

20 DIET MYTHS - BUSTED



Conventional Wisdom tells us that all we need to do to lose weight is to eat less and/or do more. Zoë Harcombe busts this, and other diet myths in this thought provoking eBook.

This is a free eBook for you to enjoy and to share freely with friends and colleagues.

As well as busting 20 of the most strongly held diet myths of recent times, it includes the full introduction to Zoë Harcombe's book *The*

Obesity Epidemic: What caused it? How can we stop it? available in hardback on amazon.com and amazon.co.uk.

If this eBook makes you interested in finding out more about Zoë and her work, you can visit her websites at:

www.zoeharcombe.com,
www.theharcombediet.com
 and
www.theobesityepidemic.org

"The truth is deafening, however quietly spoken" - Anon

by:
Zoë Harcombe

Myth No 1: Energy in equals energy out

One of the favourite slogans of diet advisors is “energy in equals energy out”. They even add “you can’t change the laws of physics/the laws of the universe.” I don’t know if they know what the laws of the universe say.

There are four laws of the universe. We can largely ignore the zeroth and the third in the world of dieting. The *two* that we need to take into account are the first and the second and neither of these says energy in equals energy out.

The first law says: “In a closed system, in thermal equilibrium, energy can neither be created nor destroyed.” Energy can be changed from one form to another, but it shall be conserved. The human body, however, is not a closed system and it is not in thermal equilibrium (although it is continually trying to be there). So, we also need to consider the second law.

The second law (entropy) has been called the law of common sense – it says that energy will be lost and energy will be used up in making available energy and we need to take both of these into account. This is the law that proves that a calorie is not a calorie, as even Weight Watchers cottoned on to with their launch of ProPoints® in November

2010. The energy used up in making carbohydrate, for example, available to the body as energy vs. the energy used up converting protein to usable energy is substantially different. 100 calories of carbohydrate eaten may make 93 available to the body; 100 calories of protein eaten may make only 70 available.^(ref 1) That’s a significant advantage for dieters and helps to explain the effectiveness of low carbohydrate diets.

These ‘laws of the universe’ were developed during the industrial revolution to help understand if we could make a perfectly efficient steam engine. The laws were and are all about energy, not weight. The laws say nothing about *weight* being conserved – we humans flit between energy and weight interchangeably in the world of dieting and our conversions and assumptions are wrong.

The laws of the *universe* were never intended to become the fundamental principles of dieting. They do have some relevance to dieting, but only when they are correctly applied and when all the caveats are allowed for. There is simply no law that says energy in equals energy out. Even if there were, the corollary would surely be – less energy in equals less energy out, which brings us nicely to the second myth...

Myth No 2: Eating less will make you weigh less

Eating less will *not* make you weigh less. It is an almost universally held belief that people who are overweight just need to eat less and/or do more. The idea that eating less will make you weigh less is based on so many underlying assumptions – none of which are reasonable to make. The idea that, if you eat 500 fewer calories the body will give up 500 calories of fat, to make up the difference, is the ultimate naivety in the world of dieting. The body is *not* a cash machine for fat.

Let us say that our average person has a basal metabolic rate (BMR) requirement for 1,500 calories a day (the number of calories the person would need if they were ill in bed all day – just to run all the activities done by the body). Let us then say that they have a requirement for 500 additional calories if they are up and about (this is a realistic

estimate – the BMR is the main determinant of the calorie need for the day by a margin).

The idea that a reduction of 500 calories leads to the body giving up 500 calories of fat assumes that neither the BMR requirement (1,500 calories) nor the additional requirement (500 calories) change. In reality both change. The person who eats less has less energy and they will likely do less additional activity that day – they won’t go to the gym or walk to the post box – they will be too tired. The body will also cut back on its maintenance for the day – it can save cell repair and building bone density for another day – you haven’t eaten enough, so it can cut back.

Think about it – you lose your job – you don’t automatically dip into savings – you cut back on expenditure and the body does exactly the same.

Myth No 3: Doing More will make you weigh less

Doing more will *not* make you weigh less. If you think that you can eat the 2,000 calories needed for the day and then try to do 500 more calories worth of exercise with the body making no adjustment elsewhere, you are wrong. The body is highly likely to cut back on the additional calorie expenditure – if you go to the gym, you may then sit on the sofa all evening – too tired to do the housework. The body can also reduce the maintenance it had planned to do for that day.

And here is a really crucial thing – exercise and BMR require quite different calories. Exercise is arguably best fuelled by carbohydrate (it provides glucose quickly for the body to use). BMR activities need fat, protein, vitamins and minerals – carbs are only useful for the vitamins and minerals they provide – the carbohydrate itself can only be

used for energy – not cell repair and fighting infection. Hence – if you eat 1,500 calories of carbohydrate (as the average citizen of the developed world currently does) – it *can't* be used for body maintenance – you need to burn it off down the gym or you will gain weight.

Both the eating less and doing more beliefs also make the massive and wrong assumption that the body is able to burn fat. The body will always use carbohydrate for fuel first. Hence, if our average person has any glucose in the blood stream or any glycogen (stored glucose) in the body – this will be used to cover any gap in food eaten or activity done. The body can only burn fat when there is *no* glucose/glycogen available. Modern man rarely, if ever, allows his body to get to the state where it can burn its own fat – let alone will.

Myth No 4:

Weight gain is the result of too many calories in

Weight gain is the result of fat being stored, not too many calories in. Equally, weight loss is about fat lost, not about putting fewer calories in.

There are two forms of fat in the human body: triglycerides and fatty acids. Human fat/adipose tissue/love handles – whatever you call it – this is the fat stored as triglycerides. Fatty acids are burned for fuel. Triglycerides are three fatty acids joined together by something called glycerol. Fat enters and exits fat cells as fatty acids (triglycerides are too big to move across the cell wall).

When we talk about fat stored as human fat tissue, we are talking about triglycerides. Inside the fat cell, fatty acids continually ‘cycle’ across the cell wall and back out again. Fatty acids can be used as fuel during this process (or recycled/stored if they are not used). If three fatty acids are joined by glycerol to form a triglyceride, they can't get back out of the fat cell until the triglyceride is broken back down into glycerol and fatty acids.

The critical role in this triglyceride, fatty acid, and fat storage process is, therefore, played by glycerol. Glycerol provides the ‘backbone’ needed to bind three fatty acids into a triglyceride. It therefore determines the rate at which fatty acids become triglycerides within fat cells i.e. the rate at which humans store fat. If we make more glucose available to fat cells, more glycerol can be made. If more glycerol can be made, more fat is stored in the fat cells.

