ATTITUDES TO OBESITY:
HEALTH PROFESSIONALS' VIEWS AND PRACTICE

Emma Louise Harvey

Submitted in accordance with the requirements
for the degree of Doctor of Philosophy

The University of Leeds
School of Medicine
September 1999

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference is made to the work of others.

ACKNOWLEDGEMENTS

I would like to thank my supervisor Dr. Andrew Hill for his guidance and support throughout the period of my research. I would also like to thank Dr. Jan Burns for encouraging me to start, and for her early help and support as my former line manager and one-time joint PhD supervisor. Thanks are also due to my employers, the University of York, and Prof. Ian Russell, for providing financial assistance, general support, and that essential resource, time. I am extremely grateful to the Max Hamilton Memorial Fund, University of Leeds, for providing a grant that enabled me to undertake the first two surveys described in this thesis. Special thanks and appreciation go to Dr. Sara Kirk (Leeds Metropolitan University) and Dr. Janet Cade (The Nuffield Institute, University of Leeds) for taking on the onerous task of reading and commenting on my entire thesis. I would also like to thank Dr. Nigel Rice and Dr. Philip Young (both University of York) and Dr. Louise Dye (University of Leeds) for providing essential statistical advice in a friendly and accessible manner; Dr. Sara Kirk and Dr. Carolyn Summerbell (University of Teesside) for providing advice, comments and practical help and Ms. Ruth Parker (University of York) for giving administrative support on the survey of dietitians reported in Chapter Six; Dr. Kim Burton (University of Huddersfield) and Dr. Andrew Garratt (University of Oxford) for providing methodological input on the dietitians' survey; and Dr. Amanda Georgiou (The Nuffield Institute, University of Leeds), Dr. Peter Bull, Ms. Hilary Bekker and Ms. Zelda DiBlasi (all University of York), for providing comments and advice on the psychological aspects of this thesis.

The systematic review reported in Chapter Seven of this thesis was carried out by a team, which included Ms. Anne-Marie Glenny (University of York), Dr. Sara Kirk (Leeds Metropolitan University) and Dr. Carolyn Summerbell (University of Teesside). I contributed to the work by formulating the idea for the review, and by taking the lead role in searching, identifying and assessing studies, and writing up.

In addition, many people helpfully gave their time for activities associated with the review. Thanks go to Julie Glanville (University of York) for her valued input in devising and running most of the electronic search strategies. Thanks also go to Cynthia Fraser (Cochrane Effective Practice and Organisation of Care Group – EPOC) for her helpful work on the Embase and CCTR searches, and to Janette

Colclough (University of York) for her assistance in devising the Embase strategy and for always being helpful and approachable with regard to our Information Resource needs. I am grateful to Pat Spoor (Cochrane Diabetes Group), Hugh McGuire (Cochrane Depression, Anxiety and Neurosis Group), Anne Taylor Vaisey (McMaster University, Canada), and Marlies Hulscher (University of Nijmegen, The Netherlands) for their help in searching for studies. I am especially thankful to those people who helped with assessing non-English language papers for inclusion, Felix Gurtner and Eric Jensen (formerly of Arcovita, Switzerland) and JP Glutting (Spanish Cochrane Centre). Thanks are also due to members of the EPOC editorial team – Mary Ann Thomson (McMaster University, Canada), Jeremy Grimshaw (University of Aberdeen) and Lisa Bero (University of California, San Francisco, USA) for their invaluable advice in scoping and refining the review, and to peer reviewers Mona Britton (SBU, Sweden), Per Björntorp (Göteborgs Universitet, Sweden), Cindy Mulrow (San Antonio Cochrane Center, USA) and Brenda Wilson (University of Aberdeen), all of whom provided us with useful suggestions for improving the protocol and the review. Thanks are also due to Claire Allen and Graham Mowatt (EPOC, University of Aberdeen) for their practical and administrative support in preparing the manuscripts for publication.

