the least amount of fruit and vegetables. Households on lower incomes consume much more full-fat milk, soft drinks and more white bread than wealthier ones. Working class women are more likely to be obese than those in the middle or upper classes.

One problem is the availability of fruit and vegetables. Many poor neighbourhoods only have small shops, which offer a limited range of food, sometimes at higher prices than big supermarkets. Some of Britain's poorest areas are known as 'retail deserts' they have so few food shops.

The upshot is that the poorer you are, the less you get for your money. At the same time, fast food outlets are cropping up everywhere. **Convenience food is cheap and filling, and children like it.** For a single parent on a low income, juggling family and job, the attraction of ready-made meals and take-away menus is obvious.

The wealthy, by contrast, have the money to buy healthy food and join health clubs. And they will probably have friends from a similar background, with similar ideas about weight and healthy eating.

With daily life providing less opportunity to burn calories, **people increasingly need to plan specifically for exercise** – something that generally requires time and money.

BEATING THE BULGE

So losing weight just means eating less and exercising more. Simple? Far from it...

Healthy lifestyles

One way to tackle obesity is by promoting healthier lifestyles. To date, there has been no public health education campaign directly aimed at reducing obesity through nutritional changes, or by any other means.

Although campaigns promoting healthy lifestyles are already in place – 30 minutes of physical activity, five times a week, and the 'five a day' fruit and vegetable campaign– they are unlikely to tackle the obesity issue. Campaign
figures show that only just over a third of men, and a quarter of women, meet the physical activity targets.

TO DATE, THERE HAS BEEN NO PUBLIC HEALTH EDUCATION CAMPAIGN DIRECTLY AIMED AT REDUCING OBESITY.

With one third of adults and half of all children predicted to be obese by 2020, health education campaigners are trying to get the importance of a healthy lifestyle message across early, by targeting nutrition and physical activity in schools.

But it is still debated how effective public health campaigns actually are. There is very little evidence that they work. Shifting people's behaviour is usually very difficult.

Diets

'Dieting' is defined as any attempt to achieve or maintain lower body weight by limiting the amount or manipulating
the type of food eaten. The promotion of diets and diet products is big business. In 2002 the annual revenue for the US weightloss industry was $39 billion (£20 billion). The subsequent rise in industry profits has been mirrored by rising obesity rates, suggesting the only pounds being lost are from the dieter's wallet.
'

Calorie control' lies at the heart of most diets. Successful diets focus on slow achievable weight loss. To maintain a lower body weight, changes in diet and lifestyle must be continued indefinitely. Unfortunately, many diets only focus on short-term weight loss rather than weight-loss maintenance.

It is also important to diet sensibly, as some diets can themselves lead to health problems. Obese patients undergoing medical treatment generally follow calorie controlled but balanced diets, which are combined with other forms of help, such as emotional support and exercise programmes.

Many diets are successful, but maintaining lower weight over the long term can be very difficult.

A POTTED HISTORY OF ANTI-OBESITY TREATMENTS

The famous Roman rhetorician Claudius Aelian (170–235 CE) described in his Historical Miscellany how, in Ancient Greece, Dionysius, the ruler of Heraclea, had become so obese he suffered difficulty breathing. As a cure, his doctors pushed long, thin needles through his hips and belly whilst he was in a deep sleep. The treatment failed: after choking to death from his fat, Dionysius could hardly be moved to his grave. Another classical treatise, Sushrita Samhita, part of traditional Indian Ayurvedic medicine, describes the use of guggul – a yellowish resin produced by the thorny mukul myrrh tree for obesity. More recently, trials have shown that an extract from guggul lowers cholesterol levels.

Gold is another classical remedy with along history. Over 5000 years ago, the Egyptians ingested gold for mental, bodily and spiritual purification. In 1965 Doctors Nilo Cairo and A Brinckmann wrote a best-selling work entitled 'Materia Medica', in which colloidal gold – metallic gold divided into fine particles and suspended in solution – was listed as the number one
remedy against obesity.