Anything that works to transport more glucose into fat cells will lead to the conversion of more fatty acids into triglycerides and more storage of fat. The easiest and most effective way of achieving this fat storage environment is to eat carbohydrates. Carbohydrates are broken down into glucose by the body, causing blood glucose levels to rise and making glucose widely available to the body.

Essentially the body is in a carbohydrate/glucose/fat-storing environment or a carbohydrate-free/fatty acid/fat-burning environment and we have known this since the 1920's!

Myth No 5: One pound equals 3,500 calories

One pound does *not* equal 3,500 calories. One of the most commonly held diet myths is “To lose one pound of fat you need to create a deficit of 3,500 calories”. This is wrong at every level. First of all, one pound does not equal 3,500 calories. You will see this formula in government literature, in just about every diet book, in private health booklets and all over the internet. The next time you see it, or hear it, ask where it comes from. You will not get an answer. (I asked the following seven UK organisations: the National Health Service (NHS); the National Institute for Clinical Excellence (NICE); the Department of Health; the National Obesity Forum; the Association for the Study of Obesity; the British Dietetic Association and Dieticians in Obesity Management and five of these have no idea where it even comes from. The two that tried to prove it failed by a factor of about ten.)

The first part of the calorie formula is the assertion that one pound of fat contains 3,500 calories. You will struggle to find anyone who can demonstrate the precise calculation behind this, so I'll offer a suggestion:

- 1) One pound equals 454 grams (decimal places aside, this is a fact);
- 2) Fat has nine calories per gram (this is the universally accepted conversion, but it is an estimate and significantly rounded down from even the original estimate);
- 3) Human fat tissue is approximately 87% lipid (this is a widely accepted conversion, but it is also an estimate).

Putting these together, we can derive the sum that 454 grams of body fat tissue has *approximately* the calorific energy of 395 grams of

pure fat (454 grams x 87%), that is 3,555 calories (395 grams x 9).

3,555 is close enough to 3,500 you may think, until you see the absurdity of how precisely the formula is applied. According to those who believe this formula, this difference of 55 calories (in this case from the calculation being approximate) would make five to six pounds difference a year.

The National Obesity Forum web site states “one less (sic) 50 calorie plain biscuit per day could help you lose 5lbs (2.3kg) in a year – and one extra biscuit means you could gain that in a year!”(2) No it won't. I can't even get an estimate of the formula to closer than 55 calories 'out'. Even if the 3,555 were correct (and it isn't), this would mean we all need a 55 calorie biscuit, no fewer, every day or we will be five pounds lighter in a year anyway. Every person who *didn't* have that biscuit every day should have lost 141 pounds over the past 25 years!

With little effort I can find evidence in obesity journals that fat has anywhere between 8.7 and 9.5 calories per gram. The same (1911) obesity journal that says that human fat tissue can be 87% lipid also says that it may be 72% lipid.

Taking the extremes of these, we can establish a range whereby one pound of fat could contain anywhere between 2,843 and 3,752 calories. Given that it is currently held that one pound is 3,500 calories we could (according to this formula) inadvertently gain six stone every year at the low end of the calculation and lose almost two stone in the same year if one pound is 3,752 calories. Don't worry about any of this – because the formula doesn't hold at any other level either.

Myth No 6: You will lose one pound every time you create a deficit of 3,500 calories

You will *not* lose one pound every time you create a deficit of 3,500 calories. The myth “To lose one pound of fat you need to create a deficit of 3,500 calories” is actually worse than a myth – it is one of the cruelest lies we have told desperate dieters. We have known since Benedict’s study in 1917 (3) that we don’t lose anywhere near this much weight and we regain any weight lost and more. The 1945 Keys study was the most comprehensively documented ever.(4) He also showed that his 36 subjects, rigorously studied in confinement over a one year period, did *not* lose anywhere near what the 3,500 formula promises. They all regained all the weight that they did lose – plus about ten percent.

Weight Watchers beautifully proved that this formula does not hold in a study published in July 2010: On July 12 2010, under the headline “Weight Watchers does work, say scientists”, Sarah Boseley, health editor for *The Guardian* wrote a wonderful endorsement for Weight Watchers following a study done by the Medical Research Council (MRC), funded by Weight Watchers.(5) The original presentation of results from the MRC revealed that 772 people were studied: 395 people were simply given weight loss

advice from their doctor (the GP group) and 377 were funded to attend Weight Watchers (419 of the 772 completed their respective programme).(6)

The study was a year in length and the likely deficit was at least 1,000 calories per day (a typical Weight Watchers allowance is 18-20 points, which approximates to 900-1,000 calories vs. an average 2,000 calorie requirement for a woman). The article reported that the GP group lost an average of six pounds (we know from the Marion Franz 2007 (7) study that ‘advice alone’ people did well to lose anything) and the Weight Watchers group lost an average of 11 pounds. The Weight Watchers group should have lost 104 pounds in fat alone (2lbs a week for 52 weeks).

This study provided irrefutable proof that the calorie theory is wrong, which should have been front page news in itself, but this was not the story of the article. The story was “you’ll lose twice as much weight with Weight Watchers.” The headline should more accurately have been “Weight Watchers works better than just going to the GP, says study funded by Weight Watchers; but you will be lucky to lose one tenth of your lowest expectation.” Not as catchy, but far more honest.

Myth No 7: Cholesterol is going to kill you

Cholesterol is absolutely life critical and vital – *not* the bad guy in any way, shape or form. You would literally die without cholesterol. It is one of the most vital substances in the human body – it is a key part of the structure for every cell in your body; it is vital for all hormone production and reproduction; it is vital for digestion – the body uses cholesterol to synthesise bile acids – without this you could not digest fat or absorb the vital fat soluble vitamins; cholesterol is vital for bones and all the roles performed by vitamin D and the brain contains about 25% of the body’s cholesterol –

making it completely vital to mind and memory functions and our entire operation as a human being.

Cholesterol is so vital to the body that our bodies make it. The body cannot risk leaving it to chance that we would get it externally from some where – that’s how critical it is. Statins stop the body from producing the cholesterol that it is designed to produce. They literally stop one of our fundamental body processes from being able to function.

One in 500 people have familial hypercholesterolemia and may have a problem clearing cholesterol in their body (rather like type 1 diabetics who can't return their blood glucose levels to normal). For anyone else to be actively trying to lower their vital and life affirming cholesterol levels is deeply troubling.

