



**The British  
Psychological Society**  
Professional Practice Board

# Obesity in the UK: A psychological perspective

**Obesity Working Group 2011**  
*Chair: Dr J.A. Waumsley*

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# Introduction

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**Julie Waumsley**, *Chair of Obesity Working Group*

Obesity is a modern epidemic in the developed world, the prevalence of which has never before been experienced. In England alone, 1 in 4 adults are currently obese, with more than half the adult population overweight or obese (NICE, 2006). This trend is set to double by 2050 (Department of Health, 2009). Obesity levels in Wales are predicted as higher than those in England, and Scotland has one of the highest levels of obesity in countries of the OECD (Organisation for Economic Co-operation and Development), with over a million adults and over 150,000 children obese. This is predicted to worsen with adult obesity levels reaching over 40 per cent by 2030 (Scottish Government, 2010). In Northern Ireland 60 per cent of adults have a weight problem and as many as 1 in 5 are obese. Figures from 2006/07 show that approximately 22 per cent of Northern Ireland's primary schoolchildren are classed as overweight or obese (Northern Ireland Executive, 2008). It is also estimated that one third of children and young people in the Western world are overweight or obese and this is set to rise by two thirds by 2050 (Reilly, 2009). Obesity is not just a cosmetic problem for many but a serious risk to health. The strain to the NHS and the cost to the wider economy are enormous given the associated health risks, such as heart disease, stroke, diabetes, some types of cancer, gout and gall bladder disease. Being overweight can also cause problems such as sleep apnoea (interrupted breathing during sleep) and osteoarthritis.

Obesity has received much media attention of late and general awareness amongst government and UK society is acknowledged. As such, there is a great deal being done at local government and within the National Health Service to try to stem the rise of obesity. The government's healthy living messages permeate communities and the National Institute for Health and Clinical Excellence (NICE) have recently set up a consultation group to address a whole-systems approach to obesity. On-going nutritional and sociological issues such as diet, transport, exercise friendly towns and available educational programmes for children and adults inform on ways to redress the growth of obesity. It is generally accepted that obesity is a multifaceted issue that requires a biopsychosocial response. However, whilst Cognitive Behavioural Therapy is briefly mentioned in the NICE (2006) obesity guidelines as the recommended way to address behavioural change through psychological issues associated with obesity, psychological issues are generally not receiving as much attention as sociological and diet issues as ways of tackling this growing epidemic. This report, commissioned by the British Psychological Society, attempts to redress this with a cohesive approach between academic and applied work by producing a report on psychological approaches to obesity.

The first two papers examine physical activity and exercise behaviour for the obese, and lack thereof, from a psychological perspective. The first paper defines obesity and offers examples and recommendations of ways in which physical activity behaviour change may occur. This is followed, in the second paper, by an overview of research which highlights

issues to do with physical activity and the obese individual. Next, the report offers insight from a health psychologist's perspective, examining ways of working with obese individuals within the National Health Service. The report goes on to examine weight loss surgery and the psychological issues therein, followed by an examination of pharmaceutical interventions. Up to this point the report focuses, in the main, on adult obesity. The fifth paper provides an overview of childhood obesity, offering a psychological slant. What then ensues is a paper addressing psychological issues with specific regard to emotional eating. The report is then concluded. Each section of the report is written by specialists in their field and offers recommendations for follow up work and/or applied examples of ways in which to work with obese individuals from a psychological perspective.

The authors are aware that obesity affects people from many different backgrounds and in differing situations. It is, though, beyond the scope of this report to address specific issues of socioeconomic status, the stigma attached to being obese and special populations, including individuals from differing ethnic backgrounds.

The aim of this report is to offer a cross-disciplined psychological perspective on ways in which to help individuals who may be struggling with weight problems and in so doing, plug the gap which the authors feel has not yet been fully addressed by current obesity interventions. Empirical evidence and applied practice intertwine to offer the reader a report that reflects the psychological perspectives from exercise and physical activity psychology, clinical psychology, health psychology, educational psychology, counselling psychology and therapeutic interventions.

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# Physical Activity and Exercise Psychology: Our Role in Healthy Weight Management for Adults

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**Julie Waumsley & Nanette Mutrie**

## Defining obesity

Obesity may be defined as a disorder in which excess body fat has accumulated to an extent that health may be adversely affected (Royal College of Physicians, 1998). The most commonly used measure of body fatness is Body Mass Index (BMI), which is calculated as weight in kilograms divided by the square of height in metres. Increased body fat content is associated with increasing mortality with a BMI of between 25 and 30kg/m<sup>2</sup>, with further progressive increases above a BMI of 30 (Calle et al., 1999). There are differences for children and different ethnic groups. However, whilst BMI remains the standard measure of fatness in social science research, the medical literature regards BMI as an inferior measure of fatness because it records the mass of the body and does not distinguish between the lean and fat mass. Thus, two individuals may be of same weight and BMI yet one may have 15 per cent body fat and the other, 35 per cent. The latter may be significantly more at risk of poor health than the former, but both would be reported as an obese statistic. Clearly, BMI measurements may result in substantial misclassification of individuals into weight classifications, which may result in an overestimation of the prevalence of obesity (Burkhauser & Cawley, 2008). Whilst it is not yet known which measure of fatness is best, candidates include: total body fat; percent body fat (which is total body fat divided by total mass); waist circumference; and waist-to-hip ratio (Burkhauser & Cawley, 2008). Use of air displacement technological equipment will more accurately assess levels of lean muscle tissue and subcutaneous bodyfat but is more expensive and cumbersome than BMI or waist measurements. A waist circumference greater than 80cm (32in) for women and 94cm (37in) for men increases the risk of cardiovascular diseases. The greatest risk is for women with a waist measurement of more than 88cm (35in) and men with a waist measurement of more than 102cm (40in). Waist circumference (or other more accurate measures) may be a more useful measure of obesity for muscular athletes since BMI often misclassifies them as overweight (Burkhauser & Cawley, 2008; Jolliffe, 2004; McKay, 2002).

## Contributing factors of obesity

People generally become obese when, over a period of time, their energy intake exceeds their energy expenditure. There is a complex interaction of contributory mechanisms influencing this, including biopsychosocial and environmental factors. Part of this complex interaction is inactivity, which is contributing to the obesity epidemic in the United Kingdom. Almost 1 in 4 adults in England are currently obese with more than half the adult population, overweight or obese (NICE, 2006). If this trend continues, 9 in 10 adults will be overweight or obese by 2050. The cost of overweight and obese individuals to the NHS in 2007 was estimated to be £4.2 billion, estimated to rise to £6.3 billion in 2015 and

is forecasted to more than double by 2050. The cost to the wider economy is £16 billion, and this is predicted to rise to £50 billion per year by 2050 if left unchecked (Department of Health, 2009). There is evidence to suggest that the Government's healthy living messages are failing to get through, as figures show obesity levels have almost doubled in 14 years (24 per cent of men and women were obese in 2007 compared with 16 per cent of women and 13 per cent of men in 1993; HSE, 2007). Childhood obesity is also increasing with the associated health problems, including a rise in Type 2 diabetes (NICE, 2006). The government *Foresight* report on obesity recognises the complexity of the causes of obesity and in so doing clearly locates inactivity as a major problem (Government Office for Science, 2005).

## Recommendations for physical activity

*'The potential benefits of physical activity to health are huge. If a medication existed which had similar effect, it would be regarded as a "wonder drug" or a "miracle cure"'* (CMO 2009).

The terms '**exercise**' and '**physical activity**' are often used interchangeably, but their differences have important implications for understanding exercise psychology. To clarify their differentiation: 'Physical activity' is any bodily movement produced by skeletal muscles that results in energy expenditure and is usually measured in kilocalories per unit of time (Caspersen et al., 1985). Physical activity might include walking, stair climbing, bicycling and swimming. 'Exercise' is a sub-set of physical activity and is planned, structured, repetitive bodily movements that someone engages in for the purpose of improving or maintaining physical fitness or health and may include activities such as aerobic dance, cycling, running or jogging, brisk walking, swimming laps or weightlifting.

In terms of intensity, moderate to vigorous levels are recommended for health. Moderate intensity is a level that people can engage in and at the same time continue a conversation with someone, while vigorous intensity (such as running or playing a fast sport such as squash) is a level that makes conversation difficult because of the increased demand on breathing required. Physical activity/exercise psychology suggests that a graduated approach to increasing activity is appropriate and will help avoid injury. The 'active living' approach, in which individuals are encouraged to make active choices in everyday life such as choosing to walk rather than drive, choosing the stairs rather than the escalator or choosing to walk the dog more, is recommended as a route to achieving regular activity without cost or the need to attend a particular facility.

Physical activity combined with the restriction of energy intake leads to greater fat loss than either treatment on its own (Crest, 2005) and the health benefits of a physically active lifestyle are well documented. However, individuals are often confused about how much physical activity or exercise to take and what type of exercise to take. The recommendation for England, Northern Ireland, Scotland and Wales is for adults to do at least 30 minutes of moderate-intensity physical activity on five or more days a week, with this activity comprising one session of 30 minutes or several lasting 10 minutes or more (CMO, 2009; NICE, 2006; Scottish Executive, 2003). To prevent obesity, people may need to do 45–60 minutes of moderate-intensity activity a day, particularly if they do not reduce their energy intake. Those who have been obese and have lost weight may need to do 60–90 minutes of activity a day to avoid regaining weight (NICE, 2006). Recent guidance from the Scottish

Intercollegiate Guidelines Network (SIGN, 2010) suggests that overweight and obese individuals should do 225–300 minutes per week of moderate intensity physical activity, which may be achieved through five sessions of 45–60 minutes per week, or lesser amounts of vigorous physical activity can be accumulated over the course of the day in multiple small sessions of at least ten minutes' duration each.

The guidance on the recommended duration and intensity of physical activity required for health is currently being updated in the UK with all four home countries involved in the process.

## **Psychology of physical activity, exercise and sport**

There is often some confusion in terminology when examining the psychology of sport, exercise and physical activity. The psychology of sport and exercise both involve examining the relationships between physical movement and beliefs and emotions. However, a primary purpose of sport psychology is to examine the effects of such variables so as to enhance performance, often in competitive sport. A primary purpose of exercise psychology is to enhance the adoption and maintenance of regular exercise and its effects on psychological well-being. The psychological and biological consequences of physical activity are studied to determine its effects on mental health (Buckworth & Dishman, 2002).

## **Prevalence of physical inactivity**

The examination of physical activity behaviour and insight into the ways in which individuals adopt and maintain regular physical activity have been grounded in psychological theories of behaviour change. The potential impact of exercise and physical activity interventions on public health is great considering the low level of activity in most segments of the population and the established links between physical activity and health. Inactivity affects more people in England than the combined total of those who smoke (20 per cent), misuse alcohol (6–9 per cent) or are obese (24 per cent). On average inactivity costs each local area care team £5 million per year due to health consequences (CMO, 2009).

Findings from the Health Survey for England (2007) suggest people believe they are more active than they actually are. The physical activity of 1,998 men and 2,509 women aged 16 and over was assessed using accelerometry, a tool used for measuring physical activity more accurately and precisely than self report measures. Only 6 per cent of men and 4 per cent of women met the government's current recommendations for physical activity by achieving at least 30 minutes of moderate or vigorous activity on at least five days in the week of accelerometer wear, accumulated in bouts of at least 10 minutes. Self report measures suggest 46 per cent of men and 36 per cent of women who were neither overweight nor obese met the recommendations, followed by 41 per cent of men and 31 per cent of women who were overweight and 32 per cent of men and 19 per cent of women who were obese (HSE, 2007). In Northern Ireland, 25 per cent of adults are chronically sedentary, taking less than 20 minutes of physical activity per week (Crest, 2005). The most recent data from Scotland suggests that around 60 per cent of the population do not achieve the recommended levels of activity for health gain (a minimum of 30 minutes of moderate intensity activity most days of the week) (Bromley et al., 2009).

Self-report measures (Health Survey for England, 2007) show that people overestimate the amount of exercise they are doing and these figures are much greater than actual measured reports of physical activity. In short, despite well-known benefits, only a minority of people in industrialised countries are sufficiently physically active to have a beneficial effect on their health.

## Physical activity behaviour change

The fact that the majority of western populations do not meet current minimum recommendations for the amount of physical activity needed for health necessitates a greater understanding of the determinants of involvement in exercise and physical activity, including motivation (Biddle & Mutrie, 2008). Translating intentions into behaviour remains a key challenge. Implementation intentions are self-regulatory strategies that involve the formation of specific plans that specify when, how and where performance of behaviour will take place and are likely to be effective in promoting physical activity behaviour (Biddle & Mutrie, 2008). Whilst it is beyond the scope of this paper to offer an in-depth discussion of all the various psychological theories of behavioural change, it is perhaps of benefit to detail theories and models of use in physical activity research and mention those that have offered an underpinning for effective behaviour change with physical activity. Very broadly, psychological behavioural change theories fall into three categories: **Attitudinal approaches**, **Motivational approaches** and **Stage-based approaches**. Within the former, the Theory of Planned Behaviour (Ajzen, 1985; 1988; 1991) has the most supporting research, with The Health Action Process Approach (Schwarzer, 1992; 2001) and Protection Motivation Theory (Rogers, 1983) also showing promising results. Amongst the many motivational theories, Self Determination Theory (Deci & Ryan, 1985; 1991) (motivation linking to competence and confidence); Goal Perspectives Theory (Maehr & Nicholls, 1980) and Self-efficacy Theory (Bandura, 1986; 1997) have support from the literature. Perhaps the best known Stage-based Theory is The Transtheoretical Model (Prochaska et al., 1992) and this model has support in the physical activity literature. Attitudes, particularly perceptions of control and intention, are central to the psychology of physical activity determinants, as is motivation, but no one construct can explain all that we do. Notwithstanding this, despite the static and uni-dimensional approach of the Theory of Planned Behaviour (Ajzen, 1985; 1988; 1991) it has been the most successful approach in physical activity psychology, showing attitude to account for about 30–40 per cent of the variance in intentions and intentions to share about 30 per cent of the variance in physical activity assessment (see Biddle & Mutrie, 2008 for an overview).

Cognitive Evaluation Theory (Deci, 1975; Deci & Ryan, 1985) involves the processing of information concerning reward structures and teases apart intrinsic and extrinsic motivation to physical activity. Thus, it remains a viable theory for the study of motivational process in physical activity behaviour. Extending this perspective, and including the psychological needs of competence, autonomy and relatedness, Deci and Ryan (1985; 1991) propose Self-determination Theory, which is an important perspective for the study of motivation in physical activity.

Theoretical approaches that have focused on the self-perceptions of efficacy and competence show that participation in physical activity is associated with perceptions of

competence but more specific perceptions of competence/efficacy are likely to be better predictors of specific behaviours than more generalised beliefs in competence (see Biddle & Mutrie, 2008 for an overview).

The Transtheoretical Model (Prochaska et al., 1992) offers a dynamic advance on the static models mentioned and an appropriate and intuitively plausible framework to understand behaviour and behaviour change. This model has been successfully used in other health settings, which lends confidence to its application to physical activity. Indeed, many interventions have used TTM as their theoretical framework (e.g. Cox, et al., 2003; Dunn, et al., 1999).

### BOX 1: A case study of a physical activity intervention based on the transtheoretical model of behaviour change

It is recommended that physical activity behaviour change interventions are guided by relevant theory. The transtheoretical model was used to inform the design of a trial to determine if people could be encouraged to walk or cycle (actively commute) to work instead of using their cars (Mutrie et al., 2002). Such a change in behaviour has become of interest not only for physical activity promotion but as an element in campaigns to limit car use and congestion and potentially improve the environment. The first way that the theory was applied in this study concerned targeting people who were thinking about active commuting (contemplators) or preparing to actively commute (doing some irregular active commuting). A stages of change question was used as a screening tool for interested participants and only contemplators and preparers were then invited into the trial. The materials for the intervention group were delivered as a 'self-help' instructional booklet named *Walk In to Work Out Pack*, designed for the contemplation and preparation stages. The pack contained written interactive materials that guided participants through elements of the transtheoretical model of behaviour change, such as considering a decisional balance sheet (pros and cons) for increasing active commuting behaviour, considering how to enhance self-efficacy for active commuting and setting goals for increasing walking or cycling to and from work. The pack also contained local information about distances and routes, and safety information. The control group received the pack six months later. The results showed that the intervention group was almost twice as likely to increase walking to work as the control group at six months (odds ratio of 1.93, 95 per cent confidence intervals 1.06 to 3.52). The contemplators, that is those who had been considering active commuting at the beginning of the trial, added more minutes per week to their walking than the preparers although the preparers also achieved an increase.

The intervention was not successful at increasing cycling with very few participants opting for this method of actively travelling. Twenty five per cent (95 per cent confidence intervals 17 per cent to 32 per cent) of the intervention group, who received the pack at baseline, were regularly actively commuting at the 12-month follow-up. The materials were updated and reproduced both in Scotland and England and are available to employers who wish to promote active commuting to their workforces.

Mutrie, N., Carney, C., Blamey, A., Crawford, F., Aitchison, T. & Whitelaw, A. (2002). Walk in to work out: A randomised controlled trial of a self help intervention to promote active commuting. *Journal of Epidemiology and Community Health*, 56(6), 407–412.

Reviews of successful interventions conclude that a key element in physical activity behaviour change is to have a theoretically driven intervention. What is less clear is which of several competing theories is best (Hillsdon et al., 2007; Kahn et al., 2002).