I am particularly grateful to my friends, my mother and Brian for providing bundles of encouragement, enthusiasm, support, and practical help throughout the long and variable period of my studies. Special thanks are due to Zaggis Dent for being there and listening to me over the years, to Bruce Dinsmore, Caroline Dinsmore, and Sara Kirk for their generous help and support, to Rachael Daggett for egging me on, to Clare Haynes for providing honesty and lots of laughs, and to Richard, my partner, for providing me with valued time, space and encouragement in the writing up months. Finally, I thank all these people for their belief in me, for if this alone could have gotten me through, they would have seen me succeed long ago.

ABSTRACT

The purpose of this thesis was to study health professionals' views and practice in relation to overweight and obesity. In particular, the aims were: to explore the key cognitions of health professionals, with a view to describing their obesity stereotype and related attitudes; to explore the same cognitions among dieters; to compare and contrast the views of health professionals and dieters; to explore the relationship between health professionals' cognitions and practices; and to investigate the way in which health professionals' practice may be improved. Four studies were undertaken. The first was a survey of health professionals' views of overweight and obese people, compared to their views of smokers. In an independent, factorial design, participants responded to questions about moderately or extremely overweight people, or moderate or heavy smokers. Two hundred and fifty-five health professionals took part. Health professionals' beliefs and attitudes were mixed, but of the four groups, attitudes towards obese people were most negative. The obesity stereotype appeared to be differentiated from the overweight stereotype by perceptions of reduced self-esteem, sexual attractiveness and health.

The second study examined dieters' cognitions of overweight and obesity. In another independent, factorial design, dieters' views about moderately or extremely overweight people were examined as a function of their own body weight (normal weight, moderately and extremely overweight). Two hundred and three people participated. The findings showed that dieters of different body weights had the same kinds of cognitions about both overweight *and* obese people. The key cognitions underpinning the overweight stereotype among dieters were that mood-related factors were viewed as important in causing overweight, and that overweight people were seen as ordinary people, but with reduced self-esteem, sexual attractiveness and health. A direct comparison of health professionals' and dieters' responses was undertaken using data from Studies 1 and 2. There were many similarities in the perceptions of the two groups, but dieters tended to have slightly more traditional views of the causes of overweight (mood, lack of willpower) and the responsibilities of overweight people. The pattern of attitudes for both groups was mixed, but health professionals' responses were more likely than dieters' to be influenced by the level of severity of the weight problem.

The third study explored the relationship between cognitions and practices among 187 dietitians. Respondents' views of overweight were similar to those of the health professionals in the first study. In addition, belief that a lack of willpower was important in causing obesity (but not general attitudes or beliefs about responsibility) was associated with a number of reported practice choices.

The final study investigated strategies for improving health professionals' management of obesity and the delivery of health care for overweight and obese people, through a systematic review of the evidence. Twelve studies were included, but due to the limited quality of many of the studies, there is currently very little information on how obesity practice may be improved and whether this will result in improved outcomes for patients.

Overall, the findings indicate that cognitions about overweight and obese people were mixed. Although some negative perceptions may exist among health professionals, these may be less negative than previously documented. Significant level effects among health professionals suggest that where they exist, they are more likely to be directed at obese people than moderately overweight people. As obese people are at a greater health risk, the implications for improving practice need to be explored in detail. The findings of the systematic review suggest that where practice does need to be improved, currently very little is known about what strategies may be effective.

TABLE OF CONTENTS

1. Chapter 1 – Introduction

1.1 A foreword – Defining obesity

There is no universally accepted definition of obesity. However, an increasingly popular approach is to define weight levels in terms of body mass index (BMI) – calculated as a function of a person's weight in kilograms (kg) by their height in metres-squared (m^2), as in **Table 1.1**.