The intelligent view on statins is that, in the very limited arena where they appear to have some

'benefit' (men over 50 who have already had a heart attack), they 'work' by having anti-inflammatory properties and that the fact that they lower cholesterol (by stopping the body from being able to produce this vital substance) is a very unfortunate side effect. (Drug companies should work on developing something that has the anti-inflammatory benefit without this huge and damaging side effect – it's called aspirin).

Myth No 8:

There is GOOD cholesterol and BAD cholesterol

There is no such thing as good and bad cholesterol. The chemical formula for cholesterol is $C_{27}H_{46}O$. There is no molecular formula for a good version or a bad version and we must stop using such erroneous and emotive terminology.

Fat and cholesterol are not water soluble so they need to be carried round the body in something to do their vital work. The carriers of such substances are called lipoproteins. We can think of lipoproteins as tiny 'taxi cabs' travelling round the blood stream acting as transporters.

HDL stands for High Density Lipoprotein; it is not even cholesterol, let alone 'good' cholesterol.

LDL stands for Low Density Lipoprotein; it is not even cholesterol, let alone 'bad' cholesterol. Chemistry textbooks cannot agree on the composition of these different lipoproteins but an approximate guide is that LDL is 8% triglyceride, 45% cholesterol, 22% phospholipids and 25% protein.⁽⁸⁾ HDL is approximately 4% triglyceride, 30% cholesterol, 29% phospholipids and 37% protein. LDL would more accurately be called the carrier of fresh cholesterol and HDL would more accurately be called the carrier of recycled cholesterol.

Myth No 9:

We need to eat five-a-day

There is *no* basis for telling us to eat five-a-day. The pick a number a day campaign (it is not always five in each country) has spread across three continents and tens of countries. It has become the most well known and promoted public health nutritional message ever. You would think, therefore, that it was evidence based and founded upon robust scientific knowledge. You would be wrong.

Five-a-day was invented in 1991, in California, at a meeting of the (American) National Cancer Institute (NCI) and the Produce for Better Health Foundation. The NCI has since trademarked the

term five-a-day. The Produce for Better Health Foundation reads like the who's who of the fruit and vegetable producer, packager and logistics world – companies who all stood to gain if the world started eating more fruit and veg.

Given the connection with the NCI, the programme was probably intended to help cancer in some way (it was never intended to help obesity). There was no evidence that it would do anything positive for cancer at the time. Attempts have been made to post rationalise it since, but these have failed.

The most recent study was published in April 2010, in the *Journal of the National Cancer Institute*.⁽⁹⁾ The study involved 142,605 men and 335,873 women for the period 1992-2000. This review of almost half a million people found that eating five portions of fruit and vegetables a day had little effect on cancer risk and the very small difference observed could be explained by other factors. The study also grouped participants into five categories from the lowest intake of fruits and vegetables (0 to 226 grams a day) to the highest intake (more than 647 grams a day). Significantly,

the cancer risk did not vary between the five groups.

I ask in the book if five-a-day is still worthwhile, even given the fact that it is a marketing campaign with no evidence – and I conclude resoundingly that it is *not*. It is fuelling the obesity epidemic, rather than helping in any way whatsoever. If parents knew what researchers like Dr Robert Lustig and Dr Richard Johnson knew about fructose, they would never give their children fruit juice again.

Myth No 10: Fruit is highly nutritious

Fruit is *not* highly nutritious. Those who have studied nutrition are not surprised that five-a-day has no impact on cancer and would be surprised if it had any impact on any modern health condition. Fruit is simply not that nutritious and its benefit has been massively over-hyped. There are 13 vitamins and there is some debate as to how many minerals should be taken into account, but most would accept 16 that are commonly listed.

Of the 13 vitamins, only ‘fat’ fruits can even start to provide fat soluble vitamins – so only

olives and avocado can help with vitamins A, D, E and K. There are far better providers of all of these vitamins in animal produce (meat, fish, eggs and dairy). Fruit is *not* a useful source for the eight B vitamins. Fruit is a good source of vitamin C (vegetables are just as good, if not better) and fruit is a good source of the mineral potassium, but it doesn’t compare to animal produce for the other 12 vitamins and 15 minerals. Potassium is also rarely a mineral that we have trouble consuming in sufficient quantities.

Myth No 11: Fructose (fruit sugar) is good for dieters

Fructose is bad for dieters – it is more likely to make them fat. Having established that fruit is not that nutritious, it gets worse. Fructose, also known as fruit sugar, is being called the fattening carbohydrate in the world of obesity. Fructose is quite uniquely metabolised by the liver, so it doesn’t get the chance to be used up as fuel in the blood stream – it goes straight to the liver where it can be turned into fat.

We need to know at this point that sugar (the stuff we put in our tea/coffee and cakes) is made up of one molecule of glucose and one molecule of fructose. The key change in our diet during the period in which obesity has gone up so

dramatically is not just our consumption of sugar – but quite specifically the combination of fructose and glucose. The combined potency of fructose and glucose is as follows – as the fructose proportion heads to the liver for its metabolism it has little impact on blood glucose levels. The glucose proportion performs this role and stimulates the pancreas to provide insulin. Hence we have triglycerides being formed, courtesy of the fructose, and they are able to be stored, thanks to the glucose causing insulin to be provided. Food manufacturers may like to argue that all sugar is equal – but, when it comes to enabling fat to be stored, the glucose/fructose combinations are more equal than others. They are particularly fattening!

Myth No 12: We must eat fibre (25-30 grams of the stuff in fact...)

Our fibre advice is about as sensible as the F-Plan diet... The UK Food Standards Agency says “Most people don’t eat enough fibre”. On the same page (the starchy foods page), they also say “Most people should be eating more starchy foods”. (10) (Funny how most of us are overweight and most of us are apparently not eating enough of things!) This page has lots of tips about how to get more fibre in your diet, but no explanation as to why. The NHS web site says “Fibre helps **prevent constipation** and clears the gut so that nasty substances don’t hang around for so long” (11) (their emphasis).

The two things we need to know about fibre are: 1) Humans can’t digest fibre. So, how can

something that we can’t digest be so important for our health? 2) Why on earth would we want to rush food through from the gut? The majority of nutritional absorption takes place in the small intestine – why would we want to speed up this process and disturb the nutrients being absorbed? If I want to lose vitamins and minerals down the toilet, I can take that diet drug Alli/Orlistat/Xenical, which has the same effect!

Don’t put nasty substances in the body (the sugar and additives that accompany bran to make it palatable) and then you don’t have any reason to rush nutritious, healthy food out of your digestive system.