In Box 1 we have added a case study that shows the use of a theoretically driven intervention aimed at increasing active commuting in a work place setting.

## Maintaining physical activity behaviour change

Sustaining changes in physical activity levels remains a challenge to exercise science. Leisure centres often offer fitness assessments to encourage members to attend although there is little to evidence sustained behavioural change in this approach. Health professionals might better assist through approaches such as Motivational Interviewing, a 'client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence' (Rollnick & Miller, 1995, p.326). However, encouraging change through motivation is a complex task. Thus, this intervention should be delivered by those trained in psychological approaches and who exhibit an ability to attune and empathise with those seeking help and who also display excellent communication and reflective listening skills. Practitioners will also have good knowledge about physical activity for general and clinical populations, including the current activity recommendations, and

### BOX 2: Steps in a typical physical activity counselling session (See Biddle & Mutrie, 2008 for more details)

#### ■ Step 1: Determine Physical Activity History

Discuss the reasons that the person has for wanting to increase activity. Take note of when the person was last active, the kinds of activities they might like now and a measure of recent physical activity, e.g. Seven-day recall.

#### ■ Step 2: Discuss Decision Balance

Ask the person to consider what the 'pros' and 'cons' of increasing activity are for them. If there are more cons than pros ask them to consider how to minimise some of the cons.

#### ■ Step 3: Ensure Social Support

Determine with the person what kind of support they might need and who can provide it.

#### ■ Step 4: Negotiate Goals

Help the person set realistic and time phased goals for gradually increasing activity up to a level they have determined, e.g. 'in four weeks' time I would like to be walking for 30 minutes more on at least three days of the week'. Write these goals down.

#### ■ Step 5: Discuss Relapse Prevention

If there is time or if the counselling session is with someone who is already doing activity then discussion on how to prevent relapse from regular activity should take place.

#### ■ Step 6: Provide information on local opportunities

All information on relevant local activities, such as walking paths, swimming pools and classes should be on hand to supplement discussion as required.

exhibit an understanding of the various theories of behaviour change and factors that will influence whether or not a person will succeed in becoming more active. For an obese population, these qualifications and attributes are of exceptional importance given the sensitive nature of physical activity in the lives of those who find activity difficult for a variety of physical, environmental, social and psychological reasons, and in view of the consequences of not incorporating physical activity into otherwise often sedentary lives. Guidelines for conducting physical activity consultations are available (see Kirk et al., 2007). An outline of the recommended steps to take in conducting a physical activity consultation is provided in Box 2 below. These steps are evidenced based and show the use of many cognitive and behavioural techniques used in other areas of behaviour change.

## Community approaches

The NICE (2006) guidelines suggest a multidimensional approach to tackling obesity within local healthcare teams and communities that address the issues of lifestyle, diet, physical activity, working with adults and children, motivation and behaviour change. However, anecdotal evidence from a cross section of healthcare teams in England and Wales (27 out of 57 contacted) suggests that although there are obesity clinics working specifically within local healthcare teams, some clinicians are not confident in knowing how to implement behaviour change and motivation strategies. Nor are some practitioners confident in prescribing exercise and physical activity programmes and may not be aware of how activity is to be recommended because of wide ranging health benefits even if weight loss is not rapid. Evidence produced from quota sampling also suggests that exercise specialists are rarely part of the obesity teams within the healthcare teams. The common model appears to be healthcare teams referring obese individuals to obesity services run as community-based programmes, such as healthy eating, commercial weight management programmes or exercise related programmes operating from local leisure centres. Some involved in such programmes do have some basic cognitive behavioural therapy and motivational interviewing training. Nonetheless, there are several presenting concerns from the model described. First, community-based intervention programmes often have a short duration (for example a 12-week course). Research suggests that any behavioural change activity is required for a duration of six months or longer to prevent relapse (Biddle & Mutrie, 2008). Second, the programmes being utilised by healthcare teams appear not to promote intrinsic motivation, which may affect adherence issues. Unless the psychological needs of autonomy, competence and relatedness are satisfied in any behavioural change programme, an individual is likely to revert to old behavioural habits (Deci & Ryan, 1985). Finally, weight related criticism has a negative effect on physical activity participation (Faith et al., 2002) as do self-presentation concerns (Biddle & Mutrie, 2008). Although exercise specialists can advise on exercise and physical activity programmes, it appears that psychological issues associated with physical activity behaviour change are not being addressed to offer support and understanding towards exercise motivation and behavioural change to obese individuals. Interventions to change physical activity are still in their infancy (Biddle & Mutrie, 2008) and there are social, physical and political environments that often reinforce and encourage sedentary living and foster obesogenic environments (Government Office for Science, 2005; Swinburn & Egger, 2004). There is little understanding of appropriate modes of activity for those who are

overweight and obese; it might be advantageous to begin exercise and physical activity programmes with non-weight bearing activity such as swimming or stationary cycling because they put less strain on joints but these activities present challenges of accessing public changing facilities or fitness gyms. The challenge of access may be psychological (not feeling 'sporty' or embarrassment) but the challenge may be mobility – especially for the super obese – in getting out of the house and to a facility. Thus home-based programmes that are supported properly may be needed.

Understanding personal and environmental factors that are associated with sedentary lifestyles and low rates of adoption and adherence to physical activity, and support in changing these sedentary behaviours, requires attention from psychologists. More work is required in care settings to establish how the care team can influence physical activity levels and exercise and physical activity psychologists would add much value to a clinical team working with obese individuals across the United Kingdom.

## Other behavioural challenges

In addition to the behavioural challenges around increasing activity to a level that will achieve health gain and contribute to weight loss, there are two other behavioural challenges that face psychologists attempting to help those who are obese gain control over their weight. These issues are sedentary behaviour *per se* and the concept of behavioural compensation for increased activity.

There is growing evidence that there are health implications of sedentary time, independent of physical activity levels (Healy et al., 2008). A dose–response association has been established between sitting times and mortality from all causes and CVD, independent of leisure time physical activity (Katzmarzyk et al., 2009). Thus a new behavioural challenge is to encourage people not to sit down for extended periods of time although the criterion level (e.g. not more than two hours) has not been established.

Physiologists have been aware for a long time that people who undertake 'training' begin to compensate for this additional energy expenditure by either increasing the amount they eat or by decreasing the amount of incidental or everyday activity they undertake. A further behavioural challenge for psychologists is to bring 'compensatory behaviour' to a conscious level and help people find ways of overcoming compensation. To date, there is no psychological evidence examining this issue.

## Conclusion

Psychologists are able to help understand motivations and barriers to increasing activity, decreasing sedentary time and using compensatory behaviours. In addition we can develop and test interventions and work as part of multi-disciplinary teams engaged in helping those who are obese gain control over their weight.

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# Obese Individuals and Exercise Participation

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## David Marchant

Given that a person with a BMI greater than 30 kg/m<sup>2</sup> is classified as obese, exercise poses a significant physical and psychological challenge for the individual. Furthermore, given that such individuals require two to three times the recommended normal activity levels for health (e.g., see Saris et al., 2003), and that such increased activity levels pose significant stress to joints, the challenge for exercise schemes and professionals is also considerable. As highlighted in the previous section, those activities that may be the most physically appropriate such as swimming, may only exacerbate any embarrassment obese individuals may experience whilst exercising (Biddle & Mutrie, 2008) due to negative self-evaluations and beliefs about their fitness and co-ordination (e.g. Brownell, 1998; Focht & Hausenblas, 2004). Indeed the significance of such obesity-related barriers is highlighted by Petersen et al. (2004) in their study suggesting that the relationship leading from obesity to inactivity is stronger than that from inactivity to obesity, potentially contrary to common conceptions. What is presented here to supplement the previous section is a review of relevant research covering psychological aspects of exercise participation for obese individuals. In particular, attention is given to: exercise referrals and interventions; exercise professionals; and modes, durations and intensities of exercise. Such factors are seen as critical variables for fully understanding the issues associated with increasing exercise participation in obese individuals.

## Exercise referral and intervention

Exercise Referral schemes have become increasingly popular within Primary Health Care settings, and offer one such structured setting through which obese individuals can learn about, and safely participate, in structured and supervised exercise. Edmunds et al. (2007) used Self-Determination Theory (SDT) as a model to assess those motivational processes related to exercise participation, cognitions, and well-being among obese individuals participating in a 12-week Exercise on Prescription (EoP) scheme for weight loss. Autonomy, competence and relatedness satisfaction (social engagement) all influenced either motivational regulation or exercise behaviours. Importantly, those clients who exhibited greater adherence to the scheme presented greater barrier efficacy than those who adhered less. That is, these individuals presented with greater confidence in overcoming those barriers identified as obstructing their exercise participation. Furthermore, Edmunds et al. (2007) indicate that for these overweight/obese individuals, feelings of choice regarding the type of exercise participated in, as well as their perceptions of competence in undertaking those exercises, assist in the development of self-determined motivation. As such, they recommend that exercise referral schemes should be grounded in the development of self-determined motivational regulation (where behaviours are performed out of choice and through interest in the activity itself rather than related outcomes). This view was recently echoed by Silva et al. (2010) whose continuing

longitudinal randomised control trial has shown beneficial effects (weight loss and exercise adherence) of exercise participation support grounded in SDT over the first year of the study with overweight and obese clients. The intervention design promoted autonomous participation through multi-level support, addressing physical activity and nutrition, individual characteristics (e.g. understanding, body image, coping strategies) and environmental characteristics (e.g. activity choices, formal and informal physical activity). The importance of such autonomy supportive environments for long-term maintenance of behaviour change in obese populations is clear, and exercise psychology has a critical role in its promotion and provision.

Dalle, Grave and colleagues (2011) recommend the incorporation of cognitive procedures and strategies into the exercise referral process, and a move towards multidisciplinary approaches to exercise promotion and support for obese individuals. Likewise, Shaw et al. (2005) conclude that exercise and dietary interventions aimed at weight loss for obese individuals should be combined with cognitive behavioural strategies to maximise success (see also Annesi & Whitaker, 2010). Such cognitive behavioural approaches are not only important for exercise adherence, but have also been shown to positively influence related variables underpinning effective participation such as body image, self-efficacy and self-concept when compared to typical introductory exercise consolation approaches (e.g. see Annesi 2010). After the referral process and initial time-period, research by King et al. (2006) indicates that obese individuals require ongoing provision of such supportive environments for behaviour change to be maintained. These authors suggest that such guidance, support and feedback could well be achieved at distance through mail, e-mail, and/or telephone.

Given the importance of psychological characteristics (e.g. self-efficacy, perceived competence, enjoyment) in promoting long-term participation in exercise, their development should be seen as a primary goal of obesity targeted exercise referral schemes. Exercise psychologists' role in understanding and developing these is grounded in a broad understanding of the individual. For example, taking a cultural perspective, Annesi (2007) monitored changes in self-efficacy of obese females as they participated in a 20-week supported exercise and nutritional scheme. Participation in the scheme was associated with weight loss; however, the primary drivers of weight change for white and African American women differed significantly. Whereas weight loss for obese white women was predicted by changes in Body Area Satisfaction, African American women's weight change was predicted by their changes in Exercise Self-Efficacy. Such differences indicate the different concerns and sources of self-efficacy that are important to behaviour change in this population. Exercise psychology's highlighting of both time-span and cultural influences on the individual demonstrates its important role in supporting effective exercise involvement for obese individuals.

Physical activity, rather than referral for structured exercise, has been a focus of childhood obesity interventions. When promoting physical activity levels in obese children, particular emphasis has been placed on TV viewing. However, rather than perceiving TV viewing as a behaviour to limit, TV viewing has been utilised as a reward and source of reinforcement from a behavioural economic perspective. Recently, Goldfield et al. (2008) demonstrated that when increased physical activity levels (measured with accelerometers) was rewarded with TV viewing time, boys (8–12 years) exhibited positive responses, when compared with

girls, thus highlighting important gender differences in increasing activity levels in obese girls. Given that TV viewing may be a less rewarding stimulus for girls than for boys, approaches to promoting physical activity to children should take into account such gender differences. Such an approach to influencing the health behaviour choices of obese children is more flexible, and potentially more effective in the long term. However, Landhuis et al. (2008) warn that efforts should be aimed at reducing TV viewing habits in childhood, given the associated health impact that persist into adulthood. Recently, Henderson et al. (2010) focused on the use of exercise consultation provided by a physician to increase physical activity participation in obese adolescents. The exercise consultation session was based upon the transtheoretical model (e.g. see Marcus & Simkin, 1994), and physicians were trained only through the review of exercise consultation guidelines set out by Loughlan and Mutrie (1995). This simple, cost-effective and accessible intervention approach resulted in increased physical activity participation and decreased weight loss. Given that youth populations are more likely to come into contact with medical rather than exercise professionals, such intervention training is promising and requires further investigation. Finally, when structured exercise participation is necessary for obese children, tailoring the environment to support enjoyment of the activity or distraction from physiological sensations have been highlighted as key considerations. For example, De Bourdeaudhuij and colleagues (2002) have demonstrated increased treadmill running times when coupled with music being played compared to no-music conditions for obese children on a weight loss programme.

The proposal that exercise prescription interventions should be grounded in theory is not a new (if not effectively practiced) proposal, as the National Health Service (2001) guidelines indicate that exercise referral schemes should be based on theoretical behavioural models. To increase the success of such schemes they should better incorporate motivational systems and support based on sound theory. In particular, the role of exercise psychologists in the design of schemes, initial assessments and during the course of participation appears critical in light of evidence. Indeed, Gidlow et al. (2005) highlight the need for more effective patient profiling on exercise referral schemes in general. SDT is suggested as a key framework for utilisation to foster basic psychological need satisfaction and self-determined motivational regulation (Edmunds et al., 2007), whilst cognitive behavioural strategies should be incorporated throughout the referral process and beyond to support the obese exerciser in long-term behaviour change.

## **The exercise environment**

The exercise environment poses many significant physical, psychological and social challenges to the obese exerciser. Previous work has shown that obese exercisers present better adherence and/or weight loss when participating in home-based rather than facility-based exercise programmes (e.g. Perri et al., 1997; King et al., 2006). However, this most likely reflects the current state of exercise environments rather than the specific efficacy of home-based exercise. Most notably for this report, research points to the social interactions with staff and fellow exercisers as critical exercise environment variables which support exercise behaviour in obese populations. For example, Edmunds et al. (2007) highlight key social interactions throughout the referral scheme as an area of concern. In their study, interactions with staff were regular and supportive early on in the scheme (e.g. an initial

consultation, an exercise induction session), particularly in terms of instructional support. After this, however, support reduced as staff worked with other new referrals as a priority. Social support throughout an individual's behaviour change and maintenance is critical for successful long term adoption. However, Edmunds and colleagues highlight those subsequent interactions later in the scheme as potentially insufficient in both quantity and quality to maintain the positive levels of perceived autonomy support demonstrated during those initial weeks. They go on to suggest that withdrawal of such contact should be made gradually and only in a way to foster effective autonomous motivating characteristics. Balancing this, Edmunds and colleagues also point to the reported connectivity and support from fellow participants as a key experience, and that given the obvious constraints on staff time and resources, systems should be developed to encourage and support interaction between exercisers themselves in the exercise setting. Efforts should be made to provide and develop opportunity for social support from key sources throughout exercise participation initiatives for obese individuals, and although family, friends and co-exercise sources are critical, the interactions with exercise staff have the potential for significant effects.

When considering the above recommendations, research suggests that appropriate social support may be hard to come by from some related professionals. For example, O'Brien et al. (2007) highlighted that physical educators display strong negative prejudice toward obese individuals and that these prejudices appear to be supported by an over-investment in physical attributes and ideological beliefs. When it comes specifically to exercise professionals and other regular exercisers, Robertson and Vohora (2008) demonstrate ominously significant anti-fat biases amongst those individuals in potentially key supportive roles. In a study using English-based exercise professionals and regular exercisers, anti-fat biases were demonstrated by both groups. Of particular concern is that fitness professionals exhibited views that obese individuals are seen as lazy and lacking personal agency and motivation (views similar to those shown to be expressed by other health professionals, e.g. Foster et al., 2003). Furthermore, both fitness professionals and regular exercisers expressed beliefs that obesity was governed by personal control, and that lacking such qualities are key to its development. Such pervasive stigma attached to excessive weight may prove to obstruct attempts to engage with regular exercise by obese individuals, in particular those who have made those steps to take part in regular exercise in exercise settings (often the safest place for structured and supervised exercise participation for such groups). Such anti-fat attitudes may significantly impact upon interactions with fitness professionals, limiting the social support received. Robertson and Vohora (2008) call for further research to ascertain the behavioural consequences of such attitudes.

The health messages delivered by exercise professionals have also been considered. D'abundo (2007) demonstrated that exercise professionals may convey an overly physical health bias when providing health and wellness messages during aerobics classes. Obese exercisers often present with elevated social physique anxiety (e.g. Treasure et al., 1998), and such a physical health bias may inadvertently draw attention primarily onto bodily concerns due to a neglect of psychological, social or experiential benefits. Given the influence exercise professionals have over key psychological variables (e.g. self efficacy, motivation development, understanding) significant efforts should be made at effectively educating these professionals towards more supportive attitudes and approaches. Exercise psychologists have a key role to play in developing and implementing such educational approaches.