BMI (kg/m^2)	Description
20 or less	underweight
20 – 25	desirable weight
25 – 30	overweight
30 – 40	obese
40+	morbidly/severely obese

Table 1.1: Definitions of overweight and obesity, from the Effective Health Care Bulletin (1997)

Nevertheless, it is important to bear in mind that the terms overweight and obese are used interchangeably and inconsistently, hence sometimes leading to ambiguous research findings. It is not always clear when overweight is described as harmful to health, whether this in fact means obesity as defined above, or both overweight and obesity. When people are said to have negative views about obesity, it is not always clear whether this includes overweight people in general. Often studies do not specify the levels of weight to which they refer, and if they do, different investigators use different definitions. Furthermore, the terms may be confused because they are not mutually exclusive: obese people are in fact 'overweight'; it is a matter of degree. Obese people also have to 'pass through' overweight on their way to obesity and the distinction between a BMI of, say, 29 and 30 is somewhat arbitrary.

This thesis will use both the terms 'overweight' and 'obese'. Generally, 'obesity' refers to the higher end of the BMI range, as in **Table 1.1**. Sometimes these terms may be

used interchangeably because a distinction has not been made clear in primary studies. However, when clear distinctions do arise, these will be presented.

In addition, the studies reported in this thesis aim to shed light on possible weight level effects. In Studies 1 and 2, survey participants were asked questions about moderately and extremely overweight people. In these cases, 'moderately overweight' is intended to equate to 'overweight' and 'extremely overweight' to 'obesity', but as it is likely that different individuals have different interpretations of these terms, these were sought from respondents. These categories have been used because many people are not necessarily aware of the overweight-obesity distinction. Furthermore, while 'obesity' may be an accepted medical term, it is one with which health professionals and scientists are probably more comfortable than lay people. Instinctively, the term 'obese' carries more negative connotations than 'overweight' or 'extremely overweight'. There seems to be a kind of natural etiquette among the general population in the terms used to describe overweight people. Many people avoid words like 'fat' or 'obese' in front of overweight people themselves. They seem to be more comfortable with terms such as 'large', 'overweight' or 'having a weight problem'. These initial studies have taken these issues into account. Later, the survey of dietitians reverts to the use of the terms 'overweight' and 'obese' as dietetic training means this group of professionals are much more familiar with these terms.

1.2 Background

Levels of obesity are rising at an alarming rate in many developed and developing countries (WHO 1998). The causes of obesity are complex and not completely understood, but it appears that big changes in lifestyle over recent decades are contributing to the problem (Prentice and Jebb 1995). Given the enormity of the problem, it is clear that the response to it needs to be multi-faceted and comprehensive. Many people are implicated in this process, but in particular, the role of the health professional in the management of obesity is vital. The health care system in the UK provides an opportunity for large numbers of obese people to be seen and given health care in a structured and systematic way. In the UK, more than 70% of the population consult their general practitioner each year (RCGP 1986). A similar figure (76%) has been quoted for the US (National Center for Health Statistics 1989). Combined with the increasing prevalence of obesity, if the health risks

associated with obesity are to be believed, there is good reason to assume a fair proportion of these consulters will be overweight or obese. Thus, there is great potential for doctors to intervene as the first line of treatment. As the gatekeepers to health care, general practitioners are also in the position to provide access to other health professionals, through appropriate referral practices.

A recent systematic review of smoking cessation counselling suggests that doctor-patient contact can be put to good effect. Silagy and Ketteridge (1997) found that changes in simple advice-giving behaviour from physicians resulted in small but significant changes amongst patients – smoking behaviour is a useful comparison in that smoking is a problem that is difficult to treat in terms of effecting long-term changes. Similarly, a systematic review of back pain studies has indicated that simply changing advice given by doctors on avoiding bed rest and becoming more active can influence patient behaviour and health outcomes (Waddell, Feder, McIntosh, Lewis *et al.* 1996). As changing patient activity levels can be notoriously difficult to achieve, this is also an encouraging finding. Nevertheless, differences in the clinical aspects of these conditions mean similar effects can not be taken for granted amongst the obesity population. Any interventions to change practice with overweight people must be tested and evaluated independently.