Myth No 13: Saturated fat causes heart disease

It has *not* been proven that saturated fat causes heart disease. We have not even established a consistent association between saturated fat and heart disease. The study to prove this has not even been done. You may like to read that again if you thought that the trial against saturated fat had even been opened, let alone closed. Here are the confessions from the UK Government, since 1984, that the trial has not been done and nor will it be...

- “There has been no controlled clinical trial of the effect of decreasing dietary intake of saturated fatty acids on the incidence of coronary heart disease nor is it likely that such a trial will be undertaken.” (COMA – Committee On Medical Aspects, 1984). (12)
- “It has been accepted by experienced coronary disease researchers that the perfect controlled dietary trial for prevention of coronary heart disease has not yet been done and we are unlikely ever to see it done.” (Truswell, 1994). (13)

- “The ideal controlled dietary trial for prevention of heart disease has not yet been done and it is unlikely ever to be done.” (FSA, 2009).(14)

When Ancel Keys ended the 1950’s having failed to find a connection between cholesterol in food and cholesterol in the blood, he turned his attention to saturated fat. This was an incomprehensible move. Given that cholesterol is only found in animal foods and given that all real fats (saturated, mono unsaturated and poly unsaturated fats) are found (in differing proportions) in all animal foods, having effectively exonerated animal foods, why accuse fat?

(Pause for a moment for some common sense – do you really think that nature is out to get us? Why on earth would nature put anything harmful, saturated fat, in the exact same foods that have all the vitamins, protein, minerals and life vital substances?!)

Surely the logical culprit to suspect would be carbohydrates generally and refined carbohydrates and modern processed foods specifically. We had no heart disease for 3.5 million years and no processed food. Then we had both. Do we suspect the beef, or the beef flavoured crisps?!

Keys spent the period from 1956 onwards doing The Seven Countries Study (which should be far more widely known about than it is).⁽¹⁵⁾ The findings were published in 1970. Keys observed some weak associations between saturated fat consumption in seven hand-picked countries and heart disease in those countries. I can observe people singing in the bath – it doesn't mean that bathing cause singing or that singing causes bathing! Keys also observed many complete contradictions in his own data and far more conflicting evidence in countries that he chose to ignore.

In *The Obesity Epidemic*, I drive a bus through the original numbers in this study (as others have done before me, although not as comprehensively). Dr. Malcolm Kendrick, author of "The Great Cholesterol Con did two alternative *Seven Country Studies* of his own. He analysed the World Health Organisation data to do this. His first seven countries were those with the *lowest* consumption of saturated fat. These were Georgia, Tajikistan, Azerbaijan, Moldova, Croatia, Macedonia and the Ukraine. Kendrick's second seven countries were those with the *highest* consumption of saturated fat. These were Austria, Finland, Belgium, Iceland, Netherlands, Switzerland and France. Every single one of the seven countries with the lowest consumption of saturated fat had significantly higher heart disease than every single one of the countries with the highest consumption of saturated fat. This concludes the exact opposite of the Keys' Seven Countries assertion. Does Kendrick go on to assert that *high* saturated fat consumption causes *low* heart disease and *low*

saturated fat consumption causes *high* heart disease? Of course he doesn't. He is too sensible and responsible to do so (actually, having met Kendrick, I take this back! He was probably laughing or crying too much to do so).

There are three facts that I can state without any fear of being proven wrong:

- 1) It has *not* been proven that saturated fat consumption causes heart disease;
- 2) It has *not* even been proven that there is a consistent association between saturated fat consumption and heart disease;
- 3) The definitive study to try to prove this has *not* been done and likely never will be.

The government and the media scream at you "saturated fat is going to kill you". I am telling you that I have never heard anything more ridiculous in my life. How do you, the innocent punter, find a way through this conflict? Here's how – check the government list of saturated fat. The National Health Service (NHS) and Food Standards Agency (FSA) have virtually identical lists and they include biscuits, cakes, chocolate, crisps, ice cream, pastries, pies, sausages, savoury snacks, sweets – are you seeing the problem? I will lead any campaign to ban all of those evil horrors, but because they are processed foods and primarily carbohydrates (you may be interested to know that most have more unsaturated fat than saturated – not that one is better or worse than the other – but just to highlight that this is a problem caused by the government and media not knowing their fats from their carbs or their real food from their processed food.) If there is any butter or eggs or real meat in any processed food a) there won't be much because that's the expensive stuff and processed food needs to be cheap and b) it will be the healthiest part of the product by a margin.

Myth No 14: Butter is bad and we should be eating man-made-margarine instead

Lard is lush, butter is brilliant and margarine is minging! (I couldn't think of a better alliterative word)! Do you really, honestly think that man knows how to feed us better than Mother Nature? Or, do you think that there are huge profits to be made in manufactured, hydrogenated, Frankenfoods and that's why a campaign has been waged against real food encouraging us to eat fake food instead?

Did you know that the main fat in lard is monounsaturated fat? Lard is 47% monounsaturated fat; 41% saturated and 12% polyunsaturated. Not that any real fat, provided by nature in real food, is any better or worse than any other – this is merely to share an interesting fact that you may not know. Lard is an excellent and stable fat to use for cooking – the structure being fully saturated, with all the hydrogen atoms where they should be, making it very safe to cook with.

Margarine is an unnatural product to which we have had little time, in evolutionary terms, to adapt to. Margarine was in fact banned in Canada until 1948. Legislation was introduced in 1940 to mandate the fortification of margarine to make it 'comparable' in nutrition to the butter that was rationed during the war. The addition of vitamins A and D to margarine remains mandatory in the UK, Belgium and Sweden. Fortification is voluntary in the Netherlands and voluntary for spreads in the UK.⁽¹⁶⁾ Butter needs no such nutritional legislation. Butter's inherent stability (all the carbon links being naturally saturated with hydrogen), also makes it safer for cooking.

The National Food survey tells us that UK citizens eat 40 grams of butter, on average, per person per week.⁽¹⁷⁾ This compares with 1,423 grams of flour⁽¹⁸⁾ and 731 grams of sugar.⁽¹⁹⁾ I think that we should worry far more about the empty sugar and nutritionally lacking flour calories that we consume, than we do our tiny butter

consumption. I said as much to a biochemist whose help I was seeking to understand lipid metabolism. Unfortunately he was so believing of the 'fat is bad' hypothesis that, his response to this butter statistic was "it only takes a drop of arsenic to kill you." Butter and arsenic in the same sentence – there have been many days when I have wondered if I have any chance of trying to overcome sixty years of propaganda.

