Identifying people with abdominal obesity and their current treatment options

Jill Hill

The rising prevalence of obesity within the UK is cause for concern. Obesity, especially abdominal obesity, is often associated with a clustering of cardiovascular and metabolic risk factors, such as hypertension, reduced levels of protective HDL-c and insulin resistance. There are also other related co-morbidities that support the need to address profiling in at-risk individuals. Therapeutic approaches to the management of obesity are based on the initial modification of lifestyle, including dietary alterations and increases in levels of physical exercise. In individuals where lifestyle interventions are ineffectual, pharmacological intervention plays a role in the management of obesity and its concurrent risk factors. This article describes the nurse's role in identifying people with abdominal obesity; the assessment of their cardiovascular and metabolic risk; and the management options for these individuals.

Within the UK, obesity (traditionally defined as a BMI ≥30 kg/m²) is becoming the healthcare issue of the 21st century and is the driver of a range of chronic conditions, including hypertension and type 2 diabetes. Within England, the 2003 Health Survey showed that 65.4% of men and 55.5% of women were overweight (BMI: 25–29.9 kg/m²), with 22.2% of men and 23.0% of women who were clinically obese. This is an increase from the 1995 figures, where 13.8% of men and 17.3% of women were classified as clinically obese (DoH, 1995). In 2003, it was also shown that 31.1% of males and 41.1% of females had an increased waist circumference (defined as ≥102 cm in men and ≥88 cm in women; DoH, 2003). The definition of abdominal obesity by waist measurement used in the Health Survey for England was that taken from the USA National Cholesterol Education Programme Adult Treatment Panel III (National Cholesterol Education Programme Expert Panel, 2002).

Recently, the International Diabetes Federation (IDF) has produced a new definition of the metabolic syndrome that refers to a cluster of conditions that can lead to cardiovascular disease, including abdominal obesity, hypertension and hypertryglyceridaemia. Within this document, abdominal obesity is defined as ≥94 cm for European men and ≥80 cm for European women, plus variations to account for ethnicity (IDF, 2005; *Table 1*).

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The increasing prevalence of obesity and abdominal obesity within the UK is due to a number of factors. The availability of energy-dense foods is a major contributor (National Audit Office, 2001). Snacks such as chocolate bars and crisps contain a high caloric value, but do not provide an individual with a feeling of satiety. There has also been a decrease in physical activity within the UK – increasingly, people use cars and public transport instead of walking, and take escalators instead of stairs (National Audit Office, 2001).

Abdominal obesity has been linked to the development of major conditions, including type 2 diabetes (Carey et al, 1997) and cardiovascular disease (Han et al, 1995). One possible link between these three conditions is inflammation, a low level of which is associated with obesity and has been implicated in the pathophysiology of diabetes and CVD (Yudkin et al, 1999; Hotamisligil et al, 2003). It is well established that obesity is associated with a number of co-morbidities, such as hypertension, gastrointestinal events, osteoarthritis and numerous types of cancers (Jung, 1997). It is also now acknowledged that individuals who display abdominal obesity also experience a clustering of risk factors, such as hypertriglyceridaemia, low HDL-c levels, increased levels of apolipoprotein B and insulin resistance (Després et al, 2001).

In light of the growing obesity epidemic, government policy is increasingly moving towards improved health prevention services with earlier interventions, as evidenced by the White Paper, *Our Health, Our Care, Our Say: A new direction for community services* (DoH, 2006a). This approach is being accomplished through the roll-out of NHS 'life checks'. This service will be focused on:

● an initial assessment that people complete for themselves

● offering specific advice and support on the action that people can take to maintain and improve health, plus, if necessary, referral for more specialist diagnoses for those who need it.

These life checks could have a beneficial preventive effect through the earlier identification of at-risk individuals, which may assist in the earlier diagnosis of long-term conditions, leading to earlier intervention and improved outcomes. This will augment and support existing services at different points along the obesity care pathway. Nurses play a major role in this pathway through the management and administration of nurse-led risk factor clinics, and by signposting individuals to other services. For these reasons and others discussed below, obesity – particularly abdominal obesity – is a priority for nurses across both primary and secondary care.

Why is abdominal obesity a problem?