Although there is great potential to reach large numbers of obese people through consultations with health professionals, it is likely that this potential is not currently being exploited. There are many possible barriers to the involvement of health professionals in good obesity management. Treating obesity is difficult, if success is judged in terms of sustained long-term weight loss (EHCB:3:2 1997; Glenny, O'Meara, Sheldon and Wilson 1997). Also, patient expectations and behaviours, provider knowledge about weight loss strategies, the availability of appropriate support services and resources and health policies may all limit the health professionals' capacity to manage obesity effectively. In particular, given the widespread stigma associated with obesity in industrialised countries, it seems probable that many health professionals will hold negative attitudes about overweight and obese people. A number of commentators have suggested that negative perceptions of this patient group, along with a lack of faith in intervention, may interfere with good practice (Frank 1993; HEA 1995; Price, Desmond, Krol, Snyder *et al.* 1987; Summerbell 1998).

The obesity attitudes literature offers useful insights into the role of negative obesity attitudes and their potential effect on behaviour. In addition, the psychological literature offers opportunities for understanding the relationship between attitudes and behaviour in general, and how this information may be utilised in the health care setting. Both approaches can, therefore, aid our understanding of the health professionals' role in addressing the obesity problem.

Unfortunately, in the application of psychological theory to health, most of the emphasis to date has been on patients' cognitions, and how these may influence the uptake or discontinuation of various health-related behaviours – far less work has focussed on health professionals' cognitions and their subsequent choice of health-care procedures (Marteau 1995). ('Cognitions' is used as a general term here to describe beliefs, knowledge, attitudes, and feelings.) In particular, the possibility of prejudice and discriminatory practices amongst professionals has been largely neglected within this specific discipline. Why these issues have been relatively overlooked is not clear, but perhaps there is an implicit belief that health professionals' practices will be based more on scientific knowledge gained through training, than on lay beliefs. Alternatively, it may also be due to the fact that health psychology as a distinct discipline is a relative newcomer, so that this is one of a number of areas that awaits further development. Of course, it is not a new idea in itself to consider variations in what health care providers do – the whole of evidence based health care is based on this premise, and investigators have been exploring health professionals' beliefs and practices for some time. However, the application of theory is dominated by studies of patients' behaviours, and there are far fewer attempts to explain professionals' attitudes and behaviours in this way. Certainly, this is the case in the obesity attitudes literature, so that health professionals' cognitions have been explored, but not generally presented within the context of psychological theory.

Therefore, within this thesis, the obesity attitudes literature will provide the lead in understanding some of the key cognitions among health professionals that may be acting as barriers to good provider practice. The social psychological literature will also be considered for its insights into the role of attitudes and behaviour, with particular reference to theories of stereotyping and prejudice. Thus, in exploring obesity attitudes, psychological theory will be used to guide interpretation of the emergent data.

In acknowledgement of the relative lack of emphasis on the health professional within the health psychology literature, Marteau (1995) has offered a useful framework for considering health professionals' cognitions alongside those of patients'. She has proposed that health professionals' cognitions influence their practice, patients' cognitions and behaviour, and ultimately patient outcomes (see **Figure 1.1** below). *'Patients' cognitions may influence health outcomes indirectly by influencing health-related behaviours (A), and directly by influencing physiological systems (B). Cognitions of health professionals will influence their own behaviour (C), which in turn may influence patients' health outcomes directly by determining how the health professional manages a disease (D), and more indirectly by influencing the cognitions of the patient (E). Patients' cognitions are also influenced by other factors, including beliefs about their health status (F)'* (p. 13-14).