The ultimate irony is that an entire industry, worth five billion dollars in the USA (2008) alone, (20) has been built on destroying the reputation of butter and then trying to reproduce the substance. Butter is a saturated fat, naturally solid at room temperature and it has a natural colour. The first part of the imitation process is to take liquid oils, usually cheap and low quality vegetable oils, and then turn them into solid fats in some way. Hydrogenation is one way, increasingly less acceptable nowadays but still done. In this process the oils are heated and pressurised and hydrogen gas is added, along with a catalyst, like nickel, to produce the chemical reaction. This helps the oils to 'accept' the hydrogen atoms that they have been 'longing for'. Of course, the hydrogen atoms don't end up exactly where they 'should'. Some end up on the wrong side of the structure and you end up not with a saturated fat, but with a completely new fat completely alien to the body.

The substance at the end of this process is grey, smelly and lumpy, so it is bleached, deodorised and emulsifiers are added to smooth things over. The mandatory vitamins are added in at this stage because none could have survived that process. Finally, the stuff needs some colour to make it look edible, so, of course, the preferred colour is butter colour. (Canada retained the strongest legislative position on *not* allowing butter colour to be used. As recently as July 2008 Quebec became the last Canadian province to repeal its law that margarine should be colourless).⁽²¹⁾

The processed spread is much cheaper, despite all the industrial operations needed. Real butter needs to come from a real animal and the best butter is hand churned. Checking my on line grocery store today, the cheapest butter that I can buy is nearly three times the price of the cheapest spread. The butter is sold in 250 gram packets. The spreads are sold in 500 gram, or one kilogram, tubs.

To conclude the ‘how to imitate butter’ process, you need a health claim, a name and a marketing campaign. The health claim can be two fold: a) this is *not* a bad saturated fat (tell them what you are

not – don’t tell them what you are); and b) some spreads add plant stanol esters and then ‘sell’ cholesterol lowering ‘benefit’. The name and the marketing campaign go hand in hand. While welcoming any attack on saturated fat generally, and butter particularly, the spread companies launch products called “Utterly Butterly”, “Butter me up”, “Butterlicious”, “You’ll Mutter It’s Butter”, “Don’t Flutter with Butter”, “You’d Butter Believe”, “You’ll Never Believe It, Believe It or Not”, all spawned from the original “I can’t believe it’s not butter.”⁽²²⁾

You just couldn’t make this up.

Myth No 15: Fat clogs up our arteries

Fat does *not* clog up our arteries... If a juggernaut were travelling around the road transport system – which roads would clog up? The minor roads and country lanes would be impassable and the motorways would continue to run with little disruption. Fat *never* clogs veins. By a process of common sense, therefore, fat also never clogs arteries. It would make no sense whatsoever that the only parts of the blood circulatory system that got clogged up were the ‘motorways’ – the widest and the fastest flowing pathways.

Without getting into the detail of different chain length fatty acids, it is a reasonable assertion to make that fat is *not* even travelling freely in the blood stream. Fat and water don’t mix so, since blood is effectively water, fat cannot travel freely around the blood system. Fat travels around in lipoproteins – along with cholesterol, protein and phospholipids. The idea that fat somehow leaps out of the lipoproteins to attach itself to the arterial wall to try to clog up the system and kill us is ludicrous at every level.

The far more likely explanation for narrowing of the arteries is that the wall of the arteries (called the endothelial wall), quite uniquely, can suffer damage such that a ‘lesion’ (think of a lesion as a ‘scab’), forms. The body is so clever and self protective that the body cannot and does not risk the scab breaking away and freely floating in the blood stream – as this could cause a blockage. The lining of the endothelial wall tries to repair itself and forms a new layer over the scab – sucking the scab back into the lining of the artery wall in so doing. That’s how smart and life preserving our bodies are. The trouble is – if we continue to be exposed to whatever was damaging the lining of the arteries (suspects are smoking, processed food, pollution, stress – modern aspects of modern life implicated in a modern disease) – we continue to form lesions. We only need too many ‘scabs’ in one area, and the repair kit being unable to keep up, and we could be in trouble – big heart attack or stroke kind of trouble.

This brings us on to the ‘repair kit’. The best repair nutrient of all – the body’s chief anti-oxidant, anti-blood-clotter and repairer of blood vessels is vitamin E. Another trouble is – vitamin E is a fat soluble vitamin, found in nature’s real fat foods (meat, fish, eggs etc), which we are continually telling people to avoid. Another huge irony is that cholesterol (and fat) are the two main repair substances in the body. So, a lesion forms and cholesterol will head to the area to do its repair job and to try to fix the scab. Then, if the person dies because there’s only so much cholesterol can do, pathologists find cholesterol around the scab – at the scene of the crime so to speak – and blame cholesterol for causing the damage. How unfair is that?! Police are always at the scene of the crime, but no one accuses the police of committing all the crimes!

When will we see the most obvious fact of modern life and modern illness? Man-made things are harming us and nature’s natural things have always been there to help us. The more we have of

the former and the less we have of the latter, the more ill health we risk. The final trouble is that food, drink and drug companies are bigger than many countries and they want to grow even bigger. Food and drink makes us fat and sick and we then need drugs and surgery to manage obesity, diabetes, cancer, heart disease, damaged joints and limbs – it is a perfect symbiotic relationship.

Good fats are those made by nature; bad fats are those made by man – that’s all we need to know. The idea that unsaturated fats are good and saturated fats are bad is actually quite funny if you know the composition of food. Nature puts saturated, monounsaturated and polyunsaturated fats in foods in the ‘right’ measure. In the pork chop mentioned in the next myth, do we really think that the 40% saturated fat is trying to kill us while the 47% monounsaturated fat is trying to save us – presumably with the 13% polyunsaturated fat providing backup? It is utterly ludicrous.

Myth No 16: Meat is loaded with saturated fat

Meat is mainly *unsaturated* fat. I reiterate, not that one type of real fat is any better or worse than any other – this is just to point out another myth that meat is somehow full of saturated fat. As an example – in 100 grams of pork chop (United States Department of Agriculture example food – pork chop, boneless, raw, lean and fat), there is no carbohydrate, there are 21 grams of protein and 4.2 grams of fat. The rest is water (75%). Of the 4.2 grams of fat, 1.5 grams are saturated and 2.7 grams

are unsaturated. The (very small) part of this pork chop that is fat is 47% monounsaturated fat, 40% saturated and 13% polyunsaturated fat.