It has long been understood that obesity is a risk factor for a range of diseases. However, it is only recently that the importance of the distribution of obesity as a cardiovascular risk factor has emerged. Since that time, large-scale studies have shown abdominal obesity to be a major risk factor for the development of both metabolic and cardiovascular diseases (Carey et al, 1997; Han et al, 1995; Wang et al, 2005; Yusuf et al, 2004).

Abdominal obesity is considered a major risk factor, as it is the outward presentation of visceral fat that is associated with pathophysiologies such as low HDL-c levels, hypertriglyceridaemia and hypertension (Després et al, 2001). A number of trials have established abdominal obesity as a cardiometabolic risk factor and three of these are examined briefly below.

Table 1. Waist circumference boundaries for elevated cardiometabolic risk (International Diabetes Federation, 2005).		
Ethnic grouping		**Waist circumference (used by the IDF to define obesity)**
Europids[†]	Male	≥94 cm
	Female	≥80 cm
South Asians[§]	Male	≥90 cm
	Female	≥80 cm
Japanese	Male	≥85 cm
	Female	≥90 cm
Eastern Mediterranean, Middle East (Arab), sub-Saharan African populations	Male Female	Use European cut-off values until more specific data are available

[†]In the United States, ≥102 cm for males and ≥88 cm for females are likely to be used in clinical practice.
[§]Until more specific data become available, the IDF suggest that South Asian cut-off values should be used for South and Central Americans. Figures are based on Chinese, Malay and Asian-Indian populations.

The Nurses' Health Study

This was a large study that included approximately 121 700 female participants. Data were analysed from 43 581 women enrolled in the study between 1986 and 1994 who provided waist, hip and weight information, and who were initially free from diabetes and other major long-term conditions. The study showed that abdominal obesity was a good predictor of type 2 diabetes over and above BMI (Carey et al, 1997).

The Health Professionals Follow-Up Study

This was a similar large-scale cohort study in an all-male population demonstrating that both overall and abdominal obesity strongly and independently predict the risk of developing type 2 diabetes. When compared as measures of obesity, waist circumference was a better predictor of the risk of developing type 2 diabetes than both BMI and waist–hip ratio (Wang et al, 2005).

The INTERHEART study

The INTERHEART study was a large multicentre study whose results showed that current smoking and a raised apolipoprotein B: apolipoprotein A1 ratio were the two strongest risk factors for myocardial infarction (MI), with abdominal obesity classified as a major risk factor. BMI was related to the risk of MI; however, this relationship was weaker than that between abdominal obesity and MI (Yusuf et al, 2004).

Assessment of risk and the role of the nurse in obesity management

The role of the nurse in cardiovascular and metabolic risk-factor management is a prominent one. This occurs alongside the general movement towards earlier prevention, and hence earlier diagnosis, within the wider health service. For example, the updated General Medical Services contract focuses on the management of obesity. GP practices now achieve Quality and Outcomes Framework (QOF) points by keeping an obesity register (DoH, 2006b).

To identify abdominally obese people within a clinical setting, the use of waist circumference is the most practical measurement, although many people may find this embarrassing and should be handled with consideration for their feelings. The measurement of this marker, along with BMI, blood pressure, blood lipids, glucose levels and smoking status, should be carried out to fully assess the cardiometabolic risk of the individual. This holistic management approach is advocated within the second Joint British Societies' Guidelines on the prevention of cardiovascular disease in clinical practice (British Cardiac Society et al, 2005).

Waist circumference should be measured between the lower rib margin and the iliac crest. This may be difficult to carry out in some people, in which case a measurement at the level of the umbilicus can be used (Hill, 2005). Despite the weight of evidence supporting waist circumference as a marker of abdominal obesity, and hence cardiometabolic risk, it is BMI that is rewarded by QOF points, while waist circumference is not.

When measuring waist circumference, it is important to be aware that ethnic differences exist between populations. Within the new IDF guidelines, white Caucasian men with a waist circumference ≥94 cm and women with a waist circumference ≥80 cm are considered to be at elevated cardiometabolic risk. However, in Asian males and females, ≥90 cm and ≥80 cm, respectively, are the boundaries for elevated cardiometabolic risk (IDF, 2005).

One of the major roles of a nurse in obesity management is in signposting the people they see in clinic to alternative healthcare resources. This signposting can be to a range of services, including exercise on prescription, recommendations to seek nutritional advice by joining a healthy eating scheme or time spent with a personal trainer.