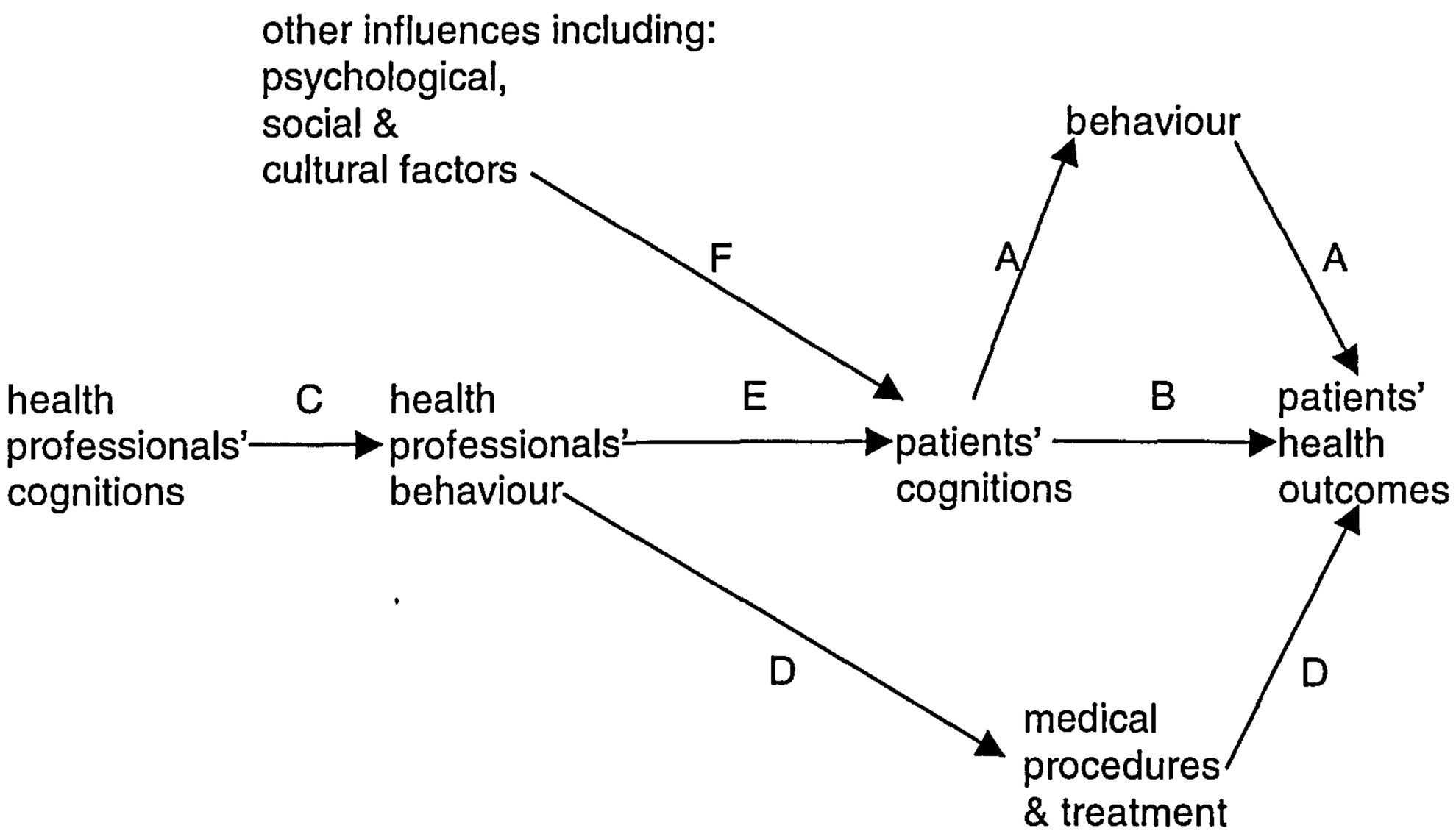

Figure 1.1: The relationship between the cognitions of patients and health professionals, health behaviour and health outcomes (p. 13, Marteau 1995).

This framework will be used in this thesis. In particular, the health professional variables are considered in more detail. From **Figure 1.1**, it is proposed that the psychological, social and cultural factors take great prominence in the whole picture, because of the existence of the obesity stereotype and widespread obesity prejudice in westernised countries. Thus, an amendment is proposed to this diagram, indicating a link between these factors and health professionals' cognitions, so that their beliefs and attitudes are explored in terms of the wider social and cultural context.