DIETING

In the 1860s, London undertaker William Banting found he could successfully lose weight by eliminating sugar, starch, root vegetables and pork from his diet. His best-selling book, Letter on Corpulence, urged people to adopt a low-carbohydrate, high-protein diet – and 'Banting' became a popular weight-loss strategy in America.

In 1890, Horace Fletcher advocated chewing every mouthful a hundred times until it turned to liquid and swallowed itself'. This prolonged chewing became known as 'Fletcherizing' – and Fletcher himself as 'the Great Masticator'. John Harvey Kellogg, a devotee of Fletcherizing, invented a 'Chewing Song' for patrons at his nutritional sanatorium in Battle Creek, Michigan. Kellogg also promoted vegetarianism and, unsurprisingly, a diet rich in his own invented cereals. Dr Robert Atkins introduced his controversial high-protein diet in 1972. This then took a back seat to a series of low-fat, high carbohydrate diets, such as the Dean Ornish programme and the Pritikin diet, over the next three decades.

The mid-1990s saw the carbohydrate backlash, with the arrival of Barry Sears'. The Zone' plan and other sugar-busting diets. And by the early 2000s, Atkins was back with a vengeance. Ultimately, most diets are simply carefully packaged ways to encourage people to eat less, usually by restricting the range of food that can be eaten. One drawback, however, is that by focusing the mind on weight loss and on what cannot be eaten, they may actually make it harder for us to resist temptation.

Drugs

There's no such thing as a magic weight-loss pill. Drugs that do work have to be taken long term, just like agents used to control blood pressure or cholesterol levels. Weight-lowering prescription drugs are available in the UK, but, like all drugs, may have side-effects that need to be weighed against their potential benefits.

The two most commonly used are sibutramine and orlistat (Xenical). Sibutramine acts on the brain, making a person feel full sooner or for longer, while orlistat reduces fat absorption in the gut. They are only prescribed to obese people who have failed to lose weight after changing diet and lifestyle. They can't be given for long, and users need advice on diet and exercise and regular weight and blood pressure checks.

Other drugs, or combinations of drugs, have been used in the USA in the past – but serious side-effects meant that some of these have now been withdrawn. Clearly there's a demand for weight-lowering drugs, and many companies are developing
new ones. One promising new drug, rimonabant, seems both to reduce the craving for food and help people stop smoking, by acting on a particular class of cannabinoid
receptors in the brain. (These receptors respond to the psychoactive component of
cannabis, chemicals known as cannabinoids. It was noticed that smoking cannabis caused 'the munchies', and this led to a search for drugs that block cannabinoid receptors and reduce appetite.)

The next few years are likely to see many more products hit the market, targeting different points in the body's weight control system.

Going to Extremes

He desire to be slimmer has led many to turn to unorthodox ways of losing weight. The desire to make money has led many to provide 'miracle cures'. So-called fad diets abound. The cabbage-soup diet and grapefruit diet are fairly self-explanatory. Others come with a supposed medical endorsement. Currently popular (if controversial) is the Atkins diet, and other low carbohydrate diets. While these can work over the short term, their long-term effectiveness is unclear and there are concerns about their longer-term impact on health.

As well as diets, some worried parents send their overweight children to fat camps, or even join camps themselves. They hope they'll receive supervision and motivation that will help them reduce their weight. But keeping the motivation up once back home can be tough.

Liposuction, sucking out fat using special surgical equipment, is a more drastic way to remove excess fat. But it is a cosmetic procedure that can only remove fat from under the skin, rather than the more unhealthy fat within the abdomen. Plastic surgeons only use it to discard stubborn 'blocks' of fat rather than use it to substitute for diet and exercise. There is no evidence it offers long-term health benefits.

SURGICAL INTERVENTIONS

The most common operation is now the use of an inflatable band that can be inserted through keyhole surgery and restricts stomach size to 15–20 ml. Even greater weight loss can be achieved by more complex procedures that restrict stomach capacity and change the flow of food through the intestines.