Exercise and a healthy eating plan make up the basis of lifestyle intervention; however, they can be difficult to adhere to, and encouragement and support are often needed. For this reason, nurses also play a major motivational role and can help people to establish achievable targets for weight loss. It is important to make individuals aware that losing weight is about a complete change of lifestyle, and they should

1. The prospect of exercise may be daunting for some people and it may therefore be beneficial for the patient to adapt/modify their behaviour gradually.

2. The effectiveness of using lifestyle modification in preventing the onset of type 2 diabetes was shown in the Diabetes Prevention Programme.

3. Exercise has also been shown to be beneficial in reducing the visceral fat of an individual.

4. For people who require pharmacological treatment, there are three available options for the management of overweight and obese people: orlistat, sibutramine and rimonabant.

attempt to incorporate exercise into their everyday life. Nurses also manage community weight management strategies, which commonly involve the use of obesity clinics. These provide a positive environment for the participants, and may help them feel that other people are in a similar situation to them.

Nurses are also involved in signposting to other specific healthcare resources. Often, by use of a triage system, the patient is interviewed by the nurse on a one-to-one basis. The outcome of this interview can be the recommendation for the individual to see a nutritionist or dietitian, a GP or, in very severe cases, to be referred for bariatric surgery. Proactive weight management, however, appears to be the exception rather than the norm (see *Box 1*).

Current strategies for the management of obesity

The increase in obesity and its resultant co-morbidities have resulted in the requirements for effective strategies are increasing. With the continued emphasis on evidence-based care, it is important to assess what works in managing people with obesity. Current strategies are based on initial lifestyle interventions with regular follow ups to encourage and motivate individuals, initiation of pharmacological weight-loss agents when appropriate and, in severe cases, surgical intervention may be necessary. Dietary alterations should focus on reducing the intake of sugar and saturated fat, and on increasing consumption of fruit and vegetables. Diets that result in a 600 kcal/day deficit are recommended for sustainable weight loss (NICE, 2006).

Exercise

The prospect of exercise may be daunting for some people and it may therefore be beneficial for the individual to adapt or modify their behaviour

gradually. With this in mind, they should aim to increase their level of physical activity gradually over time. The goals that are set for obese individuals must adhere to the SMART: Specific, Measurable, Attainable, Realistic and Time bound. For example, for someone who previously did no exercise, a SMART goal could be to go for a brisk walk for 10 minutes, three times a week, for 4 weeks, before assessing their progress.

Even modest weight loss of 5–10 % body weight can produce clinically significant improvements in blood glucose control, cholesterol levels and blood pressure (Goldstein, 1992). In people with type 2 diabetes, rates of weight loss may be slower and so lower targets may be appropriate. In addition, many oral therapies used in the management of diabetes can cause weight gain. Advice and support from the DSN is therefore particularly important to address the concerns these factors may raise.

The effectiveness of using lifestyle modification in preventing the onset of type 2 diabetes was shown in the Diabetes Prevention Programme (Knowler et al, 2002). The goals for lifestyle intervention were to achieve and maintain a weight reduction of at least 7 % of body weight through a healthy low-calorie diet, and to engage in at least 150 minutes of moderate-intensity exercise per week. Lifestyle intervention reduced the incidence of type 2 diabetes compared with the placebo group by 58 %.

Exercise has also been shown to be beneficial in reducing the visceral fat of an individual. This has been shown to be the case, even when no weight loss occurs (Ross et al, 2004). In a small study in 54 premenopausal women, exercise without weight loss was associated with substantial reductions in total (7 %), abdominal (10 %) and visceral fat (18 %). Problems exist, however, with lifestyle interventions – especially concordance. In terms of obesity management, weight regain is a problem with most lifestyle regimens (Wadden et al, 2004). It is also important to be aware that in long-term conditions such as type 2 diabetes, there is a general deterioration in the person's condition over time.

Box 1. The Counterweight study.

The Counterweight study was carried out in 40 primary care practices throughout the UK. One hundred and forty-one GPs and 66 practice nurses took part in structured interviews to examine clinician self-reported approaches to obesity management. Over 18 months, practice-based diet counselling was reported by 20% of those interviewed; dietetic referals in 4%; obesity centre referrals in 1%; and any anti-obesity medication in 2%. Results further showed an under-recording of obesity as a diagnosis and that weight management appears to be based on brief opportunistic interventions undertaken mainly by practice nurses (Laws and the Counterweight Project team, 2004).