I have yet to find a meat on the planet with more saturated than *unsaturated* fat – and I’ve checked whale, quail, chicken, beef, lamb, goose and all sorts. If dietitians know this, why are they not telling us? Dare I suggest that it doesn’t fit with the advice ‘don’t have bacon for breakfast – have a (sugary) cereal instead’?

Myth No 17: We need to keep our blood sugar topped up

Blood sugar should *not* be continually topped up! We need to keep our blood glucose level (that's what we mean by blood sugar) within a very narrow band called normal. One of the maddest bits of advice is that we need to keep our blood sugar 'topped up'. We are told to eat little and often to achieve this. Our blood glucose (sugar) levels are one of the most carefully regulated mechanisms in the human body. Every time we eat a carbohydrate and our blood glucose levels rise, the body needs to release a substance called insulin (from the pancreas) to return our blood glucose levels to normal.

Hence any 'topping up' simply places a demand on the body to get the blood glucose levels back down again. I believe that this is one of the key reasons for the explosion in type 2 diabetes – the body is just being asked to release insulin too much, too often and has no way of recognising some of the foreign substances we consume in modern man-made food. The pancreas must get to the point where it says "enough's enough" and the person becomes resistant to the insulin being released and this is another way of describing type 2 diabetes.

Myth No 18: Graze - eat little and often

Unless you are a cow, or want to be the size of one, do *not* graze! We are told to eat little and often. This seems to be partly because of this nonsensical idea that we can or should keep blood glucose level topped up. I know not why else this advice would be given because it is one of the surest ways to fatten humans (or grazing animals).

Assuming that the diet advisors want us to graze on carbs (they tell us to base our meals on starchy foods, so this is a fair assumption), every time we eat a carbohydrate, the body needs to release insulin. When we eat a carb and this breaks down into glucose and the body releases insulin, we enter

a wonderful fat *storing* environment where the body has the glycerol available to make human fat tissue and it has the insulin available to allow this to be stored in fat cells.

If we graze continually, we never allow our body to get into a fat burning state. We continually keep the body in a fat storing environment and continually have glucose or glycogen available for the body to use for energy. I'm curious to know at what point people who graze and/or base their meals on starchy foods ever get the chance to dip into fat reserves. i.e. lose weight.

Myth No 19: Sedentary behaviour caused this obesity epidemic...

Sedentary behaviour did *not* cause this obesity epidemic... The UK government (Department of Health 2004) document, “At least five a week”, notes that exercise is only claimed to have a medium level of evidence for moderate preventative and therapeutic benefits for obesity i.e. the evidence is not strong for there being much benefit either as a prevention or a cure.⁽²³⁾

The USA government admits that data to support the idea that more active people are less likely to gain weight “are not particularly compelling”. The one study that was done, to see if the weight gained by the average American over the past thirty years was due to food intake or

activity concluded that food intake was to blame. The Deakin study actually found that activity levels had risen, during the period of the explosion in obesity, and that obesity levels would have been even higher were it not for this.⁽²⁴⁾

The official evidence simply does not present a case for sedentary behaviour being the cause of the obesity epidemic. The rise in obesity started at the turn of the 1980’s (yes – exactly when we changed our diet advice). Nothing happened to activity levels at that time, or around that time, that could even start to explain the subsequent ten fold increase in obesity (from 2.7% in 1972 in the UK to 25% at the turn of the new millennium).

Myth No 20: Exercise will cure it...

Exercise will *not* cure The Obesity Epidemic... It is a simple and unavoidable fact that we can eat in one minute enough fuel for one hour. The relative importance of *not* putting something in our bodies in the first place massively outweighs the idea that we can eat what we want and burn it off with exercise.

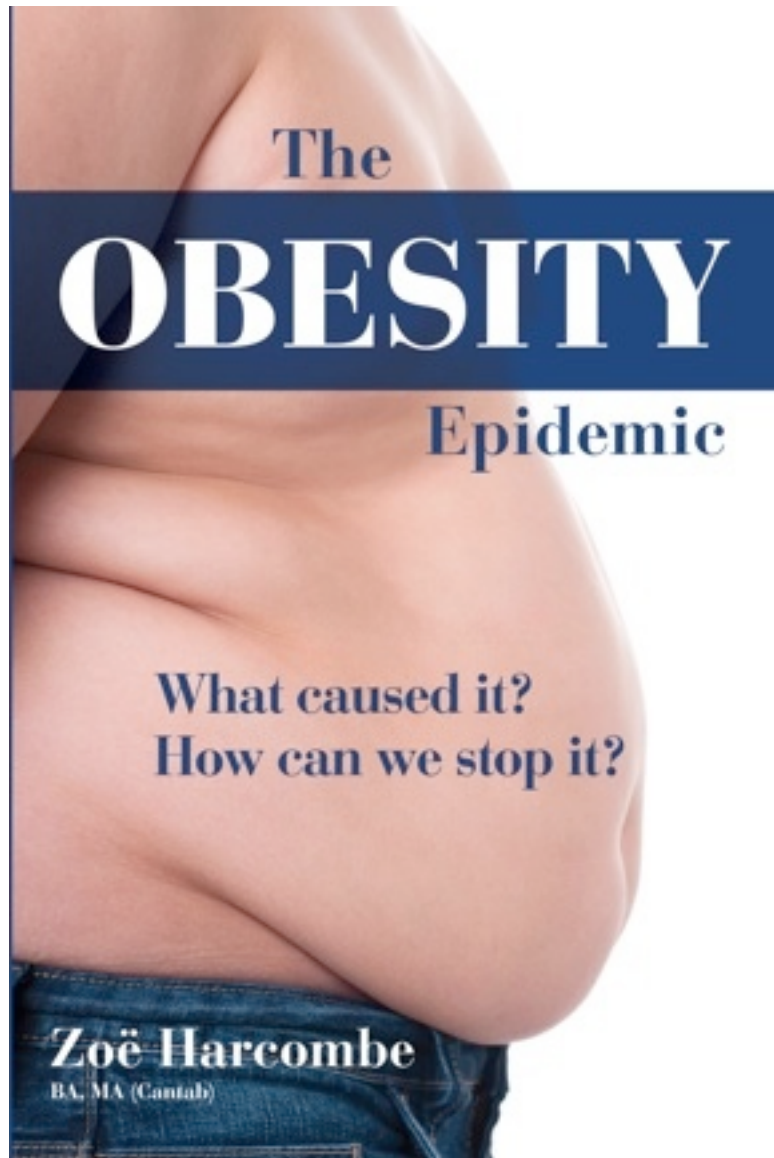
There is also the fact that exercise is best fuelled by eating carbohydrate and weight loss is best achieved by carefully managing how much and how often you eat carbohydrate. Working exclusively in the field of weight loss, the most difficult clients for me to help are vegetarians (who don’t eat the only zero carb foods available – meat and fish – although eggs are virtually carb free)

and fitness enthusiasts. The latter require a steady supply of carbohydrate and this keeps their body in fat storing mode rather than fat burning mode.