As highlighted in the previous section, such a supportive role would involve a significant behavioural and educational approach from exercise professionals that was reflective of the exerciser's needs throughout the time span of their involvement. Pinto and colleagues (1999) indicate a specific need for relapse prevention support provision from exercise professionals being required early on in the obese exerciser's participation. They observed that self-efficacy for exercise increased with participation in a structured exercise programme that resulted in weight loss. However, poor understanding of the benefits of their exercise involvement persevered, and may not develop until successful maintenance has been achieved. As such, whereas confidence building is critical early in the obese exerciser's participation, once their involvement is established, the exercise professional's efforts should be focused on developing a better understanding of the personal benefits of exercise. Indeed, **Annesi** (e.g. 2008) highlights the considerable psychological benefit that can be experienced by obese exercisers with long-term participation (in terms of self-perceptions and self-efficacy), beyond simple energy expenditure. Such understanding supports motivation for future participation. As already highlighted, cognitive behavioural approaches have been shown to effectively support such development when compared to traditional exercise consultation approaches (e.g., see Annesi 2010).

When obese individuals do take up exercise, evidence suggests that significant concerns about their appearance can hinder their adherence. For example, Treasure et al. (1998) highlighted poorer adherence to a walking group for obese women in those participants who exhibited higher levels of social physique anxiety. Ekkekakis, Lind and Vazou (2009) also indicate that obese individuals' social physique anxiety may act as a predisposition to worry about exercise and bodily evaluations, and that it has a detrimental effect upon experiences of pleasure during exercise itself. Obese females have indicated negative evaluation from others as a key barrier to exercising in exercise settings (e.g. Bain et al., 1989). Given that exercise environments have been shown to exacerbate such anxiety through presence of mirrors (Martin Ginis, Jung & Gauvin, 2003) and exercise instructor style (Raedeke, Focht & Scales, 2007; and see discussion of D'abundo, 2007 above), efforts should be made to alleviate such concerns wherever possible. Those settings identified as playing a role in providing obese individuals with exercise opportunities should make specific efforts to develop appropriate physical and social environments. Importantly, for those obese participants who persevere with exercise, improvements in their attitudes towards their own body have been shown to improve (e.g. Collingwood & Willett, 1971). Given their skills and expertise, exercise psychologists have a key role to play in influencing the practice and policy in the development of supportive environments (physical, social and psychological).

## **Exercise characteristics: psychological considerations**

The characteristic of exercise itself pose some key barriers to regular and effective exercise participation for obese individuals. Indeed, given the amount of activity required for these individuals, these barriers may prove to be some of the most significant – but also potentially some of the most addressable. Exercise psychology research has greatly informed our understanding of these factors, and places the profession at a critical position in being able to guide practice and develop understanding of these issues. A body of research directed by Panteleimon Ekkekakis has shed light on the conundrum associated with the largely held

wisdom that exercise makes you feel good – even though few actually do exercise. In particular, this research has shown that exercise can induce positive during-exercise affective responses up to intensities which induce the Ventilatory Threshold (VT), the point at which the increases in carbon dioxide production and resultant respiratory rate are greater than the increase in oxygen uptake), after which affective response become increasingly negative (e.g. Ekkekakis, Hall & Petruzzello, 2004). However, post-exercise, such negative experiences are balanced with a ‘rebound effect’ that results in post-exercise positive affective responses. Such affective responses are thought to be a key mechanism that drives long-term exercise involvement. However, recently Ekkekakis, Lind and Vazou (2009) demonstrated that obese women experience neither the positive affective responses during exercise nor the positive post-exercise responses when completing an incremental treadmill walking protocol, when compared to normal weight and overweight women. As such, this represents a critical problem when attempting to initiate exercise involvement in the obese, and supports research showing that obese individuals exhibit an increased sensitivity to elevations in the intensity of physical activity (e.g. Ekkekakis & Lind, 2006).

The experiences of exercise intensities for obese individuals is such that Ekkekakis warns that it may only prove to reinforce the perception of it being a negative situation to be avoided, a perception further exacerbated by increased social physique anxiety. In their study Ekkekakis and colleagues (2009) highlight the relative intensities that the obese women experienced in their walking protocol as problematic. These obese women had already reached 61 per cent of their  $VO_2$  peak (their maximum capacity to transport and utilise oxygen during exercise; an indication of their physical fitness) after walking for two minutes at what was intended to be only the warm-up (2.5 mph). Mattsson et al. (1997) also demonstrated that their sample of obese women reached around 56 per cent  $VO_2$  peak after walking at a self-selected ‘comfortable’ speed (2.65 mph, 1.18 m/s) for only 4 minutes. In both cases, such intensities are associated with rapid development of negative experiences. Critically, Ekkekakis and colleagues (2009) highlight the subsequently obvious problems associated with getting these individuals to regularly exercise at the recommended moderate intensities for the relevant durations (60–90 min) for weight loss.

This consideration of affective responses to exercise of obese exercisers is given further attention by the recent study of Carels et al. (2007) using 51 obese adults enrolled on a 16-week behavioural weight loss programme. Balancing out the concerns of Ekkekakis, Carels and colleagues utilised this naturalistic exercise participation setting to demonstrate that greater reported exercise intensity and duration resulted in positive mood enhancement post-exercise. Of further interest, those obese participants who adhered through until the last four weeks of the scheme reported more positive pre-exercise states when compared to their first four weeks. Obese exercisers reported more positive evening mood scores on exercise days when compared to non-exercise days. Finally, obese exercisers were less likely to exercise on days when they reported significant negative morning mood states when compared to days when morning mood states were more positive. Carels et al., (2007) highlight important clinical implications of their findings, in particular that daily mood variations may play a significant role in exercise participation in obese individuals. But given the demonstrated positive mood benefits of exercise shown for these participants, it is suggested that obese individuals should be educated on the potential mood enhancing effects of exercise participation. Likewise, that obese exercisers

showed significant mood improvements related to the length of participation, they should also be educated that their confidence and enjoyment of exercise will develop.

As such, in contrast to the prescriptive intensities of Ekkekakis et al., (2009), Carels et al. (2007) naturalistic study suggests that when exercising in such schemes, positive affective responses can be induced, which can then impact upon exercise behaviours. However, the concerns of Ekkekakis et al., (2009) remain critical to the effective formulation of effective exercise protocols for obese individuals. Crucially, they highlight the delicate balance between exercise duration and intensity when attempting to develop exercise protocols for the obese which raise caloric expenditure to the required levels but don't exaggerate negative affective responses or result in overly lengthy exercise sessions. Highlighting the importance of maintaining participation, Acevedo et al. (1997) have demonstrated that increases in aerobic capacity obtained by obese females over an eight-week aerobic training programme also resulted in significant improvements in affective responses during a graded treadmill test to exhaustion. Exercise psychologists have a potentially influential role to play in informing the exercise prescription process to engender positive psychological experiences. But without such consultation, and an over reliance on physical and medical approaches to developing exercise regimes, long-term exercise participation and enjoyment for obese individuals is likely to be limited.

## Conclusions and suggestions

Exercise psychology research on obese individuals continues to develop at pace, and critical areas are highlighted in this review of recent work. It is clear that for obese individuals to participate in long-term exercise regimes, significant barriers must be addressed if the perpetuation of the vicious cycle is to be broken for this psychologically challenging 'special population' (Ekkekakis, et al., 2009). Exercise psychology has a key role to play in influencing understanding, intervention and policy regarding obesity. At present the following suggestions can be made, which specifically highlight key roles for exercise psychologists:

- Exercise environment characteristics (both physical and social) should be addressed so as not to exacerbate social physique anxiety, and to incorporate effective systems of social support throughout all stages of exercise adoption and maintenance.
- Exercise professionals may require more effective training and support if they are to work with and support obese clients (e.g. development of supportive attitudes and health message provision). This may require collaboration between exercise providers, other key health care professionals and exercise psychologists.
- Health care professionals can be trained in cognitive behavioural approaches to promoting exercise and physical activity behaviour change, and this may be an effective way of reaching specific populations (e.g. obese adolescents).
- Interventions should be tailored to consider lifespan variables and gender as critical considerations. They should aim to address individual's social physique anxiety and exercise cognitions through the use of individually tailored cognitive behavioural approaches to supporting exercise participation.
- Exercise mode, intensity and duration should be tailored with enhancing positive affective responses in mind – rather than simply physiological outcomes.

- Exercise referral schemes should be based on sound theoretical principles of motivation and support, rather than from physiological and health outcome perspectives. Support should not only be provided throughout scheme participation; long term follow-up and support are required to ensure continued maintenance of exercise behaviours.
- Obese exercisers should be effectively educated as to the positive psychological benefits accrued through regular exercise participation.
- Exercise psychologists can play a critical role in guiding exercise health behaviour change initiatives at a number of levels of intervention.

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# Applied Psychology and Obesity Management

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## Lisa Newson & Beverley Flint

*The following chapter highlights the role of applied health psychology within the field of obesity management. The chapter has been written by a health psychologist who specialises in obesity management and public health approaches to obesity, and a clinical psychologist with an interest in obesity. Both authors work therapeutically with overweight and obese clients, and therefore this chapter offers a practical view on the management of obesity.*

### Introduction

According to a World Health Organisation (WHO, 2000) report on obesity, the classifications for weights based on the body mass index should be as follows:

- <18.5 BMI is considered underweight;
- 18.5–24.9 BMI is normal weight;
- 25–29.9 BMI is known as grade 1 overweight;
- 30–39.9 BMI is known as grade 2 overweight; and
- over 40 BMI is grade 3 overweight.

In common terms, grade 1 is known as **overweight**, grade 2 is known as **obese** and grade 3 is known as **morbidly obese**.

Epidemiological surveys in England show that the prevalence of obesity, defined as a body mass index (BMI) of greater than 30 kg/m<sup>2</sup>, is increasing. The Foresight report (Foresight, 2007) predicted that if current trends continue, 60 per cent of men, 50 per cent of women and 25 per cent of children in the UK will be obese by 2050 (and a further proportion of the population would be classed as overweight). Worryingly, the House of Commons Health Select Committee (2004) states that most overweight or obese children become overweight or obese adults; overweight and obese adults are more likely to bring up overweight children. Children from families where at least one parent is obese are at greater risk, and a child who has two overweight or obese parents is six times more likely to be overweight or obese than a child with two healthy weight parents. Current trends indicate that without clear action, these figures will rise to almost nine in ten adults and two thirds of children by 2050 and Britain will become a mainly obese society (Foresight, 2007).

A wide range of serious co-morbid conditions are associated with being obese, such as hypertension, diabetes, coronary heart disease (CHD) and stroke. In addition, obesity will adversely affect an individual's quality of life both directly but more importantly through the higher risk and incidence of disease. The cost burden imposed on the NHS as a consequence of obesity has been estimated at £479.4 million (National Audit Office, 2001)

It is paramount that the population as a whole are encouraged to adopt healthy lifestyle behaviours and prevent the onset of obesity. However, when obesity is already established, appropriate interventions and services must be available to ensure that individuals can be supported to reduce their weight, and work towards becoming a healthy weight.

Ultimately the aim of weight loss and weight maintenance interventions should be to:

1. Improve pre-existing obesity-related co morbidities.
2. Reduce the future risk of obesity-related co morbidities
3. Improve physical, mental and social well-being.

In relation to point 3 above, it is important to remember that **obesity is as much a psychological issue as a physical condition**. Psychological issues can be linked to the cause or consequence of obesity. Whichever, the former or latter, psychological difficulties can affect the ability to manage weight. It is therefore paramount that psychological techniques and therapies are integrated in to weight management pathways and are utilised to support individuals and populations to maintain a healthy weight.

## Causes of obesity

Obesity is a condition where an individual's body fat stores are enlarged to an extent that impairs health. Some people are more susceptible to weight gain for genetic reasons. Also a broad range of environmental, social and individual lifestyle factors interact to contribute to causing obesity. However, the main reasons for increasing obesity in the population are the increased consumption of high fat, high sugar foods, increasing levels of alcohol consumption and the reduced levels of physical activity throughout the population. The core of the obesity problem is simple – we eat too much and undertake too little physical activity. The solution is more complex. Due to the acknowledged complexity of obesity, the problem will not be reversed by any single approach. A successful strategy will need to change many aspects of people's lives and the environment which encourages obesity. Many of the causes of obesity are woven into the fabric of modern lifestyles. The way forward is to help people make healthy choices from childhood through to old age. The term 'obesogenic environment' refers to the role environmental factors may play in determining both energy intake and expenditure. It has been defined as the 'sum of the influences that the surroundings, opportunities or conditions of life have on promoting obesity in individuals and populations' (Egger & Swinburn, 1997). The term embraces the entire range of social, cultural and infrastructural conditions that influence an individual's ability to adopt a healthy lifestyle.

## Impact of obesity

Preventing and treating obesity and the direct and indirect consequences of being obese are complex. For example, it is estimated that 9 per cent of coronary heart disease could be avoided if all those who are sedentary and lightly active became more moderately active, 5 per cent of hypertension is linked to people who are overweight, coronary artery disease (CAD) and stroke has an increased risk 2.4-fold in obese women and two-fold in obese men under the age of 50 years, and 10 per cent of all cancer deaths among non-smokers are related to obesity. Adult obesity causes a reduced life expectancy of 8–10 years, mainly through those diseases. It can also impair a person's well-being and quality of life. (Department of Health, 2001; 2008a). Obesity is associated with the four most prevalent disabling conditions in the UK (arthritis, mental health disorders, learning disabilities and back ailments). Amongst the obese adult population the odds of having a disability is

increased compared with the healthy weight population. There is twice the risk of having a physical disability, 84 per cent increased risk of musculoskeletal illness, 35 per cent increased risk of back problems, 3.5 times the risk of developing osteoarthritis and 4 times the risk of other arthritis and 2.5 times the risk of having a disability requiring personal care.

The rise in childhood obesity has the potential to reverse the trend in life expectancy. For the first time in two centuries, children may not live as long as their parents (Foresight, 2007). There is strong evidence to associate childhood obesity with increased risk of: cardiovascular disease; raised blood pressure; adverse lipid profiles; adverse changes in the heart; and over-production of insulin. Overweight and obesity in childhood are known to impact on the psychological well-being of children, with many developing poor self-esteem (Dietz, 1998; Sheslow et al., 1993). Children who are overweight and obese are likely to continue to be overweight and obese as adults, with weight gain increasing with age. Obesity and the associated illnesses put pressure on families, the NHS and society more broadly and, without action, the cost to society is forecast to reach £50 billion per year by 2050 (Foresight, 2007).

## ‘Risk factors’ of obesity

The basis of obesity usually lies in some combination of environmental, psychosocial and genetic or biological attributes.

Incidence is higher in certain sub-groups; it may be that weight management interventions need to consider these factors when designing their services and, in addition, it may be an indicator for additional psychological support.

**Adults:** For both men and women, being ‘most at risk of obesity’ has been found to be associated with:

- Deprivation (especially for women; Health Survey for England, 2008).
- Age.
- Being an ex-cigarette smoker.
- Self perceptions of not eating healthily.
- Not being physically active.
- Hypertension.
- Income, with a positive association for men and a negative association for women.
- Additionally, among women only, moderate alcohol consumption was negatively associated with being at risk.

**Childhood:** Survivors of childhood cancers, some ethnic minority groups (e.g. southern Asian populations), children or young persons who have one or more obese parent, looked after children, and young persons who experience learning difficulties.

**Deprivation:** The Foresight report (2007) predicted that those who are already disadvantaged are more likely to suffer obesity and the considerable problems associated with it. This disparity is most evident among women and children: 32 per cent of women in the poorest fifth of English households are obese compared to only 19 per cent of women in the richest fifth; while children from the lowest income households are almost twice as

likely to be obese than those from the highest income households. Studies consistently show that residents of neighbourhoods characterised by socio-economic disadvantage tend to exhibit higher rates of obesity. People from the poorest households are least likely to meet the recommended levels of physical activity. They are also the most likely to be sedentary – achieving less than 30 minutes of physical activity per week. For example, 44 per cent of women and 34 per cent of men in the poorest households in England are sedentary, compared to only 33 per cent of women and 28 per cent of men in the wealthiest households. People living in deprived areas are also less likely to meet physical activity recommendations. These low physical activity levels are a significant cause of health inequalities, with inactive groups suffering poorer health and living shorter lives than the general population.

In addition to the independent risk factors above, specific psychological risk factors may also increase the onset of obesity: Individuals who suffer from psychological disorders (e.g. depression, anxiety and eating disorders) may have more difficulty controlling their consumption of food, exercising an adequate amount, and maintaining a healthy weight.

Food is often used as a coping mechanism by those with weight problems, particularly when they are sad, anxious, stressed, lonely, and frustrated. In many obese individuals there appears to be a cycle of mood disturbance, overeating and weight gain. When they feel distressed, they turn to food to help cope, and though such comfort eating may result in temporary reduction of their distressed mood, any weight gain as a result of this overeating contributes to a negative cycle of behaviour.

Other risk factors include problematic eating behaviours such as:

- ‘mindless eating’;
- frequent snacking on high calorie foods;
- overeating;
- night eating; and
- binge eating disorder (BED).

## Evidence of what works

**Adults:** Information on the effectiveness of different interventions for clients has become available only relatively recently. Although there are gaps in the evidence, a report by the National Institutes of Health (1998) identified a number of potentially effective weight loss interventions:

1. Diet
2. Exercise
3. Behavioural strategies
4. The preceding three in combination where possible
5. Limited use of pharmaceutical interventions in conjunction with strategies to change lifestyle
6. Surgery for selected morbidly obese patients.

Recommendations also include the use of maintenance strategies such as continued therapist contact and prevention strategies such as screening and counselling. Guidelines

suggest that weight loss programmes should aim initially to reduce body weight by 10 per cent from baseline, at a rate of 1 to 2lb a week. Exercise should be encouraged for all overweight clients, including those physically challenged, by promoting exercise designed to achieve increased energy expenditure rather than aerobic fitness.