1.3 Thesis outline

This thesis explores the views and practice of health professionals in relation to overweight and obese people. The literature review undertaken in the next chapter summarises some of the key themes from the obesity literature. The causes for the rising levels of obesity and the potential consequences for public health, in the UK and other developed countries, are explored. Contemporary and traditional beliefs and attitudes about obesity are examined, along with some of the psychosocial consequences of negative obesity attitudes. Consideration is given to the overlap between psychosocial and health problems, in summarising what is known about health professionals' views and practice in relation to obesity. Psychological theories of attitudes and in particular stereotypes and prejudice are discussed, with the aim of providing further insights to the obesity attitudes literature, and for guiding interpretation of the findings reported in subsequent chapters.

The findings from four studies are reported: a survey of health professionals' views of overweight and obesity; a survey of dieters' views of overweight and obesity (and a direct comparison between these views and those of health professionals); a survey of dietitians' views of overweight and obesity, and their reported management practices; and finally, a systematic review of strategies to improve health professionals' management of overweight and obesity. In this way, health professionals' views and practice are explored.

2. Literature review

2.1 Obesity – A public health problem

The trend of rising levels of obesity in industrialised societies will have important consequences for population health and health services expenditure in coming decades. In the UK in 1992, obesity reduction was identified as a key target within the Health of the Nation strategy (HoN 1992), but in contrast to most other HoN targets, it is one which still requires substantial attention (NHS Trust Project 1997). Obesity is still increasing in the UK and at the current rate may affect 18% of men and 24% of women by the year 2005 (The Nutrition and Physical Activity Task Forces 1995). This is in stark contrast to the original HoN targets of 6% and 8% for men and women, respectively. This pattern is mirrored elsewhere. Increases in average BMI and obesity prevalence have been reported in both North and South America (Kuczmarski, Flegal, Campbell and Johnson 1994; Sichieri, Coitinho, Leao, Recine *et al.* 1994), Australasia (Hodge, Dowse, Toelupe, Collins *et al.* 1994; National Heart Foundation of Australia 1990) (Hill, Rogers and Blundell 1995), as well as in Asia (Popkin, Paeratakul, Ge and Zhai 1995) and many European and Scandinavian countries (Seidell 1995) (WHO 1998).

In order to seek out a response to the rising levels of obesity, it is useful to explore the reasons why obesity prevalence is increasing – what is happening to explain this trend? Many scientific disciplines are involved in the effort to understand, prevent and treat obesity: exercise physiology, nutrition, endocrinology, behavioural genetics, psychiatry, neuroscience, anthropology, psychology (Schlundt, Hill, Sbrocco, Pope-Cardle *et al.* 1990), and epidemiology, among others. While some explanations focus on the individual, it is clear that the rising trends in industrialised countries mean that something must be happening at a population level. It is also true that what is happening at a population level is not the same for everyone: in other words, not everyone is becoming overweight or obese. Therefore, it is important to explore both individual and social factors.

2.2 The causes of obesity – Individual explanations

2.2.1 The role of physiology

More than a hundred years ago, a French physician and physiologist Claude Bernard described the stability of the internal workings of the body, even under extreme environmental changes (Keesey 1995). He put this down to the body's ability to monitor itself and adapt to deviations from the norm. Walter Cannon, an American, later introduced the term 'homeostatis' for this mechanism (Keesey 1995). In an extension of these ideas, Nisbett (1972) introduced the concept of the 'set point theory', to describe the observation that obese and hungry individuals show a number of behavioural parallels. He suggested that obese individuals are in a chronic state of energy deficit and are genuinely hungry, possibly because they try to hold their weight below its biologically determined 'set point' by controlling food intake. In this way, in overweight people, the body would be striving to return to a natural (stable) baseline weight that is higher than that for normal weight individuals.

Much of Nisbett's theory was based on animal studies, which appeared to indicate a set point regulated by the hypothalamus, responsible for adjusting food intake to maintain fat stores at a pre-determined level. For example, Hoebel and Teitelbaum (1966) demonstrated that animals with damage to the ventromedial nucleus of the hypothalamus regulated their weight at a new, higher level, while Powley and Keesey (1970) showed that animals with *lateral* hypothalamic lesions *lowered* the level at which body weight was held. Some human studies appear to support the set point theory. Those involving food restriction (Keys, Brozek, Henschel, Mickelson *et al.* 1950) and overfeeding (Sims, Kelleher, Horton, Gluck *et al.* 1968; Bray 1983) have suggested that body weight returns to baseline levels after participants resume an *ad libitum* (free) diet, thus indicating that regulation at a pre-determined level is possible. These studies have since been criticised on methodological grounds, but it does appear that the body regulates to some degree through physiological mechanisms, even if the mechanisms are not exactly as described by Nisbett. Adjustments appear to be more vigorous in weight loss than gain, and in rapid rather than slow changes, hence the difficulties associated with short-term, dramatic weight loss strategies (Egger and Swinburn 1997).