Page points

1. Effective identification of people at increased cardiometabolic risk is important, as is ongoing risk assessment and management of these individuals.

2. The management of obesity through lifestyle changes is effective; however, problems exist, such as weight regain and concordance.

Pharmacological treatment

For people who require pharmacological treatment, there are three available options for the management of overweight and obese people: orlistat, sibutramine and rimonabant. Orlistat and sibutramine have been included in the recent guidance on obesity from NICE (NICE and the National Collaborating Centre for Primary Care, 2006). The recommends are for orlistat to only be prescribed as part of an overall obesity management plan in those who meet one of the following criteria:

● A BMI of 28 kg/m² or more with associated risk factors.
● A BMI of 30 kg/m² or more with no related co-morbidities.

NICE recommends that sibutramine should only be prescribed as part of an overall plan for the management of obesity in adults who meet one of the following criteria:

● A BMI ≥27 kg/m² and other obesity-related risk factors (such as type 2 diabetes or dyslipidaemia).
● A BMI ≥30 kg/m² without associated co-morbidities.

Additionally, sibutramine should not be prescribed unless there are adequate arrangements for monitoring both weight loss and adverse events (NICE and the National Collaborating Centre for Primary Care, 2006).

Both agents have been shown to be modestly effective in promoting weight loss, as shown in a Cochrane review (Padwal et al, 2004). They have also been shown to have beneficial effects on certain cardiometabolic risk factors (James et al, 2000; Torgerson et al, 2004). In terms of adverse events, orlistat is associated with gastrointestinal side effects and sibutramine is associated with small increases in blood pressure and pulse rate (Padwal et al, 2004).

A newer approach to the management of cardiometabolic risk is the use of the recently licensed agent rimonabant. Rimonabant provides a holistic management strategy for cardiometabolic risk through the management of waist circumference, decreased HDL-c levels and elevated triglyceride and HbA_{1c} levels. Rimonabant is licensed as an adjunct to diet and exercise for the treatment of obese (BMI ≥30 kg/m²) or overweight (BMI >27 kg/m²) people with associated risk factors such as type 2 diabetes or dyslipidaemia. The recent *Rimonabant in Obesity* clinical study programme showed that rimonabant is effective in managing multiple cardiometabolic risk factors through increases in HDL-c levels and decreases in triglyceride and HbA_{1c} levels (Després et al, 2005; Scheen et al, 2006). It offers an effective option for the holistic management of cardiometabolic risk factors, and benefits were 57 % greater on HDL-c and HbA_{1c} levels than the benefits expected from weight loss alone (Scheen et al, 2006). The most common adverse effects reported more frequently with rimonabant than placebo include nausea, dizziness and diarrhoea (Electronic Medicines Compendium, 2006). Other adverse events include anxiety, mood alterations and depressive disorders – rimonabant is not recommended in people receiving antidepressant medication. It is also important to be aware that depression is more common in people with diabetes (Anderson et al, 2001).

If all non-surgical treatment options have been attempted and failed to produce sustainable, beneficial weight loss for at least 6 months and the individual has a BMI ≥40 kg/m² (or 35–40 kg/m² with another condition, such as diabetes), bariatric surgery can be recommended (NICE, 2006). The individual also has to be receiving intensive management in a specialist obesity service, be generally fit for anaesthesia and surgery, and committed to the need for long-term follow up. Bariatric surgery can also be a first-line treatment for appropriate people with a BMI ≥50 kg/m².

Conclusion

Effective identification of people at increased cardiometabolic risk is important, as is ongoing risk assessment and management of these individuals. The management of obesity through lifestyle changes is effective; however, problems exist, such as weight regain and concordance. For this reason, the use of pharmacological treatments to reduce weight and its associated co-morbidities may be required. These pharmacological treatments may also have a role to play in people with type 2 diabetes, as obesity tends to increase with the use of most anti-diabetic medication (Purnell and

Weyer, 2003). All of these management options should be considered for each individual on a case-by-case basis and will assist nurses in their considerable role in the holistic management of cardiometabolic risk factors. ■

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Page point

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