**Children:** The importance of establishing healthy behaviours in childhood is well established, as is the idea that parents and carers are important role models for children. Therefore, parents and carers should be encouraged and supported to adopt good food and physical activity practices in relation to weight, e.g. the encouragement of active play, undertaking physical activity as a family, reducing sedentary activities, families regularly eating meals together that are healthy and the correct portion size.

The prevention, development and treatment of childhood obesity is complex, and risk factors related to developing obesity start from the initial decisions parents make before and following birth. For example, children who are breast fed up to six months of age have a lower risk of developing obesity compared to those who are bottle fed or weaned before six months (DoH, 2008a). Prevention of childhood obesity must encourage families, schools and communities to adopt healthy lifestyle habits, and support children to make healthy eating and activity choices. Interventions and treatment for childhood overweight and obesity should address lifestyle within the family and in social settings, offering frequent and long-term support and advice (DoH, 2008 a & b). Whilst this chapter does not discuss the psychological treatment of childhood obesity, it must be noted that psychologists can provide a range of interventions that may enhance and support those children and families attending treatment services. Psychological input may be integrated into the intervention delivery such as adopting motivational interviewing or brief solution focused therapy techniques. Family and art therapy may also be included within the multi-component intervention. Psychologists may need to work with families on acceptance towards the ‘diagnosis’ of childhood obesity, prior to engaging with weight management interventions. The psychologist’s remit may be linked to improving a child’s self-esteem and confidence, management of anxiety and coping strategies (linked to bullying), and/or the child may experience behavioural withdrawal or become challenging. Likewise it may be that family support or parents may benefit from a therapeutic environment with a psychologist, so to establish how they can support long-term behavioural changes in promoting healthy lifestyles.

## Benefits of weight loss

It makes sense that weight loss in obese and overweight adults should be encouraged, bringing with it a variety of significant health benefits. Surprisingly, marked benefits to an individual’s health can be demonstrated with only a modest body weight loss of 10 per cent, including more than a 20 per cent reduction in total mortality (Jung, 1997). Relevant guidelines (e.g. NICE, 2006; SIGN, 2010), acknowledge the complexity of treating obesity, in both children and adults, and reference is made to the adoption of psychological input and adopting behaviour change techniques. There has been little guidance on specifically what and why psychological input should be included in relevant treatments and services. As such even though research evidence highlights the psychological causes/consequences of obesity, often treatment services are designed around eating behaviour and exercise

behaviour, by relevant professionals such as dietitians and exercise physiologists, and then psychological input, interventions or services are added on. It would be more optimal if the design and core of weight management interventions were based upon evidence-based psychological interventions from the beginning. Whilst it is acknowledged that psychologists are an expensive commodity within the NHS, the level of expertise and applied therapeutic knowledge that can be integrated into the services should be encouraged so as to improve the service outcomes, working towards the ‘ultimate aim of weight loss interventions’ as highlighted above and therefore supporting the weight loss goals of the individuals.

## **Applying psychology to adult weight management: Psychological assessment (what competencies are needed; what assessment should include)**

Cooper et al. (2003) provide a very comprehensive assessment checklist that provides a useful framework on which to base an assessment. Current eating habits, weight history (including weight cycling), reasons for weight loss, and goals for treatment can form the basis for ‘setting the scene’. Borrowing techniques from the Motivational Interviewing ethos can prove helpful here, and throughout treatment. Checking with the client how important weight loss is to them at assessment may prevent clinicians from making the assumption that weight loss is a priority for them at that time. Assessing the willingness to engage in *specific* behaviours may also serve to ensure that a patient is not agreeing to something they are not ready for (Verheijden et al., 2005, as cited in SIGN, 2010). Consideration should be given to who in the household is responsible for food shopping/preparation, as involving family members/carers in the treatment may be pertinent.

Due to the high prevalence of anxiety and depression in the overweight population (e.g. Stotland & Larocque, 2004; Davis et al., 2005; Greenburg et al., 2005), mental health screening should be included within a weight-management assessment. This may indicate that a more thorough mental assessment is necessary. This can then serve to ensure that risk has been assessed, but also to ascertain if a co-morbid mental health condition, including personality disorder, has been identified and/or treated. Similarly, the presence of an eating disorder must also be screened for, as weight loss treatment is contraindicated in the eating-disordered.<sup>1</sup> As cited in the SIGN guidelines, two cross-sectional studies have suggested that the prevalence of Binge Eating Disorder (BED) in the community is approximately 3 per cent, compared with 30 per cent in those seeking weight management services (Spitzer et al., 1992 & 1993). The particular weight management service level agreement may determine if a mental health condition or BED (as opposed to occasional binge eating episodes) can be treated within the service. In reality, the presenting problems often associated with being overweight/obese and co-morbid mental health problems can rarely be neatly separated. For example, behaviours associated with being overweight/obese, such as comfort eating, may be a safety behaviour in the presentation of anxiety and/or depression. The development of such safety behaviours may have a basis within a complex history that may include abuse. If a client has a moderate to severe

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<sup>1</sup>Reduction in compensatory behaviour and binge eating is the intervention goal, rather than weight loss (see Brownley et al., 2007).

mental health problem, including an eating disorder that may be better treated by a specialist mental health/eating disorder service than the weight management service must consider this.

#### Assessment could include:

- Behavioural
  - Previous attempts at weight management
  - Eating and dietary styles (including binge, night-time & over eating)
  - Assessment of lifestyle behaviours/sleeping patterns
- Cognitive functions
  - Understanding of psycho-education material
  - Understanding of weight management interventions benefits/risks and limitations (lifestyle; pharmaceutical; surgical procedures)
  - Coping skills, emotional barriers
- Psychopathology
- Co-morbidities and physical health
- Developmental issues
- Current life situations (stressors; work-life balance; social support)
- Motivation and expectations

Following this thorough assessment, should weight stabilisation/loss be the goal of treatment, a large component of treatment is likely to involve making behaviour changes. The more complex clients may require in-depth assessments and individualised treatment aimed at addressing symptoms of anxiety and depression. As discussed above, it may also be necessary to measure risk, liaise with other services and in some instances make appropriate referrals to other specialist services. Clinicians with a high level of training in conducting and supervising psychological assessments and treatments will have the relevant competencies.

## Appropriate therapeutic approaches

When engaging in weight management services, clients are typically faced with initial dietary restrictions, permanent changes in eating and dietary habits and behaviours, altered body sensations and experiences, shifting body image and self-care behaviours, new cognitions and feelings, and an emerging and different lifestyle. Individual or group-based psychological interventions should be included in weight management programmes. The level and intensity of psychological input will depend on the complexity of the intervention and client need, more complex clients will require increased input. Psychological interventions should be tailored to the individual and their circumstances.

The literature particularly focussing on psychological interventions for weight loss in adults focuses on behavioural and cognitive-behavioural treatments. The Cochrane Review authors' conclude that behavioural and cognitive-behavioural interventions, when combined with dietary and exercise strategies, are particularly effective in enhancing

weight reduction. Community-based treatment for weight-loss, which is likely to include making changes to activity levels, diet, unhelpful safety behaviours, are aimed at equipping the client to make changes to their lifestyle that are realistic and maintainable. Indeed, addressing the importance of weight maintenance and relapse prevention should be an integral part of weight-loss treatment, as suggested by Cooper et al. (2003). As cited in the SIGN guidelines, the range of psychological interventions and strategies includes:

- self monitoring of behaviour and progress;
- stimulus control;
- cognitive restructuring;
- goal setting;
- problem solving;
- assertiveness training;
- slowing the rate of eating;
- reinforcement of changes;
- relapse prevention; and
- strategies for dealing with weight gain.

The following strategies may also prove useful:

- behaviour chain analysis; and
- identifying and addressing ambivalence

In addition, the 2006 NICE guidelines *Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children* suggest involving family members in behavioural treatment programmes, as this ‘is generally more effective for weight loss than targeting the overweight individual alone’ (as cited in SIGN, 2010, p.27).

In **classical conditioning**, eating behaviours are associated with other activities. The behaviours become conditioned to occur together, as when a person snacks while watching the TV. If these two behaviours are paired repeatedly, they become so strongly associated with one another that turning on the TV alone triggers the need to eat. Behavioural intervention involves identifying and extinguishing the inappropriate psychological or environmental triggers and cues.

**Operant conditioning** uses reinforcement and consequences. A person who uses food as a reward or to temporarily reduce stress will associate food with a more pleasurable state, which makes it more likely to become a repeated behaviour. These basic psychological approaches are commonly integrated into weight management services and are often adopted by other non-psychological health professionals such as dietitians, exercise physiologists, health development workers and others.

Within NHS weight management programmes, many integrate techniques as listed above, which are based upon basic behaviour change models such as *classical* and *operant conditioning*.

However, it is important to recognise that individuals who require weight loss may have already experienced several weight management programmes, of which, many will have integrated basic cognitive and behavioural techniques via psycho-educational methods. As individuals repeat weight loss attempts, by implementing basic behaviour change techniques, the complexity of their underlying obesity issue may increase (in this way we can consider a client to be non-complex, requiring weight management intervention based upon basic psychological behaviour change techniques, or complex, has experiences of weight cycling, diagnosed mental health issues, co-morbidity, those who are disengaging with services, learned helplessness, etc.). In these instances, for a 'complex' client, the role of the psychologist may be to consider more in-depth structured therapy to either:

- 1) address an underlying cause of obesity (anxiety, mental health issue, etc.); or
- 2) to integrate more through therapeutic approaches to enable the client to engage and adhere to weight loss interventions.

During assessment and throughout treatment, consideration must be given to the client's possible fluctuating ambivalence and motivation. Cooper et al. (2003) suggests addressing this directly by exploring the client's concerns and reservations. Listing the pros and cons of treatment can prove useful, and this list can act as a reminder of the reasons to commit to prolonged lifestyle changes at times when motivation is waning.

Another useful resource is the self-help book *Overcoming weight problems: A self-help guide using cognitive behavioral techniques* (Gauntlett-Gilbert & Grace, 2005). Written by a clinical psychologist and dietitian, the book suggests some useful exercises aimed at addressing motivation whilst describing behaviour change techniques that may prove helpful in the client's weight loss endeavour.

For the complex client who may require more in-depth therapy to address issues associated with anxiety or depression, refer to the recommendations in the relevant NICE guidelines.

## Length of treatment

Jeffery et al. (2000) suggest that weight loss interventions can often result in quick weight loss at first, with the greatest loss after six months (as cited in Turk et al., 2009). This weight is often regained thereafter. Clients are attempting to change habits that they have perfected over a lifetime. Regular support, with sessions spread over a substantial period of time, is more likely to result in ongoing lifestyle changes that should result in weight loss and maintenance. Cooper et al. (2003) suggest an intervention of 24 sessions spread over 44 weeks. Other successful outcome studies reported treatment durations of 12 months or longer (Shaw et al., 2005, as cited in SIGN, 2010). Turk et al.'s 2009 review of weight-loss maintenance RCTs suggest that weight loss maintenance, or continued loss, can be achieved with maintained support from weight loss services. The authors conclude that maintenance treatment should include focus on dietary modification, adherence to physical activity, continued participant contact, problem-solving therapy, and for some, continued use of orlistat.

## Prescribing of obesity medication

As with surgery, the use of pharmacological interventions is becoming an increasingly common treatment for obesity. The Nice guidelines (NICE, 2006) specify that the prescription of Orlistat for adults should only be considered after dietary, exercise and behavioural approaches have commenced and are being evaluated. Prescription is applicable for individuals of  $\geq 30$  BMI ( $\geq 28$  with physical co-morbidities). Orlistat is not advocated as a stand-alone treatment, and NICE guidance sets out that information, support and counselling on diet, activity and behavioural strategies should also be provided by appropriate health care professionals. Prescription should continue past three months, only if a weight loss of 5 per cent of baseline weight has been lost. It is important that when clients are prescribed Orlistat that they have clear support and guidance on adherence to medication, and are able to, in conjunction with the prescription, make appropriate lifestyle changes. Psychologists can offer support to individuals to help them engage with adherence, discuss any pre-conceptions about taking a 'miracle weight loss drug' and ensure that their client is motivated, and empowered to tackle their weight management issues.

## Surgery

Non-surgical interventions are the cornerstone of overweight and obesity treatment. The intensity of management for overweight and obesity will depend on the level of risk of health problems and the potential to gain benefit from weight loss. If weight loss relative to trend remains constant for five years post-intervention before returning to baseline, the cost per quality adjusted life years (QALY) in the best-performing non-pharmacological studies ranges from £174 to £9,971. At the current time, within the investment of obesity, the largest cost is accountable to bariatric surgery.

Obese individuals have typically made multiple attempts to lose weight, with little or no success. Their failed attempts result in discouragement, frustration, hopelessness and learned helplessness about the prospect of losing weight in the future on their own. For this reason, many turn to bariatric surgery as a last resort. Not surprisingly, significant weight loss confers psychological as well as medical benefits, with improved mood, self-esteem, motivation, and relationships (Herpertz et al., 2003).

Clients contemplating bariatric surgery should undergo pre-surgery psychological evaluation along with monitoring and addressing of psychological and behavioural factors pre and post-surgery (National Institutes of Health Consensus Panel, 1992). There are two reasons for this:

- 1) to identify individuals who have significant psychopathology that may put them at risk for unsuccessful surgery; and
- 2) to pre-select individuals who are psychologically stable and may have a great deal of success with bariatric surgery.

The pre-surgery evaluation should address characteristics of the client such as:

- 1) awareness of the procedure and capacity to give informed consent;
- 2) motivation for surgery;

- 3) awareness of and capacity for compliance with post-surgery restrictions and behaviour change;
- 4) current stressors, behavioural and eating practices that might be barriers to the life style changes that are necessary for a successful outcome; and
- 5) current psychological wellbeing and stability, self efficacy, resiliency and coping resources to manage stress.

A psychological assessment (LeMont et al., 2004<sup>3</sup>) for bariatric surgery candidates should conclude one of the following outcomes:

- (1) No psychological contraindication for surgery.
- (2) Psychological or psychiatric treatment required prior to surgery-reassessment required.
- (3) Psychological contraindication for surgery.

Psychologists who specialise in working with obese individuals can offer patients psycho education regarding the post-operative diet and emphasise the importance of behaviour change for weight loss and maintenance post-surgery. In particular the role of the psychologist here can often be to remind the client that the surgical procedure changes a physical component of their stomach, and so the will power, motivation and control required to change behaviour to eat healthily, exercise and therefore lose weight will remain an individual action and not become a biological passive result.

Emotional struggles are common post-surgery. Clients sometimes feel their weight loss is less than they anticipated and it takes longer. Frustration can lead to lack of motivation and difficulty adhering to the post-operative diet (with some individuals over consuming or finding alternative ways to consume highly calorific foods). Psychologists can assist these clients via cognitive restructuring to help them rationally evaluate their progress, as well as behavioural techniques to aid them in making healthy behaviour changes. Additionally, some individuals who struggled with emotional eating before surgery may return to similar behaviours post-surgery, resulting in less than optimal weight loss.

Another way clients may struggle emotionally post-surgery is by feeling uncomfortable with their 'new look' and body image after losing a significant amount of weight. With rapid weight loss there often is sagging skin and many patients cannot afford cosmetic surgery to correct this. It is not uncommon for individuals to discover body image dissatisfaction in a new way, which unfortunately may result in issues with their relationships and intimacy. These clients may require psychological assistance to work through their body image, emotional, and/or relationship issues. Weight loss surgery is discussed in greater depth in the next chapter.

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# Weight Loss Surgery

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## Emma Kewin and Susan Boyle

With obesity levels continuing to rise and described as a ‘global epidemic’ (WHO, 2000) coupled with evidence that weight loss surgery is the most effective intervention for long-term weight loss in those with morbid obesity (Togerson & Sjöström, 2005), the NHS have been increasing access to this treatment. National guidelines NICE (2006) and SIGN (2010) have endorsed this intervention due to the significant weight loss bariatric surgery can achieve and the subsequent improvement in physical co-morbidities and mortality rates (Sjöström et al., 2007).

Many people attending weight loss surgery clinics report experiencing significant amounts of prejudice about their size. They often have attempted numerous diets, describe an intense sense of failure, extreme levels of self-loathing and are highly self-critical. Very commonly, such individuals berate themselves for having gained weight and allowing themselves to ‘get like this’. Many people seek weight loss surgery (WLS) as a last resort, but some have had to persevere to be referred to specialist clinics (where they are available), as well as deal with the criticism that they are ‘cheating’ for wanting a ‘quick fix’, from friends, family, commercial slimming groups and even some health professionals. Within healthcare services we are not exempt from the prevailing attitudes in our society. Members of staff unused to working with this client group can also reflect such prejudicial views and blame the person for draining the resources of the NHS, etc. This level of critical thinking has been reported in studies examining attitudes to obesity and is often evidenced in the tabloids, serving to reinforce that the obese person is personally responsible for their own state and is therefore ‘blamed’ for their weight. Often, there is failure to acknowledge biomedical, psychological and societal factors that have a contributing role in obesity, such as genetic factors and the impact of the obesogenic environment in which we live (Sogg & Mori, 2008).

As WLS has increased in the UK, psychologists are coming together nationally to discuss the complex nature of working with those who are severely overweight and having surgery. This paper provides a brief outline of some of the research and challenges identified in working with this patient group. What is clear from the literature and from a clinician’s viewpoint is the importance of patient-centred care and a multi-disciplinary team approach within bariatric services.

