The essential publication for today's professional pharmacist

Autumn/Winter 2010/11
www.thepharmacist.co.uk

## Inside

- Special delivery
- Confidence with unlicensed medicines
- The generic success story
- Counterfeit medicines – the facts

Sponsored By
Nova
Laboratories Ltd

# Managing obesity by challenging addiction

## Obesity has been linked to addiction. What does this mean for the future of weight management?

By S N Kreitzman, S A Kreitzman, and V Beeson of Howard Foundation Research Ltd

Weight loss by total food replacement (the elimination of *all* food from the diet) is seen by some as a draconian and unnecessary approach to the management of obesity. When trying to devise a successful weight loss programme, the optimum approach would appear to be fairly straightforward: simply reduce the daily caloric intake to a point below the level of calorie utilisation. In layman's terms, just eat less. Indeed, there are many different approaches currently available, all based around the notion of eating less: low carb, low fat, calorie counting, behaviour modification (smaller plates) etc, not to mention the plethora of meal replacement programmes in which a small amount of non-formula foods may be consumed. Why then, would anyone need to use a total food replacement formula (very low calorie diet) in order to lose weight?

It is true that each of the available approaches to calorie restriction can have successful outcomes, even in cases where the logic of a diet plan is spurious or medically dubious, or possibly even in violation of the laws of thermodynamics. Whatever the given approach of a specific diet plan might be, it will lead to weight loss if it reduces a dieter's daily calorie intake to a point below the body's daily requirement.

Unfortunately, nothing in life is ever that simple. Despite a bewildering selection of diet programmes, self-help books, drugs, even surgical interventions, the increase in overweight and obesity continues almost unabated. Weight regain is virtually universal regardless of the method of weight loss or the will of the dieter. Even post-surgical weight regain remains one of the bewildering frustrations of the field. The consequences of relentless gain of weight, however, in terms of medical co-morbidities, healthcare costs and personal quality of life, make it necessary to find answers.

### Obesity and addiction

The solution to obesity should be trivial, as we have already seen. All dieters have to do is just eat less. In addition, many people can and do control their eating behaviour and never appear to be in danger of escalation into obesity.

For those who do become obese however, their food behaviour often displays the compulsions and cravings of an addiction. Indeed, it is when food consumption is put into the context of other addictive behaviours that the nature of the problem becomes clear. The link between addiction and obesity is even being exploited in the search for drugs to combat obesity, as can be seen in the 30 July 2010 report in *The Lancet* on the use of naltrexone in conjunction with bupropion as a weight loss treatment.

How robust is the parallel between drug addiction and obesity, and are there insights from the research into addiction that can guide our treatment of overweight? Not all people who are exposed to habit-forming drugs become addicted, just as not all people exposed to high-fat, high-calorie foods become obese. Vast numbers of people consume moderate amounts of alcohol and do not advance to alcoholism. Many people are able to stop smoking as they take on board the health consequences of continuing.

Drugs and food appear to activate common reward circuitry in the brain. The brain naturally produces opiates: drug-like chemicals that cause pleasure sensations and are linked to addictions. Animal studies show that these chemicals can be a trigger for sweet, fatty cravings. And consuming such foods make the brain produce even more of the chemicals (as shown, for example, in studies of rats fed chocolate milk). When the brain's normal opiate production was blocked, rats chose their normal feed over previously tempting sweets.

Drewnowski tested this approach on 41 women (bingers and normal eaters). They were offered their favourite foods, from pretzels and jelly beans to chocolate chip cookies and chocolate ice cream. Half received injections of naloxone, a drug used to treat heroin overdose because it blocks brain opiate receptors. The rest were given a placebo of saline.

Naloxone made the bingers eat considerably less – 160 fewer calories per meal, as Drewlowski reported in the *American Journal of Clinical Nutrition*. Their chocolate consumption dropped in favour of lower fat foods like popcorn. When asked to rate their favourite foods again, chocolate was rated lower than before. Significantly however, the non-bingers weren't affected, a finding that might limit the widespread efficacy of the drug combination referred to above. If a person's obesity is related to compulsive behaviour then this research is very encouraging. For others, however, its effectiveness will be extremely limited. In other words, it may only help those patients it can help.

If we accept a component of addiction in food abuse and ultimately obesity, then we need to recognise that the most powerful long term treatment for addictions is complete abstinence from the addictive substance. A reformed smoker is someone who does not smoke. A reformed alcoholic is someone who does not drink.

Alcoholics note that it is easier to draw a line between zero drinks and one drink, than between the first and second or even the sixth and seventh. There is an exact parallel with seriously overweight people: the introduction of almost any food can trigger the need for substantial food consumption. Unfortunately for the overweight, total abstinence from food is generally not considered feasible or even survivable. As a result, this most powerful tool for the control of food abuse is usually overlooked.

From a biological point of view, however, it is important to recognise that the human body does not survive on food, it survives on nutrition. We require a constant supply of a very specific list of chemicals (nutrients) to sustain ourselves. These chemicals are typically ingested in the food we eat. Because there is no single food that exactly matches the nutritional needs of a human being, it is important that we receive our nutrition from a diverse range of foods. For an addict who abuses food, this presents a serious problem; one that the mantra 'just eat less' completely fails to address.

### Total food replacement programmes

The advantage of a total food replacement programme is that nutrition is provided by an engineered formula that is nutritionally complete, allowing the dieter to remove the addictive substance (food) from his or her life while the weight is lost. The value of a total food replacement formula programme in the treatment of overweight and obesity should now be obvious. *Total* food replacement is the only means by which those who are subject to food abuse may avoid the addictive stimulus that perpetuates their weight problem.

This begs the question of how to proceed once the excess weight has been lost. Although the smoker should not return to cigarettes, and the alcoholic should not begin drinking again, the idea of avoiding traditional foods for life is a disturbing prospect, and one that no one would actually promote. The concept of permanently denying the pleasures of the table is unlikely even for the most food-averted of the population; it is inconceivable for the food addicted. There will inevitably be a food future, with the possibility (even probability) of weight regain. The availability of total food replacement formulas for future weight correction is likely the factor that protects against addiction transfer, an overwhelming and destructive consequence of weight reduction surgery.

Addiction transfer is a worrying and increasingly reported after-effect of bariatric surgery, as the loss of weight apparently does nothing to alleviate the addictive behaviour. Up to 30 per cent of post surgical patients are reported to be transferring their addiction to other quarters (alcohol, gambling, promiscuous behaviour etc) to the point of self destruction. Addiction transfer appears to have a neurological basis, as research suggests that the same biochemical processes are at work in multiple types of impulse-control disorders. Each seems to trigger the same reward sites in the brain, resulting in cravings that are difficult to resist.

Weight loss with very low calorie diets has a clear advantage. When used strictly, ketogenic total food replacement diets are not perceived by the body as a deprivation condition requiring an alternative pleasurable stimulus which can lead to addiction transfer. Once in 'ketosis', a high percentage of patients report a mild euphoria or at least a sense of comfort and well being. VLCDs are rapidly being recognised as perhaps the only weight loss method that engenders the many health benefits of weight loss and crucially leaves the patient physically and psychologically healthy afterwards.