2.2.2 The role of genetics

There appears to be reasonably strong evidence that genetic factors play a role in the development of obesity. For example, Stunkard, Foch and Hrubec (1986) carried out a large twin study of human obesity and found that concordance rates for different degrees of overweight were twice as high for monozygotic (identical) twins as for dizygotic (non-identical) twins. They suggested '*about 80% of the variance in BMI is accounted for by genetic factors and that the magnitude of this contribution remains stable throughout adult life'* (p.52).

Stunkard *et al.* (1986) also reported that all of the twin studies they had identified found a strong genetic component to obesity (Brook, Huntley and Slack 1975; Borjeson 1976; Medlund, Cederlof, Floderus-Myrrhed, Friberg *et al.* 1976; Feinleib, Garrison, Fabsitz, Christian *et al.* 1977; Fabsitz, Feinleib and Hrubec 1978). Later studies reported similar findings (Korkeila, Kaprio, Rissanen and Koskenvuo 1991; Bouchard, Tremblay, Despres, Nadeau *et al.* 1990). Bouchard *et al.* (1990), for example, studied the response to long-term overfeeding in identical twins and found significant similarity within pairs of twins in terms of body weight, percentage of fat, fat mass and subcutaneous fat. A number of adoption studies support these findings (Withers 1964; Biron, Mongeau and Bertrand 1977; Annest, Sing, Biron and Mongeau 1983; Stunkard, Sorensen, Hanis, Teasdale *et al.* 1986; Price, Cadoret, Stunkard and Troughton 1987), with levels of obesity being more similar amongst birth relatives than adoptive ones. More recently, the discovery of the ob gene and its product leptin (Zhang, Proenca, Maffei, Barone *et al.* 1994) has once again emphasised the role of genetics in obesity.

As a whole, these studies lend support to the notion that overweight is at least partially under genetic control. Accordingly, Stunkard *et al.* (1986) have proposed that genetics determine *whether* obesity can occur, while other (e.g., environmental) factors determine the *extent* to which it occurs. Given that the gene pool is relatively stable, if genetic factors alone were important there would be no way of explaining the huge increases in obesity in recent decades.

2.2.3 The role of personality and emotions

Traditionally, people have explained obesity in terms of overweight people repeatedly consuming the wrong types and amounts of foods, possibly in response to particular emotional or psychological cues. For example, Kaplan and Kaplan (1957), commenting on a review of the literature, concluded that '*the ultimate cause of the great majority of cases of obesity is psychologically determined hyperphagia'* (p.199). Also after a narrative review of the evidence, Ganley (1989) concluded 'emotional eating' to be extremely common among overweight and obese people. However, many of the studies cited in support of these arguments have a number of methodological weaknesses, including small sample sizes, a failure to control Type I error, no control groups, and a reliance on self-reported outcomes (Allison and Heshka 1993). Thus, such conclusions are not especially reliable. One could equally argue an alternative explanation from Ganley's summary: an unintentional finding is that it shows many people who are *not* overweight also show patterns of emotional eating. For example, Rand, Stunkard and Glucksman (Glucksman, Rand and Stunkard 1978; Rand 1982; Rand and Stunkard 1977, 1978) found that for 147 people undergoing psychotherapy, matched for age, education, socio-economic status and therapist, and for whom weight loss procedures were not part of therapy '*many more obese patients (98%) than non-obese patients (43%) were reported to eat when they were depressed, anxious, or angry'* (Rand 1982, p.183). This indicates that a proportion of normal weight individuals report 'emotional eating', apparently without becoming overweight. Perhaps eating in response to emotional or psychological cues is a common habit, but only some people become overweight as a result. As such, 'emotional-eaters' may become 'concentrated' in the overweight samples used in studies, while those who do not become overweight as a result remain 'diluted' in the general population from which controls are taken.