## What is Weight Loss Surgery (WLS)?

Bariatric operations are major gastrointestinal interventions, which alter the capacity and/or the anatomy of the digestive tract causing restriction and/or malabsorption of food. There are two types used mainly in the UK:

- **Restrictive surgery** – laparoscopic adjustable gastric band (LAGB)
- **Combined restrictive and malabsorption surgery**, a Roux – en – Y gastric bypass.

There are other types of surgery, such as Vertical Banded Gastroplasty, Biliopancreatic Divisions, with or without a Duodenal Switch and many more. According to Kral (1995), there are as many as 21 types of surgery but all of these tend to be used less commonly than the two main types mentioned above.

## Who is it for?

The National Institute for Health and Clinical Excellence (NICE) suggests that WLS should be considered for people with severe obesity if:

- They have a body mass index (BMI) of  $40\text{kg}/\text{m}^2$  or more or they have a BMI of between  $35\text{kg}/\text{m}^2$  and  $40\text{kg}/\text{m}^2$  and other significant disease (for example, diabetes, high blood pressure) that may be improved if they lose weight.
- All appropriate non-surgical measures have failed to achieve or maintain adequate clinically beneficial weight loss for at least six months.
- They are receiving or will receive intensive specialist management.
- They are fit and able to have surgery.
- They commit to the need for long-term follow-up.
- Bariatric surgery is also recommended as a first-line option (instead of lifestyle interventions or drug treatment) for adults with a BMI of more than  $50\text{kg}/\text{m}^2$  in whom surgical intervention is appropriate' (NICE 2006).

NICE (2006) guidelines suggest that people with severe obesity having surgery should have all options discussed with them, outlining all the costs and benefits of WLS, including long-term implications, and risks, such as complications and mortality. This should enable them to make an informed decision. Assessment should also be made to consider any obvious physical or psychological reasons why a person could not adhere to the changes required to benefit from WLS, namely dietary changes.

It is important to note that whilst NICE recommends the BMI criteria of 40 plus or 35 plus co-morbidities (in Scotland SIGN state BMI  $35\text{kg}/\text{m}^2$  or above and the presence of one or more severe comorbidities) a large number of Health Boards are not compliant with this criteria, increasing the criteria to BMI above 50 or adopting other criteria based on which comorbidities have to be present for the patient to be eligible. The reasons for this increase are linked primarily to financial resource to support the procedures, even though the evidence suggests that bariatric outcomes may be less beneficial for those with higher BMIs (Chevallier et al., 2007; Ma et al., 2006). This has implications for community management of obesity, for if many people who are eligible for surgery (based on criteria recommended by clinical guidelines) are not offered it due to the selection criteria of their local Health Board then their care has to be provided at a community level. Given that increased obesity threatens many aspects of health and well-being the overall costs, including wider social care, can be significant.

NICE and SIGN (2010) emphasise a multi disciplinary team approach when assessing patients, so that people have access to specialist health care professionals – dietitians, specialist nurses, psychologists, physiotherapists, etc. – as well as physicians and surgeons, pre and post operatively. According to national guidelines the benefit of WLS is that it can help people to achieve long-term weight loss and lowered overall mortality, as a

consequence of this weight loss. It can also help stop the development of new co-morbid conditions and lower healthcare requirements (and associated costs) after surgery. For those centers who are not able to provide comprehensive multi-disciplinary long-term follow-up then this should be arranged in local healthcare teams and good liaison between surgical and local teams should be a clear part of the care pathway.

## How successful is WLS?

WLS has become increasingly popular, with rates of severe obesity rising and non-surgical interventions proving to be much less effective, with many regaining much of the weight lost overtime (Sogg & Mori, 2004). Surgery is an invasive intervention which can help people to lose and maintain weight loss. The goal is the amelioration or cure of associated co-morbidities with this reduction in weight. There is now an expanding literature supporting the success of this intervention. For example, the amount of excess body weight loss following a gastric bypass is typically between 50–65 per cent at two years post operative and 40–50 per cent of excess body weight lost by restrictive procedures like the LAGB (Sarwer et al., 2004). Sjöström et al. (2007) report on the results from the longitudinal Swedish Obesity Study (SOS), concluding that WLS remained an effective treatment for continual weight loss over time, and leading to a clinically significant reduction in co-morbidities. In a review of the outcome research pertaining to WLS, Ogden, Clementi and Aylwin (2006) conclude that surgery also improved quality of life and psychological functioning.

The above and other such findings have been replicated and well documented in the academic journals. In addition the media has focused on this issue, with popular magazines and newspapers frequently running articles on individual success stories. This accounts for the observation that individuals attending WLS clinics have such high expectations about a procedure that they believe will help them. Clinical experience suggests some people often hold beliefs that WLS will be a ‘magic cure’ to help them gain control of their weight and that other areas in their life will ‘fall into place’ as a consequence.

However, not all patients will benefit from WLS to the same degree. Sarwer et al. (2004) report that up to 20 per cent of people fail to achieve significant weight loss after surgery and that the variation in weight loss success is due to the interplay between surgical, dietary and psychological variables. Several studies have found that younger age, lower BMI, male gender, not having diabetes and greater surgical experience predicts better outcomes (Chevallier et al., 2007; Ma et al., 2006). However these factors do not explain all of the variance associated with outcome and it is not uncommon for some weight regain to occur over time. In terms of psychological factors Saunders (2001) states that for some individuals the weight regain is more pronounced and due to a disturbed eating pattern. This may be a resurgence of pre-operative problems although this is difficult to predict pre-operatively.

Although overall mortality is lower (29–40 per cent lower) in the seven years post surgery in patients receiving bariatric surgery compared with BMI matched controls who did not receive surgery (Sjöström et al., 2007; Adams et al., 2007), when the specific cause of death is examined the results indicate that there is a lower mortality from CVD and cancers, but not for all other causes. Bariatric surgery candidates actually have a 58 per cent higher mortality from non-disease causes such as accidents; poisoning and suicide in the seven

years post surgery than severely obese individuals from the general population (Adams et al., 2007). The reason for this higher mortality in the post-surgical group is unclear but some evidence suggests that as those who seek bariatric surgery have a different baseline level in certain psychological factors, for example higher levels of anxiety or mood disorders, compared to those with matched levels of obesity that do not seek surgery, then this is a likely predisposing factor (Karlsson et al., 2007). Although higher levels of psychological problems should not automatically preclude candidacy for WLS, there is a concern about a patient's ability to care for them self post-surgically. A preoperative psychological assessment would assess the person's ability to participate fully in their treatment and ensure appropriate supports are in place for those exhibiting high levels of psychological distress before and following the surgery.

## What psychological factors are predictive of outcome after WLS?

Determining the psychological factors that may improve or impede a good WLS outcome is critically important, yet is challenging. Although there is an emerging literature looking at predictive factors of success following WLS, the results are often contradictory and far from conclusive. There is still no general consensus about what psychological factors predict a good outcome. However it is important to note that most studies examining psychosocial predictors for WLS have already excluded those with severe psychopathology, so have highly selective samples of patients. It is therefore not surprising that no clear psychological predictors, at least to inform about factors related to poorer outcomes, have emerged.

Despite the lack of general findings there is limited evidence to suggest that a significant problem with disordered eating is a negative predictor of weight loss. In pre-surgical WLS patients around 27 per cent of people are found to meet the criteria for binge eating disorder (Dymek-Valentine et al., 2005), less with bulimia nervosa and night eating disorder but some may have sub-threshold levels of these disorders. Studies have shown that binge eating greatly improves or remits post operatively and that if it does reoccur, it will be 12–18 months post-op (Sogg & Mori, 2008). In their extensive literature review, van Hout et al. (2005), report that some researchers suggest treatment for BED before WLS is advised, whereas others suggest that WLS could help treat symptoms of BED and that it improves psychological well being. Sogg and Mori (2008; 2009) suggest that imposing pre-operative treatment for binge eating might not be the most appropriate time, bearing in mind the delay that tends to occur in these behaviours resurfacing and that people may 'get lost in the system' waiting for treatments. Saunders (2004a) found that people who previously had BED were no longer able to eat the volumes of food that they had previous to WLS, but that a pattern of grazing can emerge, and some of the respondents in her study grazed for similar reasons that they had binged prior to surgery. This raises the possibility that the practice and reliance of eating for emotional regulation remains and it is merely the volume of foods ingested that has changed.

However, if the only focus is on formal eating disorders this would underestimate the prevalence of wider eating pathology such as emotional eating. It has been suggested that it is more useful to focus on the degree to which an individual relies on eating as the main coping strategy rather than the presence or absence of an eating disorder *per se*

(Greenberg et al., 2009). Grazing and emotional eating are also common, although again there is a discrepancy on how prevalent these behaviours are in those seeking WLS (Saunders, 2001; van Hout, et al., 2005; Sogg & Mori, 2008; 2009; Chen et al., 2009). Post surgical weight gain may arise in people who have pre-surgical eating disordered behaviours, although there are mixed results (van Hout et al., 2005). In some findings pre-operative binge eating led to more weight gain, whereas in other studies it led to similar, if not better, outcomes than those who did not binge eat (Chen et al., 2009).

Emotional eating, using food to help cope with negative emotions, has been cited as a common problem for those that are severely obese (Canetti, Berry & Elizur, 2009). Emotional eating and grazing has been linked to sub-optimal weight loss post operatively (Sogg & Mori, 2008; 2009; Canetti et al., 2009). Canetti and colleagues (2009) infer that those who emotionally eat may have a poorer outcome post-op as the intervention does not alter this behaviour. However, as van Hout et al. (2005) suggest, many people who present for WLS have high incidence of psychosocial distress some of which may be caused by being severely overweight and which they manage in unhelpful ways, such as emotional eating. They suggest that this should not preclude people from WLS, but stress the importance of providing adequate therapeutic support for those who require it. The issue of emotional eating is addressed in more depth later in this report.

It has been suggested that the external support that WLS imposes actually encourages higher self-efficacy to make necessary behavioural changes. Ogden, Clementi and Aylwin (2006) found that WLS imposed a sense of control on patients with regards to their eating, which was not there previously. Some reported that the reduced/changed anatomy caused by the surgery imposed the control, whereas others stated that they were more conscious of being in control of how they ate.

## **Psychological status in severely obese patients seeking surgery**

In terms of the psychological status of patients seeking WLS it has been found that there is a higher prevalence of psychological co-morbidities in those with severe obesity (those at lower levels of obesity may have no greater rates of psychopathology than the rest of the population). As it is the more severely obese group who are likely to be considered for WLS a substantial number of people presenting for assessment have suffered or are still suffering from psychological disorders. The most common psychological co-morbidities are mood disorders and eating disorders as previously stated and substance dependency (Sarwer et al., 2004).

Prospective studies considering whether depression or obesity came first have generally indicated that depression appears to be a consequence rather than a causal factor (Roberts et al., 2000). This has been linked to the functional impact of excessive weight and stigmatisation because of size/shape. As previously stated clinical levels of binge eating are relatively common with, on average 27 per cent of those being considered for WLS meeting criteria for BED (Dymek-Valentine et al., 2005), although some studies have described higher levels, depending on criteria used to define the eating disorder (Spitzer et al., 1992; 1993). However, it is important to be clear that not all individuals who are obese have an eating disorder and it is more accurate to consider obesity as a weight disorder (Ratcliffe, 2009).

## What psychological factors are contraindications for bariatric surgery?

It is known that many people who present for WLS have psychological difficulties preoperatively (Sogg & Mori, 2008; 2009; van Hout et al., 2005), a factor alone which may be used to exclude them from surgery erroneously.

There is no overall agreement as to whether or not psychiatric conditions are contraindicated in WLS, and the research is again contradictory (Sarwar et al., 2004, van Hout et al., 2005). In their literature review, van Hout et al., (2005) report on a study by Guisado and Vaz (2003), where they found poor weight loss in those with a personality disorder that made it difficult to adapt to the demands of more controlled eating. However, other studies did not find any correlation between psychiatric disturbance and poor surgical outcome. Trauma history has been highlighted as important to consider; for example, excess weight may be serving as a protective buffer, to enable individuals to avoid intimacy, and may lead to self-sabotaging behaviours post operatively (Sogg & Mori, 2008; 2009). Bauchowitz et al., (2005) reviewed likely outcomes from current practice and suggests that the most common contraindications were active substance abuse; uncontrolled major mental illness such as schizophrenia and bipolar disorder; severe learning difficulties; or having a clear history of non-compliance with medical advice.

Among researchers the nearest to a consensus view is that it is not the type of psychological problem/disorder that is relevant but the severity; the extent to which it is being managed and its likely impact on adherence to behavioural change. Van Hout et al. (2005) draw the conclusion that the presence of a psychiatric disorder should not necessarily preclude WLS; as if it did many people would be prevented from accessing WLS due to the high levels found in this group. This would mean that they would be denied access to a treatment which should greatly improve their physical co-morbidities; their health risk profile and indeed their overall quality of life. They state 'perhaps not mere presence or absence of psychological problems is predictive of the results of bariatric surgery, but rather the extent of these problems'. The inference is for good pre and post operative support from the MDT and liaising with mental health services if needed.

## Psychology remit within WLS services

The role of the psychologist is not primarily one of a gatekeeper (although in some cases it may be), but to identify the degree of emotional, cognitive and behavioural factors that might influence weight loss and make recommendations to improve outcome. This will involve working collaboratively with the patient to plan what future input they might require and to provide therapeutic interventions pre or post operatively as required, or signpost to alternative agencies. Therefore those involved in the psychosocial assessment should have sufficient expertise in the areas of WLS, obesity, mental health and disordered eating behaviours (Sogg & Mori, 2008).

## Multidisciplinary role: psychological expertise

Within the multidisciplinary setting the psychologist will have a consultative/supervisory role to enable the multidisciplinary team to deal with psychologically complex cases and an

educational/training role to highlight how to facilitate health behaviour change. There may also be an advocacy role in terms of helping to break the prejudices that people may have about those who are severely overweight, e.g. highlighting complex factors relating to weight gain and how easy or difficult it may be for an individual to adhere to dietary advice.

## **Psychological assessment:**

Psychological assessment for WLS patients is important not only due to the behavioural nature of obesity, but also to identify and assist in the management of any psychological conditions present in the patients. Although guidelines (NICE, 2006; Scottish Executive, 2004; SIGN, 2010) highlight the need for psychological factors that may impact on outcome, they do not state what the specific contraindications are.

No uniform guidelines exist on how to conduct this psychological evaluation but several areas are important to address and usually comprise of a clinical interview and use of standardised measures. Sogg and Mori (2004) developed 'the Boston Interview for Gastric Bypass' in an attempt to standardise an assessment protocol due to the lack of consistency in the measures to assess people for WLS. This has now become a recommended tool by the American Society for Metabolic and Bariatric Surgery (Sogg & Mori, 2008). Although it is still not being used uniformly, it provides a useful framework to gather important and clinically relevant information.

An assessment interview generally covers: psychological functioning (current & past); eating behaviour; history of substance misuse; motivation, expectations and adherence to previous medical regimes; social support and coping skills; understanding of the surgery process; social and cognitive functioning (initially assessed via interaction with patient but more formal measures if indicated); body image issues and those anticipated with weight loss (Dymek-Valentine et al., 2005). Overall the aim is to establish the individual's ability to implement behavioural changes necessary for weight loss.

## **Recommendations to the surgery team**

Following psychological assessment likely recommendations are that minimal or moderate psychological issues will not preclude candidacy for WLS but some may be significant enough to warrant intervention prior to surgery. Severe or unstable psychopathology will require prior treatment and a period of stability. Surgery may indeed exacerbate psychological problems given that it can be viewed as a major stressor. The emphasis is on stability and a period of at least 12 months of stability (or absence from substance abuse) has been considered good clinical practice (Dymek-Valentine et al., 2005). Outright denying a patient WLS is not common as any condition that can be improved would lead to recommendations for treatment and then re-assessment at a later date. However, when there are extreme problems and no apparent solutions, e.g. very low intellectual functioning and poor social support, then surgery would not be recommended.

In their review of outcomes following psychological assessments for bariatric surgery Pawlow et al. (2005) found that the majority of individuals will not be excluded from WLS on psychological grounds. The authors report that there were no psychological contraindications for surgery (range 64 – 81.5 per cent) for the majority; some will require

psychological intervention either prior to or alongside surgery (range 15.8 – 33 per cent) and only a small amount will have absolute contraindications for surgery at the time of assessment (range 2-3 per cent).

## **Psychological interventions pre and post WLS**

### **Pre-surgical interventions**

Obesity has a large behavioural component and surgical interventions require life-long behavioural change for a successful outcome. The psychological approaches that have an evidence base for weight loss approaches generally still apply for those who have had surgery; for example NICE (2006) have listed the cognitive and behavioural interventions found to improve outcome in combination with dietary interventions such as goal setting; stimulus control; cognitive restructuring, etc. Ideally, advice on these approaches should be provided before surgery so that individuals understand their eating behaviour, know how to break habits and have addressed emotional eating and develop coping skills if these are relevant.

For individuals where there are moderate-to-severe psychological problems then treatment may have been recommended prior to accessing surgery. This may be provided within the team if resources cover this level of support.