For another bit of common sense – man has evolved to gather food; man has equally evolved to conserve the food that he gathers. The idea that man is naturally active is another myth. Cave man would find the activities that we have invented today (aerobics, spinning, marathon running) quite funny. Man is as evolutionarily disposed to being sedentary as he is to gathering food. What man would have done, and what we should do today, is natural activity. Walk, talk, sing, dance, cook, clean and tend the land – that’s what we should do. Not pumping iron!

Zoë Harcombe.

The Obesity Epidemic: What Caused it? How can we stop it?



“The Obesity Epidemic is the most comprehensive demolition job on the arrogance and ignorance of the health profession I have ever read”

Barry Groves, Author Trick and Treat: How ‘healthy eating’ is making us ill

Introduction

In a study of formerly obese people, researchers at the University of Florida found that virtually all said that they would rather be blind, deaf or have a leg amputated than be obese again.⁽ⁱ⁾ That is the extent of our desire to be slim and yet two thirds of people in the UK, USA and Australia are overweight and one quarter obese. Why?

To be slim, to achieve the thing we want more than our sight, hearing, or mobility, we are told that we just need to “eat less and/or do more.” Quite specifically, the advice is “One pound of fat contains 3,500 calories, so to lose 11lb a week you need a deficit of 500 calories a day.”⁽ⁱⁱ⁾

So, why don't we just follow the advice? Why on earth do we have an obesity problem, let alone

an epidemic, when we so desperately want to be slim?

I set out to answer that question in the late 1980's and this book is the culmination of that quest. At the time of starting my research, obesity levels for men and women in the UK had reached double figures. The World Health Organisation published BMI statistics for the UK for five comparator years: 1966; 1972; 1982; 1989 and 1999 (presented in the tables below).⁽ⁱⁱⁱ⁾ The UK health service was devolved in 1999, with England, Scotland, Wales and Northern Ireland managed separately from this point forth, thus losing the opportunity for UK data beyond the turn of the Millennium.

Table 1: Percentage of men in each BMI category (UK):

Men (%) ⁱⁱⁱ	1966	1972	1982	1989	1999
BMI < 18.5	2.3	1.9	1.3	0.6	0.3
BMI 18.5-24.9	83.7	72.6	54.7	44.0	27.9
BMI 25.0-29.9	12.8	23.0	37.8	44.7	49.2
BMI > 30	1.2	2.7	6.2	10.6	22.6

Table 2: Percentage of women in each BMI category (UK):

Women (%)	1966	1972	1982	1989	1999
BMI < 18.5	7.8	5.4	3.7	1.6	0.3
BMI 18.5-24.9	81.1	78.0	70.4	58.5	37.6
BMI 25.0-29.9	9.2	13.9	19.0	25.8	36.3
BMI > 30	1.8	2.7	6.9	14.0	25.8

Totals for men in 1972 and 1989 and for women in 1966 and 1989 deviate slightly from 100% due to rounding.

We can make a number of observations about this data, but there is only one key point to note. UK obesity levels were remarkably constant and small for decades. Indeed, throughout the tens of thousands of years before the 1966 data, there is no record of an obesity problem, let alone an epidemic. Suddenly, in evolutionary terms, and

dramatically, in amounts, obesity levels increased from 2-3% in the 1970's to 25% today. Two thirds of UK citizens are now overweight or obese.

The USA started from a slightly higher base and displayed a virtually identical trend, with 70% of Americans currently overweight or obese:

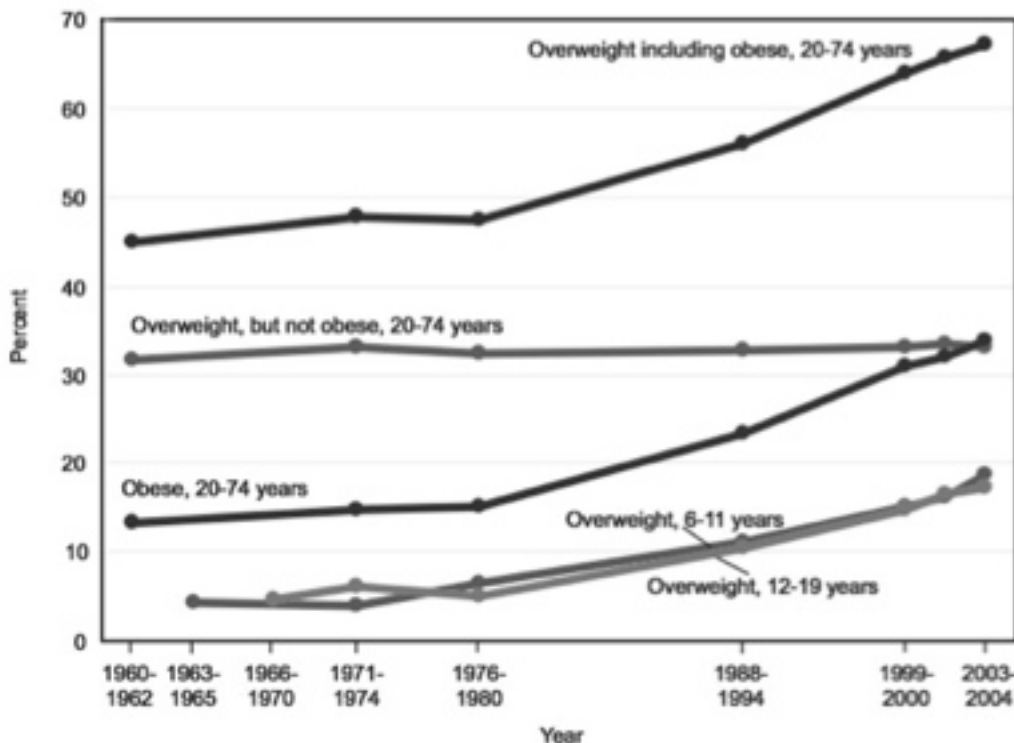


Figure 1: Overweight and obesity, by age: United States, 1960-2004.(iv)

It seems so obvious that the starting point for understanding the obesity epidemic should be – what changed in the late 1970's/early 1980's? Was there one thing that happened that could explain the sudden and dramatic increase in obesity?