### **Post-surgical interventions**

Clinical experience has suggested that post-operative problems can emerge that could impact on outcome unless addressed. Compensatory behaviours have been reported and within clinical practice some people have reported increased use of alcohol, drugs, spending money, self-cutting, promiscuous sexual behaviour, etc., since having WLS, although some of these behaviours were in place pre operatively, and were either kept secret or deemed to be unimportant by the person until a problem arose after the surgery. This is an area that requires further research. Some have also reported distress related to excess skin as a consequence of losing weight, which can have an impact on self esteem and limit the quality of life improvements expected. In the UK, funding for plastic surgery to remove this excess skin is by no means a guaranteed follow-on from WLS. Protocols to access this will vary across the country before a referral can be made to a plastic surgeon for consideration. The possibility of the above areas should always form part of the discussion during the assessment session.

As previously stated many people have high expectations of how WLS will change their life. Unrealistic expectations can lead to disappointment with the amount of weight lost, e.g. many people remain obese, depending on their initial weight (van Hout et al., 2005; Sogg & Mori, 2008). Managing expectations and encouraging individuals to accept that they will have to adhere to behavioural changes long-term (accept the chronicity of their weight problem) is an important part of post-operative support. It is important for people to know that weight gain can reoccur, so that they can make an informed choice about this invasive treatment option beforehand and also manage relapses when they occur afterwards.

Disturbed eating patterns can return or develop post-operatively in a number of the patients that are followed up in clinical settings. Reported examples in clinical practice include patients describing disordered eating such as eating until they were sick, and then

going back for more food or eating 'easy foods' such as ice-cream, to 'test' or 'cheat' their gastric band. Many people describe a feeling of deprivation and loss and some resorted to pre-surgical diets, eating restrictive or 'fad foods' to help control their eating or resorted to grazing to help them cope. These are common experiences and are reflected in the literature (Saunders, 2001; 2004a; 2004b; Sogg & Mori, 2009). Van Hout et al. (2005) report that patients may experience a loss of control over their eating as early as six months post operatively and Sarwar et al. (2004) suggest that the unsatisfactory weight loss in 20 per cent of people is likely to be a consequence of surgical, dietary or psychological variables.

## **WLS preparation & support groups**

There is some evidence in the literature that attendance at surgery support groups is linked to better weight loss (Hildebrandt, 1998) and if led by members of the MDT, from the service perspective, is a pragmatic way to provide long-term follow-up. Support groups can include individuals at various stages in the process but perhaps separating into pre and post surgery groups allows targeting discussion to the needs of clients at particular stages (Marcus & Elkins, 2004).

Group interventions in the form of a 'preparation for surgery programme' are an efficient and potentially effective forum to provide dietary advice underpinned by psychological approaches to behaviour change. These are being utilised in various NHS UK settings. The emphasis is on building skills necessary for adherence to behaviour changes necessary for a good outcome.

Following surgery, support groups provide a useful forum for after-care. There is some qualitative literature which has suggested that the following elements provide the focus for these groups: encouragement of adherence; praise for success; problem identification; supporting new coping; relapse prevention and interpersonal learning and support (Marcus & Elkins, 2004; Algazi, 2000).

## **Conclusion**

WLS is a complex procedure, its success depends upon individual behavioural change and it is clear from the above that psychological factors directly impact on outcome. The psychologist's role within this process is not only to provide assessment/evaluation but to make recommendations regarding therapeutic interventions to optimise the safety and efficacy of the WLS.

As stated previously, this is a brief outline of some of the areas of concern regarding WLS and it is in no way complete. However, these findings highlight the necessity of patient-centred care, to determine what support surgical candidates require before and after their operation if the outcome is to be successful. The importance of good post-operative follow up by the MDT to review how the individual is progressing is highlighted.

The model of care in obesity has now become one of a chronic condition, requiring a continued input and follow-up as highlighted in other long term conditions such as diabetes (Canetti, Berry & Elizur, 2009). Long-term follow-up is considered essential. Saltzman et al. (2007) suggest that in the first year after surgery the patient should be seen

by one of the MDT (surgeons, physician, dieticians, and psychologists) at least every three months. The implications that can be drawn from all of the literature, is the need for good pre and post-operative psychological support and care from the multidisciplinary team. Psychologists should provide assessment and also direct therapeutic interventions alongside the wider role within the team, ensuring communication channels are kept open and sign-posting or referring to specialist agencies as appropriate.

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# Pharmacological Interventions

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**Kathryn Roberts & Stuart Flint**

## Treatment options and guidelines

As with surgery, the use of pharmacological interventions is becoming an increasingly common treatment for obesity. Until recently there were three medications available on prescription in the UK. These were Orlistat (a gastrointestinal lipase inhibitor), Sibutramine (a noradrenaline and serotonin reuptake inhibitor) and Rimonabant (a cannabinoid receptor block). However, the licence for the latter was suspended in October 2008 and for Sibutramine in January 2010, in the UK. These actions, by the European Medicines Agency (2008, 2010) were on the basis that the risk of adverse side effects outweighed any potential benefits. In the case of Rimonabant these risks related to an increased incidence of depression, whilst Sibutramine was indicated in adverse cardiovascular events.

The NICE guidelines for obesity (NICE, 2006) specify that the prescription of Orlistat for adults should only be considered after dietary, exercise and behavioural approaches have commenced and are being evaluated. Prescription is applicable for individuals of  $\geq 30$  BMI ( $\geq 28$  with physical comorbidities). Orlistat is not advocated as a standalone treatment, and NICE guidance sets out that information, support and counseling on diet, activity and behavioural strategies should also be provided by appropriate health care professionals. Prescription should continue past a three month duration, only if a weight loss of 5 per cent of baseline weight has been lost. However, NICE also stipulate that prescription can be considered for people whose weight has reached a plateau following adherence to dietary, activity and behavioral changes, and whom remain overweight at this plateau. These recommendations are also in line with those in the updated Scottish guidelines on management of obesity (SIGN, 2010).

In relation to drug treatments for children and adolescents, additional requirements to those of adults exist (NICE, 2006). Specifically, Orlistat should only be considered if physical, or severe psychological, co-morbidities exist and the prescribing must be done within a context of involvement with a specialist multi-disciplinary team, with experience of prescribing for adolescents. It is also stipulated that these recommendations only apply to young people aged 12 years and older. This is in line with the Scottish guidelines, although these also state more specifically that Orlistat should only be prescribed to adolescents with co-morbidities with a BMI that is higher than 99.6 per cent of the population (matched for age and sex) of the 1990 UK reference chart for age and sex (SIGN, 2010).

## Brief overview of evidence

Franz et al. (2007) performed a systematic review which compared the weight loss effects of eight weight loss methods, including Orlistat. Weight loss was assessed at six-monthly intervals up to a 48-month total follow-up period (where data was available). Weight loss effects were found to be greater among the Orlistat groups at 6, 12 and 24 months. This review yielded that the majority of weight lost was within the first six months of taking Orlistat, after which weight began to plateau (a pattern of weight loss that was also observed in dietary and exercise conditions). However, this review reported that at 24 months a greater mean weight loss was maintained compared to diet and exercise interventions. Another observation was that of a lack of a further effect on weight loss when treatment duration was extended. Longer administration of Orlistat did appear to assist weight maintenance, but did not lead to more weight loss.

In another systematic review (O'Meara et al., 2004) the majority of trials showed favourable results of Orlistat in terms of weight difference at 12 and 24 months. This review also explored the use of Orlistat with people who have co morbidities such as type 2 diabetes. In the related trials the overall effects showed that Orlistat was still favourable to placebo in terms of weight loss, although the effect size was smaller and additional favourable secondary outcomes included the reduction or discontinuation of anti-diabetic medication. This was borne out in the XENDOS study (Torgerson et al., 2004), a large-scale RCT featuring four-year treatment duration of Orlistat versus placebo. In line with Franz et al. (2007), O'Meara et al. (2004) also reported that maintenance of weight loss was enhanced by extending the duration of treatment. Two studies showed the effect on weight change over the subsequent 12 months when Orlistat was withdrawn after the initial 12 months treatment. Weight regain did occur, however, although this was approximately half the amount regained by those given placebo. The XENDOS trial corroborated this finding over four-year Orlistat treatment duration with progressive weight regain after an initial maximum weight loss at 12 months, however regain remained lower than that experienced with placebo.

Czernichow et al. (2009) have reviewed three trials of Orlistat with participants aged 10–18 years. Similar effects were found to those reported in the adult literature, although the limitations of this overview included the small sample sizes and high overall attrition rate.

## Limitations and considerations

Although research largely suggests that Orlistat can be effective in promoting weight loss and maintenance of this, compared to lifestyle changes alone, there are still limitations that require attention and consideration. These include:

- Adverse side effects do occur, particularly in the early stages of treatment, and include gastrointestinal distress, loose and/or fatty stools and faecal urgency and/or incontinence. There is likely to be variability amongst individuals as to the tolerance of these effects. This research field is still relatively young and although there is evidence to suggest long-term prescription (up to four years) is not linked to further adverse effects (Torgerson et al., 2004), there is still further follow up required to investigate the impact of this later in life.

- Although research evidence does support the longer-term use of Orlistat in the promotion of weight loss maintenance, this does have implications in clinical practice. As highlighted by O’Meara et al. (2004), the research trials often departed from clinical recommendations somewhat and so the generalisability of the findings to clinical practice may be limited. For example, the prescribing guideline to discontinue treatment after 12 weeks if less than 5 per cent initial body weight is lost, was not upheld. In the clinical realm, practitioners may not be willing to continue the treatment as this is contrary to current prescribing guidelines.
- Whilst Orlistat is associated with both greater weight loss and enhanced weight maintenance, there is still a common pattern of weight regain over time, even whilst Orlistat is continued. This effect has several implications, including the cost effectiveness of the treatment and the impact of weight regain on the individual, both physically and psychologically. NICE also highlights that weight loss is not guaranteed. These effects warrant further investigation in order to understand the processes involved. Communication of these effects to those potentially considering this treatment option is necessary in order that their expectations are realistic.
- It is identified within the NICE guidelines (2006) that evidence of effectiveness of Orlistat with BMI of >50 is extremely limited as research has so far focused on BMI 28–50. As is highlighted within the current document, it is people with higher BMI who are more likely to have greater barriers to achieving positive outcomes to obesity interventions. Further study is required to ascertain whether pharmacological intervention can be assistance, and whether this would best be indicated within a stepwise approach to treatment.
- The weight loss effect of Orlistat remains dependant on simultaneous behavioral change. If prescribing guidelines are adhered to, there will be a sub-group of people who will be excluded from this treatment option, as they are unable to make or sustain lifestyle changes. For these individuals psychological interventions may be indicated initially. This may be particularly pertinent to individuals with higher BMI, but requires assessment on an individual basis. Where psychological developments are made, Orlistat may then be a useful tool in assisting the weight loss process.

Whilst patients prescribed orlistat often do demonstrate at least a 5 per cent weight loss, ‘the use of orlistat does not guarantee weight loss’ (NICE, 2006). A report recently circulated by the National Prescribing Centre (July, 2010) identified opportunities to improve efficacy of prescribing, and included within this report was the anti-obesity medical orlistat (Xenical) which states that patients should be taken off it if they have not lost more than five per cent of their body weight within 12 weeks. Moreover, the ‘effectiveness of orlistat for people with a BMI of 50 kg/m<sup>2</sup> or more is extremely limited’ (NICE, 2006). Utilising this evidence, the National Prescribing Centre have issued general practitioners with guidance to reduce the prescription of orlistat.

## Concern over weight loss drug Alli

Until 2009, all weight loss aids have been prescription only but there is now a new weight loss drug called Alli, which is a reduced strength version of the prescription weight loss drug Xenical (also known as Orlistat) that is available without prescription. There are a

number of clear issues that need to be addressed as this presents a potentially problematic situation. Alli is available for any adult with a BMI of over 28 and wants to lose weight combined with a healthy diet. It is claimed that adding Alli to a lower-fat diet can boost weight loss by up to 50 per cent, by preventing some of the fat consumed being absorbed. One of the major concerns with Alli is that it is referred to as a weight loss aid and although weight is important, the significant implication of becoming overweight or obese is fat accumulation and therefore losing fat and not necessarily weight is the most essential aspect of being overweight or obese. Like other weight loss aids, the assessment of whether someone can purchase Alli has its flaws, as this is based on Body Mass Index (BMI), which is not a consistently accurate measure when assessing whether an individual is overweight or obese and hence eligible for the weight loss drug. Furthermore, the drug is available to the public to purchase on the internet and therefore by simply entering a BMI above 28 allows an individual to acquire it. Thus, there is potential for weight loss drugs to be misused by vulnerable people, such as those suffering from an eating disorder, body dysmorphia, depression, etc., and potentially those under the age of 18 years to obtain it as the internet provides a very unsafe means of assessing an individual's suitability for a drug. In a society where thinness is often associated with beauty and health (Hoverd, 2005; Price & Pecjak, 2003) this provides a potentially dangerous mechanism to achieving a standard that is often unrealistic and unachievable (Slater & Tiggemann, 2006).

Additionally, the potential for users to suffer from side effects as a result of consuming weight loss aids has been documented previously. For example, Christensen et al. (2007) conducted a meta-analysis reporting an increased likelihood of suffering from depressed mood disorders and anxiety in patients receiving 20mg of rimonabant. Another noteworthy finding was that patients consuming rimonabant were 2.5 times more likely to cease treatment as a result of the depressive mood disorders and that anxiety experienced resulted in patients discontinuing treatment in comparison to the placebo group. Thus, the role of psychology in the adherence to medication and coping with the potential side effects is an area of concern; however, to venture into a more detailed discussion of this area of depth is beyond the scope of this report.

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# A review of some of the existing literature on obesity in children and young people and a commentary on the psychological issues identified

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**Kairen Cullen**

## **Rationale**

This paper summarises a National Children's Bureau information sheet on obesity in children and young people, NCB Highlight No 250 (Reilly, 2009) and is supplemented with information drawn from the author's literature search and clinical experience.

Requests for information about colleague psychologists' experience and work with childhood obesity have also been made via the Society's Division of Educational and Child Psychology committee and the divisional newsletter, *DECP Debate*; the Association of Educational Psychologists' weekly broadsheet to members; and the Association of Child Psychologists in Private Practice (ACHIPPP) discussion forum.

In addition, some correspondence has taken place with Professor John Reilly of Glasgow University, the author of NCB No 250, and Professor Andrew Hill of Leeds University, who has undertaken UK-based research on the psychological aspects of obesity in children and young people.

## **The problem**

Existing high levels of childhood obesity are increasing in the Western world. It is estimated that at present one third of children and young people are overweight or obese and that this will rise to two thirds by 2050 (Reilly, 2009).

NCB No 250 (Reilly, 2009) draws upon recent systematic reviews and public health obesity guidelines and identifies the following issues:

- **Prevalence.** Trends are fairly consistent throughout the UK and are not specific to particular regions.
- **Incidence is higher in certain sub-groups**, i.e. survivors of childhood cancers, some ethnic minority groups such as southern Asian populations, children or young persons who have one or more obese parent, looked after children and young persons who experience learning difficulties.
- **The problematic nature of defining obesity and related measures.** The simplest measure at present appears to be use of the Body Mass Index (BMI) Percentile Charts but insufficient awareness and understanding of this is prevalent amongst parents and professionals involved with children and young people, thus warranting an increase in national awareness raising and education programmes.

- **Consequence of obesity for physical health**, such as increased incidence of blood pressure, diabetes, fatty liver disease.
- **Impaired psychological health** (McCullough et al., 2009)
- **Less likelihood of achieving the *Every Child Matters* five outcomes** (DfES, 2004), i.e. for every child to be healthy, stay safe, enjoy and achieve, make a positive contribution and achieve economic well-being.
- **Less chance of realising the aim of inspiring young people into sport, stated as one of the five key areas of the Olympic Legacy** (Brooker, 2009)

With regards to the effects of obesity upon psychological health, Hill's work (2005, 2007 & 2008) and that of Walker and Hill (2009) highlight a number of issues. Hill has conducted research into possible links between obesity and depression in children and found that there is no straightforward association. The relationship is complex and mediated by age and gender with obese adolescent girls seemingly most likely to be at risk of depression in later life.

Hill has employed Cooley's (1902) theory of the 'looking glass self' in exploring effects of obesity upon children's social self perception. He has found that few direct effects can be claimed in younger (i.e. primary aged) children, but in 13- to 18-year-olds social network mapping exercises indicate that obese individuals have significantly fewer nominations from other young people. He has also explored victimisation of obese children through 'fat teasing' and in a study of 11-year-olds found that 12 per cent of girls and 16 per cent of boys had been affected but, interestingly, fewer than half of the sample who had been teased were actually overweight or obese.

Bromfield's (2009) review of the research in the area of childhood obesity and psychosocial outcomes highlights the fact that overweight and obese individuals, unlike other minority groups, do not appear to be any less anti-fat biased than non-overweight or obese individuals and that this in-group devaluation understandably impacts upon psychosocial outcomes (Schwartz et al., 2003; Wang et al., 2006). One study, referred to by Bromfield (2009) demonstrated that by age 11, obesity negatively impacted upon self-esteem, particularly for girls, but only within certain areas of perceived competence such as physical appearance (Franklin et al., 2006). Another study found that decreasing levels of self esteem were associated with a greater likelihood of obese children engaging in high risk behaviours such as smoking or consuming alcohol (Strauss, 2001).

Bromfield (2009) also explores the link between obesity and underachievement and highlights a number of possible explanations. Firstly, there is some evidence that severely obese children and adolescents may miss more school days than the general student population (Schwimmer et al., 2003). Secondly, obese children may have lower expectations of themselves in terms of school performance and educational future (Davidson & Birch, 2001; Mellin et al., 2002), and so might their teachers (Smith & Niemi, 2003). Thirdly, obesity-related bullying may lead to retaliation or uncharacteristic behaviour in the obese child that results in their exclusion from school (Murtagh et al., 2006). This particular study found that it was the social consequences of being overweight, rather than the physical health risks, that fuelled these children's desire to lose weight.

## The causes

The obesity epidemic phenomenon is occurring in and attributable to a social context in which many children's dietary arrangements are of poor quality, i.e. include food and drink high in sugar, carbohydrate and saturated fats and insufficient physical activity. The NCB Highlight (Reilly, 2009) states that childhood obesity can, in the vast majority of individual cases, be attributed to a food intake which supplies more calories than is utilised in exercise and goes on to affirm that links with limited or little physical exercise, consumption of drinks high in sugar, high calorie, nutritionally poor foods and food advertising have been identified in existing research.

Shaw (2009) reports that a quarter of school children surveyed ate junk food before school, with crisps, fizzy high sugar drinks, sweets and chocolate products being most popular.

Aside from food advertising, other media influences upon lifestyle have been held accountable for the rise in childhood obesity. This includes the phenomenon of risk averse parenting, manifest in parents who are extremely concerned for their children's safety and reluctant to allow their children to 'play out' unsupervised. Given parents' busy lifestyles this inevitably means that much of children's leisure time is spent pursuing indoor activities such as playing on the computer and watching television. The expense involved in participating in more active leisure activities may also exclude children from certain socioeconomic backgrounds.

Caution is advised against using any single marker of 'couch potato-ism' or sedentary lifestyle such as television viewing, however, given that only small correlations have been found between television viewing and physical activity in children, or television viewing and body fatness in youth (Marshall et al., 2004). Television viewing and physical activity do not necessarily compete for time, with exercise peaking in the early evening and television viewing later on (Biddle, Gorley & Stensel, 2004).

In these times of unlimited food and no practical need to be physically active, physical activity becomes a choice. Confusing recommendations and conflicting information, for such as distinguishing between physical activity and exercise, might be other obstacles to parents making this choice on behalf of their children.

One theory is that a child's susceptibility to obesity might be determined much earlier in infancy when its mother makes the decision whether to breastfeed or not. Whilst the mechanisms are not entirely clear, systematic reviews have concluded that breast-feeding in infancy is protective against later obesity, (Arenz et al., 2004; Harder et al., 2005). Another likely contributory factor lies in the way that eating habits have changed. Modern lifestyles can militate against the whole the family sitting down to eat meals prepared from fresh ingredients.

A child's poor eating habits may also be one manifestation of a parent's general difficulty with implementing firm rules and managing their child's behaviour. Another very plausible theory, given that there is a higher prevalence of obesity amongst children with at least one obese parent, is that of the inter-generational family script, i.e. parents modelling a dysfunctional relationship with food to their children. This may be in the form of passing on bad habits or food choices, or conveying the attitude that they are not responsible for

their diet, i.e. food exerts a greater force on their eating behaviour than their own willpower.

Research suggests that obese adults may be particularly susceptible to emotional eating and using food to cope with negative emotions (Canetti et al., 2002; and see the next section of this report). Parents may unwittingly pass this problem on to their children by offering food as a comfort. A huge range of emotion-related events and experiences have been reported as contributing to obesity by obese people themselves. It would seem likely that childhood obesity might, in some cases, be similarly linked to unhappiness in one form or another, such as those relating to complex family dynamics, which may include issues of parental obesity, although this may be more difficult for a child to articulate. The literature has suggested ‘at least a modest relationship’ between childhood sexual abuse and obesity (Gustafson & Sarwer, 2004) and so it is important to remember that in some cases obesity may point to a more serious underlying problem or trauma.

The contributing or causal factors of childhood obesity are numerous and likely to combine in many different ways for individual children. Hill (2008) argues for the need for an integrative conceptualisation of issues raised by obese children and young people. Once obesity has developed, additional maintaining factors may come into play, such as lowered self-esteem for example.

## **Interventions, actual and/or possible**

In the UK, SIGN and NICE have produced evidence-based guidance on ‘prevention and management of obesity in children and young people for health professionals, parents and children and young people and their families’ (Reilly, 2009, p.3.) These guidelines employ the general principle that weight maintenance rather than weight reduction is most appropriate for the majority of overweight and obese children and young people, i.e. that the individual’s weight and height ratio will stabilise at a more healthy level, over time.

As stated, a great deal more work has been carried out in the United States than in the UK and much of the latter is based upon programmes which originated in the US and still under relatively early evaluation, such as the ‘Traffic Light Programme’ being undertaken at Great Ormond Street. Key components include reduced television viewing and more physical activity. Taking a holistic view and approach to the prevention and management of obesity and encouraging the development of intrinsic motivation is key. However, Biddle (2004) warns that making one specifically targeted sedentary behaviour, such as watching television, conditional on being active may be associated with an increase in other non-targeted sedentary behaviours. Where rewards are used, they may need to be tailored to the individual; for example, television used as a reward has been found to work better for boys (Goldfield et al., 2008).

In response to growing concerns about the present and future health and well-being of the nation’s population, i.e. both children and adults, a number of major governmental policy initiatives are underway, such as *Healthy lives, brighter futures: The strategy for children and young people’s health* (DfCSF, 2009) and *Future health and well being. Healthy eating, active living:* (Scottish Government, 2008) and *Choosing health: Making healthy choices easier* (DoH, 2004).

These initiatives target the social and physical environment rather than the individual

child. *Healthy lives, brighter futures* recognises the importance of involving and educating parents and carers in the Healthy Child Programme, Antenatal Preparation for Parenthood Programme, Family Nurse Partnership Programme and in Sure Start children's centres. Various other school-based government programmes supporting physical exercise and sports, healthy eating and improving the quality of personal, social, health and economic education have also been attempted.

O'Dea (2005) raises some concern about school-based interventions for obesity, warning that an overemphasis on weight management could lead to other undesirable outcomes such as dieting, slimming, the development of other eating disorders, and also to further stigmatisation as the result of the idealism of the 'norm'.

NICE guidance for promoting physical activity for children and young people recommends that children are physically active for one hour a day and that this can be achieved in 10 minute bouts of activity. The guidance suggests the promotion of the benefits of physical activity, not just in terms of weight but also body image, mental health, self-esteem and confidence. It also emphasises the importance of encouraging participation in physical activity by making it fun, enjoyable, social and varied, and by treating it as a part of everyday life. The provision of safe spaces, facilities and opportunities to participate in physical activity inside, outside and to and from school is presented as being the joint responsibility of numerous agencies. Inclusion is stressed for those children with disabilities, from disadvantaged socioeconomic backgrounds, with cultural requirements and medical conditions, and a diversity of role models is advocated. Crucially, consultation and problem-solving with children is recommended with regards to addressing the reasons why some children may not be active. Increasing children's choice is another key element so that they have the option of engaging in non-competitive and/or single gender physical activity if that is what they prefer. Privacy in changing rooms might be provided where it is a concern and the negotiation of a dress code that is practical, affordable, and acceptable and that minimises concerns about body image.

Publicity of the issue of childhood obesity is another area in which much work is being done. Some large scale research studies into children and young people's eating and lifestyle choices, sponsored by commercial organisations such as Kellogg's are being reported in the media. The media have also begun to focus on obesity in children and young people.

## **Future work**

It is commonly accepted that the increased prevalence of obesity is attributable to environmental and behavioural changes that have impacted upon diet and brought about decreased activity levels. However, Bromfield (2009) draws our attention to the fact that the Scottish Intercollegiate Guidelines Network (SIGN, 2003) states that 'no published UK study has appropriately examined the causal roles of these specific environmental factors'. Furthermore, with regard to the consideration of psychological factors related to obesity there would appear to have been a move away from the causes to the consequences, (Chang & Christakis, 2002). Wills, et al. (2006), call for more research 'with' as opposed to 'on' children and young people who are overweight and obese.

Hill also bemoans the lack of research into the possible effects of obesity upon children's quality of life and the need for identification of the protective factors against psychological distress linked to obesity.

There is a need for more UK-based research. The majority of interventions referred to in NCB Highlight No 250 (Reilly, 2009) are from the US, have been subject to limited scientific, systematic evaluation and as a result have relatively little long-term and proven success rates. Only two randomised control trial studies, i.e. Hughes et al. (2008) and Daley et al. (2006), have been undertaken to date and there is an urgent need for better evidence-based studies on successful strategies and programmes. The measurement of the effects of obesity upon self esteem is conceptually and practically problematic and, as for most psycho-social phenomena, affected by many confounding variables (Hill, 2008). However, the development of interventions designed to increase self-esteem and the exploration of the effects of increasing self-esteem upon obesity and the success of concurrent interventions would appear to offer promise.

Applied psychologists specialising in work with children and young people, such as educational psychologists (EPs), appear to have undertaken relatively little obesity-related work. One exception is that of work at Bristol University to obtain children's views on the psychological aspects of childhood obesity; the focus of the research is giving a voice to children to gain their perspectives and to inform multi-agency interventions contributing to the *Every Child Matters* outcomes. The study uses semi structured interviews with a random sample of eight Year 5 children from a primary school in an area of social disadvantage (Doutre & Mansfield, 2010).

The apparent dearth of applied educational psychology work relating to childhood obesity is likely to arise because this is a relatively new field and has generally been viewed as a primarily medical concern. Bromfield argues that educational psychologists could have a particular role in giving a voice to the concerns of obese children, addressing the link between obesity and poor psychosocial outcomes, reducing stigma, identifying resilience factors, and emphasising the heterogeneity of the group that is obese children and the need for individually tailored interventions. On this last note, Hill also emphasises the importance of a case by case approach in professionals' assessment and monitoring practice in order to inform customised interventions which stabilise children's weight over time.

The majority of current and future health threats which include obesity, smoking, mental health, drugs and alcohol, and sexually transmitted infections (STIs), all relate strongly to the needs to manage stress, emotion and relationships with others. As previously mentioned, improving the quality of and making it a statutory requirement for provision of personal, social, health and economic education has already been recognised by the government as imperative. Educational psychologists have a role in helping children to talk about the issues that affect everyone, the variety of ways in which problems manifest and of supporting the development of alternative coping strategies in a normalising, non-stigmatising climate. Psychologists also have a duty to ensure that there is adequate, professional psychology of a high quality, made available to the media.

## Conclusions

Many psychological reasons lie behind the choices that are made in relation to diet and activity. These include individuals' personal habits and behavioural choices and the wider societal influences as well as some individuals' experience of serious trauma, such as child abuse. A large number of factors contribute to the development of obesity and its maintenance. These factors interact in a complex way and so interventions need to be tailor-made for the individual. The psychosocial effects of obesity are again not clear cut, but mental health, achievement, social status and self-esteem may potentially be affected and therefore, awareness of this possibility is important.

The most important goal for managing obesity in children and young people is that of weight maintenance and this is a long-term venture. A holistic approach needs to be taken to intervention as simplistic interventions that target one form of sedentary behaviour have not been shown to be effective. It is preferable to provide appealing opportunities to be physically active and to eat more healthily and thereby encourage intrinsic motivation to make lifestyle changes as there is greater likelihood of these behaviours being maintained. Care needs to be taken so that an unhealthy preoccupation with weight is not encouraged and so that the possibility of stigmatisation is not increased. Firm rules and occasional treats are the ideal diet strategy, along with an unwavering emphasis on the positive rather than any form of criticism or communication of failure. In relation to this, psychologically based interventions should fully utilise positive psychology approaches.

There is a clear need for the recognition and full utilisation of professional psychological input, which is intrinsic to multidisciplinary interventions and which ensures sound, basic psychological interventions. Such interventions should aim to create long-term behavioural change and the promotion of children's positive self-esteem and increased confidence. They should also offer support to address possible bullying, to improve family communication and to provide parental support and empowerment.

Consultation with children and young people is key to the success of interventions and future research in this area and also the involvement of parents and carers. Improvement in the quality and provision of personal, social, health and economic education is another promising avenue. There would appear to be a greater role for educational psychologists to play at individual, group, organisational and societal levels, both in clinical practice and in multiple case study-based research initiatives. Finally, an increase in UK-based research that explores psychological causal factors in obesity, the effects of obesity upon quality of life and the identification of protective factors with regards to the psychosocial effects of obesity is urged.

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# Emotional Eating as a Factor in the Obesity of Those with a BMI $\geq$ 35

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## Julia Buckroyd

There has been a tendency to assume that all those with a BMI of 30 or more can be understood in the same way and that there is no need to differentiate between people in terms of advice given. The only exception to this rule is the NICE guidance (NICE, 2006) that people with a BMI  $\geq$ 40 or  $\geq$ 35 where there are co-morbidities should be offered bariatric surgery. Yet the obese population includes a vast number of people – one quarter of the population at least, and rising. It seems unlikely that all this population needs is advice to eat less and exercise more, with the proviso that those whose health is seriously compromised by their weight should be offered a procedure whose intention is to make it impossible to overeat.

It is clear that there are a number of well understood factors which promote progressive weight gain: an obesogenic environment which provides an abundance of calorie dense, readily available and inexpensive food; a collective lifestyle which renders physical effort largely unnecessary while at the same time rendering us ever more sedentary; a common latent genetic tendency to weight gain; and physiological mechanisms which make sustained weight loss difficult for most people. These factors are so pervasive that in our obesogenic culture most people are now overweight or obese. In this paper I make no further mention of these factors, not because they are unimportant but because others have addressed them in this document. My focus is on discussing the evidence which suggests that a substantial number of those who are at the heavier end of the obese spectrum use food as a means of emotional management. My principal recommendation for a response to such people is that their eating is seen as a necessary element in their functioning which will not be given up unless other strategies can be learned. The task for the clinician may be to encourage and support the development of improvements in areas such as emotional intelligence, self soothing, self esteem, body esteem and relationship rather than to focus on weight loss alone.

Traditional diet and exercise programmes, improved by cognitive and behavioural psychology, have proved ineffective in delivering maintained weight loss. As early as 1991, Garner and Wooley were reporting ‘overwhelming evidence that [behavioral and dietary treatments of obesity] are ineffective in producing lasting weight loss’ (p 729). This reality has been obscured because almost everybody can secure short term weight loss via dietary restriction (Garner & Wooley, 1991). Disappointingly, ‘short-term results are frankly misleading indicators of long term outcome’ (p.737). They reported abundant evidence ‘that most individuals will regain most or all of their weight after four or five years’ (p.736). As they comment, dietary restriction maintained by willpower is simply too difficult for most people.

A substantial minority of obese people, perhaps 20–30 per cent of those seeking treatment, suffer from Binge Eating Disorder (BED) (Devlin et al., 1992). Both Cognitive Behavioural

Therapy (CBT) and Inter Personal Therapy (IPT) have resulted in a reduction in bingeing but, unfortunately, neither these treatments nor behavioural weight loss treatment for BED have been shown to produce maintained weight loss (Wilson et al., 2000). Devlin (2001) is similarly convinced that 'sustained weight loss [for patients presenting with both obesity and BED] remains a largely unrealised goal'.

Glenny and O'Meara (1997) reviewed the prevention and treatment of obesity and concluded that although a number of treatments had been shown to achieve weight loss, weight regain was common and modified only by long term follow-up strategies. Douketis et al. (1999) reviewed material on the detection, prevention and treatment of obesity and concluded that there was a lack of evidence supporting the long-term effectiveness of weight reduction methods. Harvey et al. (2002) reviewed health professionals' management of obesity and concluded that 'at present there are few solid leads about improving obesity management'. A revisiting of research from the United States on this subject attempts to put a more optimistic gloss on the data, but still reports that only 20 per cent of overweight people succeed in maintaining a weight loss of 10 per cent or more of baseline weight for one year (Wing & Phelan, 2005).

What is it that we have not understood about people's eating behaviour that makes it so very difficult to achieve lasting weight loss? Life events and their emotional consequences often lead to abnormal food use in the wider population (Rookus et al., 1988) and there are recognised to be normative levels of emotional eating (Waller & Osman, 1998). The thesis of this paper is that a large number of obese people persistently use food for emotional regulation with the result that they become obese and that since it is part of their continuing survival strategy they will not surrender their eating behaviour until or unless they find some other or better way of managing their feelings. As Foster and Kendall (1994) and Wilson (1994) both suggest, it is unlikely that all obese people are the same, psychologically speaking, or that all obese people will respond to a single approach. Foster and Kendall (1994) identify 'the psychological heterogeneity of obese persons' (p.711) and suggest that 'a significant percentage of obese patients, presenting for treatment, may require psychotherapy or pharmacotherapy in addition to any obesity treatment' (p.711). Although differences have been identified for some considerable time and the need for differential treatments understood (Brownell & Wadden, 1992; Schwartz & Brownell, 1995) little progress has so far been made in matching treatments to individual needs.

One exception has been work by Teixeira et al. (2005) that attempted to discover whether it was possible to predict treatment outcomes by identifying significant predictors of weight loss. They identified 'treatment' as a reduced calorie diet, sometimes with exercise, and a behaviour modification component. The people who benefited from this treatment were those who had few previous weight loss attempts (as Jeffery et al., 1984 had previously found) and an autonomous, self motivated, cognitive style. In other words Teixeira et al have demonstrated that a specific treatment (reduced calorie, exercise and behaviour modification) works for a specific group of people (few previous weight loss attempts and an autonomous, self motivated, cognitive style). Unfortunately this description of patients may not extend to more than 20 per cent of obese people. It is the contention of this paper that changing eating behaviour, for many people, is a psychologically and emotionally far more complex task than has so far been recognised.