Yes there was. In 1977 the USA changed its public health diet advice. In 1983 the UK followed suit. A more accurate description would be that we did a complete U-turn in our diet advice from “Farinaceous and vegetable foods are fattening, and saccharine matters are especially so”(v) to “base your meals on starchy foods”. Obesity has increased up to ten fold since – coincidence or cause?

There are so many more questions that we need to ask (and answer) to understand the worst health crisis that we have ever faced:

- 1) Have you heard the sayings “energy in equals energy out” and “you can’t change the laws of physics”? What precisely do the laws of thermodynamics say? Which law have we oversimplified and which law have we neglected to consider?
- 2) Are you familiar with the formula “one pound equals 3,500 calories, so to lose one pound of fat, you need to create a deficit of 3,500 calories”? When and where did this originate? Would you be able to prove that the formula holds true? Would you be interested to know the responses given by seven UK government and obesity organisations when asked those same questions?
- 3) Is a calorie a calorie? Is one sugar the same as any other?

- 4) What happens if we manage to get humans to eat less and/or do more over a period of six months? What happens afterwards? What is the scientific evidence for sustained weight loss in the seminal obesity studies from the past 100 years?
- 5) Are obese people greedy, or lazy, or both, or none of these? Can obesity be caused by anything other than greed or sloth?
- 6) Where does five-a-day come from? What are the five most nutritious foods on the planet?
- 7) Why is fructose being called the lipogenic (fattening) carbohydrate?
- 8) Would you be able to prove that saturated fat consumption causes heart disease? If I told you that the study to consider this has not even been done, would you believe me? If the UK Food Standards Agency said this, would you believe them?
- 9) What remains if you take the public health list of ‘saturated fat’ and cross out processed food (primarily carbohydrates)? Would you be open to the idea that we could have a heated agreement with a clarification of terminology?
- 10) Where does cholesterol fit in to the obesity debate?
- 11) What is human fat tissue? How do we (biochemically) store fat? How do we burn fat? Which macronutrient determines fat storage and fat utilisation?
- 12) Does sedentary behaviour explain the timing and the increase in obesity? Can exercise be a cure for the obesity epidemic?
- 13) How embedded are the food and drink industry in our dietary advice and agencies? Would you be concerned if the likes of Coca-Cola, Kellogg’s and the sugar industry were working in partnership with our national dietary associations?

This epidemic has become far too serious for us to continue with tautologies (a calorie is a calorie), or platitudes (eat less/do more), or marketing slogans (five-a-day). It is time for some facts.

I will keep everything as simple as possible, but, as Albert Einstein so rightly advised “It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience.”^(vi) i.e. make things as simple as possible, but not simpler. We have made some serious simplifications thus far and we must make no more.

This book will examine some of the classic literature in some detail: The Seven Countries Study; the Minnesota Starvation; Newburgh and Johnston; Kekwick and Pawan; Stunkard and McLaren-Hume; systematic reviews of the efficacy of different weight loss methods and other evidence relied upon by our public health advisors today. Some studies have shaped our current advice and shouldn’t have and some have been overlooked and shouldn’t have been. We need to

know what stands up to scrutiny, what can explain the obesity epidemic and what, therefore, can stop it. This book is fully referenced and evidence based. If I proffer an opinion, I make it clear that I am doing so by saying “I believe” or “I think”. I invite you to come to your own conclusions along the way.

This book will take you on the journey that I have been through, as an obesity researcher, from thermodynamics and peanuts under Bunsen burners to obesity organisations sponsored by food manufacturers and carbohydrates being confused with fats. Out of an illogical assumption that people have made themselves obese (when this is the last thing that they want to be), through being greedy and lazy, may come a different logical conclusion that our current diet advice a) doesn’t work and b) worse – that it is actually the cause of the obesity epidemic that it is supposed to cure.

The final part of this book looks at what needs to happen to reverse the obesity epidemic. This can be achieved, but crises require major interventions, not the same things done in different ways. One definition of madness is doing the same thing again and again and expecting a different result. Revolutionary change will not be achieved with the UK Change4Life campaign, for example, advising people to have a banana instead of a bag of crisps. Swapping one starch for another is going to make no difference to the obesity epidemic. Some of the proposals may appear extreme, but, if they do, how does “90% of today’s children being overweight or obese by 2050” sound?^(vii)

There is so much conflicting information about diet and nutrition, and the public is rightly confused and mistrustful of current advice. The same conflict can arise for a researcher, so I have established two fundamental principles, to which I return for grounding every time I find myself questioning issues.

- 1) I believe that nature knows how to feed humans better than food manufacturers. Nature has no vested interest, no profit to be made from us and no reason to provide us with anything other than nutritious food. I therefore believe that the human race must return to eating food in the form closest to that provided by nature: meat, eggs and dairy from naturally reared animals; fish; vegetables and salads; nuts and seeds; fruits and whole grains. I call this *real food*.
- 2) I believe that the job description of the human body is to keep itself alive. I therefore believe that, in normal circumstances, the human body will *not* do anything that is intended to kill us.

I have a one in four chance that you, the reader, are obese. I have a two in three chance that you are overweight. Given your interest in the subject matter, I have a virtual certainty that you know and/or work with overweight people. If I can prove to you that eat less/do more has never worked and will never work – are you prepared to consider an alternative that will? For yourself or for your patients or for our children facing a fat future?

All I ask is that you read this book with the most open mind possible. My experience of calories started at the age of 15 and I believe nothing now that I believed then. When I started studying nutrition professionally, I was a vegetarian. Within weeks of learning about food and nutrients, I started eating fish. When I started the manuscript for this book I was still a non-meat eater, believing that I could be optimally healthy without meat and that animals could concomitantly be better for this. After 20 years of abstinence, I now eat red meat until, or should I say when, the cows come home. That is how much my own thinking has changed as a result of the research I have undertaken. Please be open minded to your own views changing even a fraction of this, rather than have the following apply to you:

“My mind is made up; don’t confuse me with the facts.” (Anon)

Thank you

Zoë Harcombe

Further information and reading available at:

www.zoeharcombe.com

www.theobesityepidemic.org

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All references in *The Obesity Epidemic* are available online at <http://www.theobesityepidemic.org/references/>

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