Meanwhile the evidence has been steadily accumulating of associations between emotional eating, binge eating and obesity. Binge eating has been extensively studied, especially in relation to aversive emotional states (Heatherton & Baumeister 1991; Kenardy, Arnou & Agras, 1996; Telch & Agras, 1996; Vogeles & Florin, 1997; Deaver et al., 2003; Chua et al., 2004). Marcus and Wing (1987) found that 20–46 per cent of obese individuals in a weight control programme reported binge eating (see also Yanovski, 2003a; 2003b). More recently Gluck et al. (2004) reported that up to 46 per cent of those defined as obese, binge eat and binge eating appears to be more common in females (Freeman & Gil, 2004; Linde et al., 2004). On the basis of this evidence it looks as though getting on for half of obese people may be using food to manage difficult feelings. Foreyt and Goodrick (1994) found that weight regain was associated, among other things, with life stress, negative coping style and emotional or binge eating patterns. Fichter et al. (1993) and Agras et al. (1997) reported that binge eating predicted weight regain.

Canetti et al. (2002) looked at the relationship between emotions and food intake and concluded that negative emotions especially, increase food consumption, among normal weight as well as overweight people, but also concluded that the influence of emotions on eating behaviour is stronger in obese people. He confirmed that obese people eat in response to emotions more than normal weight people

Stephoe et al. (1998) determined that stress leading to increased distress, stimulated alterations in food choice towards greater intake of fat and sugar, in vulnerable individuals. Popkess-Vawter et al. (1998) identified power/control relationships with others and unpleasant feelings as triggers for overeating in overweight women. Epel et al. (2001) show that artificially induced stress promotes 'comfort food intake'. Schoemaker et al. (2002) and Freeman and Gil (2004) report that stress precipitates binge eating. Rosmond (2005) is also interested in the relationship between stress and visceral obesity. He suggests that persistent stress results in the release of excess cortisol which in turn promotes visceral obesity. Gluck et al. (2004) came to the same conclusion. Conversely, Heinrichs et al. (2003) discovered that social support and oxytocin suppressed cortisol production.

Geliebter and Aversa (2003) reported that overweight individuals overate during negative emotional states and situations. Byrne et al. (2003) identified the use of eating to regulate mood or to distract from unpleasant thoughts and moods as one characteristic of obese women who had lost a substantial amount of weight and then regained it. Walfish (2004) found that 40 per cent of a sample of bariatric surgery patients could be identified as 'emotional eaters' and recommended treatment to address this problem to increase the likelihood of long-term maintenance of weight loss.

But who are these people whose emotional eating is so persistent that it results in obesity? There is substantial evidence to suggest that those who routinely use food for affect regulation may have significant psychological issues relating to their history. Attachment history has been studied extensively for its relationship to affect regulation. Schore has developed a clear model for the relationship between attachment history, its neurological consequences and the person's capacity to regulate affect. 'Enduring structural changes [as a result of traumatic attachments] lead to the inefficient stress coping mechanisms that lie at the core of...post traumatic stress disorders' (Schore, 2002, p.11; see also Raynes et al., 1989; Zimmerman, 1999; Schore, 2000; 2001; 2003). A review of attachment research in

eating disorders (Ward et al., 2000) concluded that insecure attachment is common in eating disordered populations. Maunder and Hunter (2001) have extended the scope of the enquiry to evaluate the evidence linking attachment insecurity to illness generally. They cautiously proposed that overeating, leading to obesity, may be a means of managing insecure attachment. Flores (2001) related attachment difficulties to addiction and substance abuse as a means of self-repair. Trombini et al. (2003) found that obese children and their mothers had a significant prevalence of insecure attachment style and recommended that treatment of obesity in children needed to include a psychological intervention with the mother. Vila et al. (2004) similarly identified disturbance in the families of obese children and recommended family treatment. Ciechanowski et al. (2004) found that avoidant attachment patterns were associated with poorer self management in patients with diabetes – there is an 85 per cent association of Type 2 diabetes and obesity (Eberhardt et al., 2004). Troisi et al. (2005) commented that ‘persons with eating disorders are expected to have a high frequency of adverse early experiences with their attachment figures and a high prevalence of insecure attachment... The insecure attachment style has been also considered as a risk factor for the development of an eating disorder’ (p.89). Tasca et al. (2006) reported that both attachment anxiety and attachment avoidance were related to poorer outcomes in group treatment for binge eating disorder.

Attachment difficulties may well be associated with difficult early experiences (Prior & Glaser, 2006). Felitti (one of the first researchers to explore these themes) observed a 55 per cent dropout rate in a weight loss programme despite the fact that dropouts had been losing weight, not gaining. This observation and subsequent interviews and studies (Felitti, 1991; Felitti, 1993) indicated that overeating and obesity were often unconscious ‘protective solutions to unrecognised problems dating back to childhood’ (Felitti, 2003, p.2).

Felitti’s work stimulated an epidemiological study in collaboration with researchers from the Center for Disease Control and Prevention (CDC) in Atlanta, USA: the ‘Adverse Childhood Experiences (ACE) Study’. This study sought to examine the relationship between childhood abuse and family dysfunction and many of the leading causes of adult mortality (Felitti et al., 1998). Eight categories of experiences (ACEs) that could adversely affect a child were developed, three of which were direct actions: physical, verbal and sexual abuse. The other five addressed environmentally adverse experiences such as loss, neglect or trauma; violence against mother; growing up in a household with members who had been imprisoned, were substance abusers, or who were depressed, suicidal or had untreated mental illness. Of 17,337 adult participants more than 50 per cent reported at least one ACE, 25 per cent reported at least two. Those that reported four or more ACEs were at increased risk for substance abuse (drugs, alcohol, smoking), mental health problems, cancer, heart disease, chronic pulmonary disease etc. In relation to obesity, the study found that people who had experienced four or more ACEs had a 1.4 to 1.6-fold increased risk for severe obesity and inactivity (Felitti et al., 1998).

A number of other authors have explored the relationship between earlier adverse life experiences, eating disorders and obesity (Kopp, 1994; Lissau & Sotrensen 1994; Kent et al., 1999; Wonderlich et al., 2001; Williamson et al., 2002). In a review of the literature of childhood sexual abuse (CSA) and obesity, Gustafson and Sarwer (2004) note that ‘studies suggest at least a modest relationship between the two’. A similar result was found in a review by Smolak and Murnen (2002) who found that CSA is associated with an increased

likelihood of eating disorder symptoms. A positive correlation between CSA and binge eating has been found (Grilo & Masheb, 2001; Wonderlich et al., 2001). It is possible that binge eating is the mediating factor between CSA and obesity.

Mills (1995) found that adults whose obesity dated from childhood had poorer mental health than those who became obese later in life, suggesting early traumatic experience. Power and Parsons (2000) suggested that emotional deprivation in childhood might be related to adult obesity. In studies by Grilo and colleagues, 83 per cent of participants with Binge Eating Disorder (BED) reported some form of childhood maltreatment (Grilo & Masheb, 2001). (BED is a diagnostic description of bingeing combined with a loss of a sense of control which occurs twice a week or more over a period of six months.) A study of bariatric (stomach) surgery patients found half the females had experienced early sexual abuse (Rowston et al., 1992) and abuse history was significantly related to overweight / obesity in a sample of female gastrointestinal patients (Jia et al., 2004). In a study of extremely obese bariatric surgery candidates 69 per cent reported maltreatment (Grilo et al., 2005). My own work with a sample of bariatric surgery candidates has replicated these findings (Buckroyd et al., 2009).

Longitudinal studies of sexually abused children over seven years revealed higher rates of healthcare utilisation and long-term health problems than comparison groups, and both studies mention comparatively higher rates of overweight and obesity in the abused groups (Frothingham et al., 2000; Sickel et al., 2002). There is some evidence that CSA may negatively influence weight loss in obesity treatment (King et al., 1996). Wiederman et al. (1999) discuss how obesity may have an adaptive function for sexually abused women, which lends some support to the findings of Felitti (1993) where participants reported using obesity as a sexually protective device, and overeating to manage emotional distress.

Much of the data quoted above has been gathered by means of questionnaires. However, when obese people have been given the opportunity to talk about their obesity at greater length, the findings have shown very similar results. Qualitative studies have consistently demonstrated the association of poor family functioning and excess use of food. These studies have also shown the importance of the social environment and food use in response to negative affect. Stress, anxiety and loneliness are particularly identified in the data (Lyons, 1998; Sarlio-Lahteenkorva, 1998, Bidgood & Buckroyd, 2005; Davis et al., 2005; Goodspeed-Grant & Boersma, 2005). A sample of 79 obese women seeking treatment was asked at first interview what factors they thought were involved in their obesity. As expected, many practical factors were identified including bad diet, overeating, etc., but all of them also attributed their eating behaviour to emotional factors. These were of a huge range from particular feeling states such as boredom, depression, anxiety, to current life events such as relationship problems, bereavement, illness, etc., to reports of adverse childhood experiences (Buckroyd & Coker in preparation).

If psychological factors and obesity can be linked, as the above evidence suggests, we need to know precisely how they may be linked. In the past ten years or so evidence has been accumulating which suggests that eating particular comfort foods – foods high in fat and carbohydrate – has an effect on the biochemistry of the brain which reduce stress or produces hedonic effects (Colantuoni et al., 2002; Will et al., 2003; Will et al., 2004). Yanovski (2003b) found that the opioid system might be involved in response to ingestion

of sweet, high fat foods by women. Lowe and Levine (2005) have proposed that the presence of highly palatable food is enough to activate a hedonic appetite system. Apparently the prospect of the pleasurable results of eating is a powerful force. Dallman et al. (2005) demonstrated that eating comfort foods reduces the effects of chronic stress by modifying the biochemical effects. She urges that, rather than accepting that those in chronic stress will indulge in comfort foods and thus become obese, the chronic stressor should be removed. She proposes, therefore, that obesity might be less common 'were policy makers aware of the insidious effects of not actively seeking to relieve sources of uncontrollable chronic stressors' (p.279). This is a long way from urging obese people to eat less.

This data does not demonstrate that all obese people use food for emotional purposes. What it does show is that the emotional use of food is normative in the non-obese population and that a significant proportion, perhaps approaching 50 per cent of obese people, seem to use food to manage their emotional lives to such an extent that they become obese.

The task of identifying those whose obesity is driven by emotional eating is not simple, not least because, as Felitti remarked, overeating and obesity were often unconscious 'protective solutions to unrecognised problems dating back to childhood' (Felitti, 2003, p.2; Buckroyd & Rother, 2007). However, there is one group of obese people which research has demonstrated has very significant levels of the kind of history associated with emotional eating. The evidence suggests that rates of trauma, childhood maltreatment, poor self-esteem and depression are very high in people presenting for bariatric surgery, that is, in those who generally speaking are morbidly or super-morbidly obese. Research literature (e.g. Rowston, et al., 1992; Gustafson et al., 2006; Tuthill et al., 2006; Grilo et al., 2005; 2007; Franks & Kaiser, 2008; Sansone et al., 2008; Wilde et al., 2008; Buckroyd et al., 2009) on psychological screening for bariatric surgery candidates, reports high percentages of childhood maltreatment, poor self-esteem, and depression. Walfish (2004) found that 40 per cent of a sample of bariatric surgery patients could be identified as 'emotional eaters' and recommended treatment to address this problem to increase the likelihood of long-term maintenance of weight loss.

The question of whether emotional eating and BMI are correlated has not so far been answered, but if the above literature is thought to be compelling, it would make sense to begin a process of incorporating psychological therapy into the treatment of obese people by beginning with those whose health risk is greatest, i.e. those with a BMI  $\geq 40$  (Mokdad et al., 2003). This research supports the idea that this group of people – perhaps 2-3 per cent of the population of England, as estimated in 2003 ([http://www.who.int/diabetes/physical\\_activity/2003.pdf](http://www.who.int/diabetes/physical_activity/2003.pdf)) and certainly not fewer in 2009 – have all the characteristics that suggest the use of food for affect regulation. This group, approximately 1.3 million (2.5 per cent of 52 million) far too numerous for bariatric surgery in the foreseeable future, constitute a group who are exceedingly costly to the NHS and whose care and health might well be improved by a therapeutic intervention leading to improved mental health and weight loss.

However, underlying any recommendation to include psychological issues in the care of this patient group is a far more fundamental need. Authors of earlier chapters in this document implied that basic changes in our lifestyle in the UK need to be implemented.

Our diet needs to change, our activity levels need to increase – in fact we need to eat less and better and exercise more, just as the NICE guidelines said. In addition, I would say we need to pay attention to the way that children are brought up and the way that we manage our lives if we are to reduce the levels of psychological distress and the increasing recourse to compulsive and addictive behaviours of all kinds, including food. These are utopian ambitions. In the meantime we in the world of psychology can make a contribution to addressing the psychological function of overeating and doing what we can to enable distress to be expressed in words, rather than in deeds.

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## Conclusion

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It is clear from this report that obesity is a complex issue requiring complex interventions. It is also evident that one solution to such complexities will not be suitable for all obese individuals, making advice and treatment a challenge to health professionals. If the 'cure' for obesity was as simple as logic suggests, i.e. eating healthily and taking regular exercise in order that food intake and energy expenditure are in balance, there would not be an obesity epidemic blighting the lives of so many and draining NHS resources. Whilst nutritional and sociological factors shaping the lifestyle of many individuals within the obesogenic environment in which we all exist in 21st century Britain have received much government and media attention in terms of interventions, a psychological approach, often neglected within current applied programmes, can also offer a significant contribution to helping individuals in order to stem the rise of this modern epidemic.

Exercise psychologists can offer the necessary expertise to help obese individuals recognise and understand the significant barriers that require addressing to break their vicious circle of sedentary behaviour and adopt and maintain a long-term increase in physical activity and/or exercise regimes. Given the particularly sensitive nature of physical activity in the lives of obese individuals, this consulting should be delivered by experts who understand the theoretical background to behaviour change, who show excellent communication and reflective practice skills, and who have the ability to attune to those seeking help.

Despite much evidence to show that weight loss surgery is the most effective intervention for long-term weight loss (Togerson & Sjostrum, 2005) it is also the case that bariatric surgery candidates have a 58 per cent higher mortality post-surgery than severely obese individuals from the general population (Adams et al., 2007) with psychological factors being the likely cause (Karlsson et al., 2007). The importance of psychology, both pre and post surgery, is therefore clear within a multi-disciplinary team approach within bariatric services, with long-term follow-up essential.

Of the pharmacological interventions prescribed, Orlistat has remained available and can be effective in promoting weight loss and maintaining this despite unpleasant side-effects, there is still a pattern of weight regain over time. The weight loss effect remains dependent on simultaneous and sustained lifestyle changes. Thus, whilst Orlistat may 'kick start' an individual into weight loss, it will not replace the need for required behavioural changes necessary to adopt and maintain a healthy lifestyle. Perhaps even more worrying than Orlistat, which at least is controlled by prescription, is Alli, which can be purchased with ease, especially over the internet. Individuals who are most vulnerable and desperate for any drug that will make weight loss easier for them, can obtain Alli without negotiation of physical side effects and without expert support toward better understanding of how to obtain long-term behavioural change with regard to their obesity.

Despite the well documented consequences to the physical health of obese children, it is apparent that psychological factors, i.e. depression, low self-esteem and stigmatisation, are

of paramount importance when addressing this cohort of young individuals. More UK-based research is required to address long-term interventions that examine psychosocial outcomes and develop customised individual interventions which aid stability of children's weight over time. The most important goal for managing obesity in children and young people is that of weight-maintenance and positive psychological approaches can offer expertise to this end.

Despite an emphasis on psychology offering support and aiding exercise and lifestyle behavioural changes for the obese, such an approach requires some will-power on behalf of the individual. Whilst this may be possible throughout the duration of 'treatment' when the individual has the support from those experts with whom they are working, it is clear from many weight loss programmes that will-power is simply too difficult to sustain for most people. Thus, an in-depth understanding of the reasons as to why many obese individuals use food as a means of emotional regulation is an important factor that should not be overlooked, and which can be addressed by therapeutic intervention. Indeed, the suggested 1.3 million obese individuals who use food for affect regulation put a strain on NHS resources and bariatric surgery treatment too costly to sustain in the foreseeable future. This is compelling evidence to suggest incorporating psychological therapy into the treatment of obese individuals.

This report offers good argument for the added value that psychology and therapeutic approaches can add to the treatment of the complex problem of obesity. Whilst there is no one single approach and each individual requires a tailoring of intervention, no one intervention will be complete and sustainable without the individual better understanding their own needs and approach to behavioural change. Psychology and a therapeutic approach can empower change through better self-awareness and an increase in intrinsic motivation to obtaining a healthier long-term life-style. Not only does this have the potential for positive consequences for a healthier nation, bringing relief to current overstretched NHS resources, it would bring relief to the millions of obese individuals, many of whom are at a loss as to how to achieve control over their weight.

This report has not attempted to offer a 'one size fits all' approach, nor does it want to dilute the responsibility of other factors contributing to the obesity epidemic. Obesity is clearly a multidisciplinary issue where policy, economics, socio-environment, genetics, biology, psychology and medical advances all play a role. It is also the case that there will be individuals for whom some of the issues raised in this report do not fully apply (such as those from differing ethnic backgrounds, people with disabilities affecting mobility, pregnant women, those with complex medical histories) and these require further acknowledgement. Nonetheless, this report offers an insight into some of the psychological complexities that accompany the multiple factors involved in being obese. Psychology has an important place in the care of those attempting to gain control over their weight and should not be overlooked.

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