The evidence that obesity is caused by psychological factors is not strong. A report by the Royal College of Physicians Scottish Intercollegiate Guidelines Network (SIGN 1996) based on an extensive literature review notes that although behavioural responses to stress and mental health problems are frequently referred to as important contributors to weight gain, most formal analyses do not support this proposition. Many commentators are now convinced of the fact that there are no differences in psychological or personality characteristics between overweight and non-overweight people, even at the severe end of the obesity scale. From the

available literature, Stunkard and Wadden (1992) conclude that there is no single personality type that characterises the severely obese, there are no greater levels of psychopathology than in average weight controls, even though severe obesity can *result* in body image disparagement and a reduction in self-esteem. Even if the presence of obesity has a psychological impact, which is equivocal, it is not clear that the *causes* of obesity are psychological in nature (e.g., Friedman and Brownell 1995). Sometimes the explanations for the causes and consequences of obesity are mixed, so leading to confusion.

2.2.4 Medical causes

There are a number of specific medical or therapeutic causes of weight gain. The SIGN (1996) report cites the following: endocrine factors such as hypothyroidism or Cushing's Disease; some genetic disorders, or hypothalamic tumours or injury; various pharmaceutical interventions such as tricyclic antidepressants, valproate for epilepsy, and some steroid based treatments; and giving up smoking. In addition, a number of syndromes are associated with obesity: Prader-Willi, Pickwickian, Alstrom-Hallberg, Bardet-Beidl and polycystic ovarian syndromes (Brownell and Fairburn 1995). Although important in the medical assessment of an obese person, these disorders and syndromes are likely to explain only a small fraction of the cases of obesity.

2.3 The causes of obesity – Population level explanations

The prevalence of obesity in industrialised countries is rising. Generally, this rise is explained in terms of a widespread increasing imbalance between energy intake and expenditure. For example, for any individual, a modest but continuous accumulation of only 50-200 kcal a day over a four to ten year period can lead to a very slow but progressive weight increase of 2-20 kg, before the metabolic and physical cost of maintaining the extra weight balances the additional intake (SIGN 1996).

Seidell (1995) describes a number of factors to explain the increasing prevalence of obesity in a population, based on evidence from several epidemiological studies:

- Demographic factors: age (increased weight with age up to 55 years in men and 70 in women), gender (higher prevalence in women after age 50 years), ethnicity (large unexplained differences between different ethnic groups).
- Sociocultural factors: educational level, income and profession (in Europe, high prevalence in those with lower educational levels and income), marital status (usually increasing after marriage).
- Biological factors: parity (higher BMI with increasing number of children).
- Behavioural factors: nutrition (especially the proportion of fat in the diet), smoking (lower body weight in smokers, weight gain with cessation of smoking), alcohol consumption (moderate intake sometimes associated with higher BMI), physical activity (lower activity is usually associated with higher body weight).

While it is likely that all these factors contribute to weight gain to some degree, many of these are relatively fixed over extended periods of time and therefore do not necessarily explain the huge population increases in obesity. However, the exceptions are two of the behavioural factors listed above. Explanations focusing on changes in diet and activity over recent decades offer compelling accounts for the shifts in population trends of obesity.

Work and social patterns have changed immensely in the past 50 years in industrialised countries like the UK. For example, more women than previously are working full-time in paid employment and fewer are available to fulfil the traditional role of homemaker. Fewer people proceed straight from living as part of their family unit to living with a partner: more are getting married or are co-habiting later, more are working and living independently for greater periods of time. An increase in the divorce rate means that more people find themselves living alone later in life. All these changes in social living patterns mean there is less time for 'home management' activities and fewer are shared, increasing the resource burden on the individual. Furthermore, home cooking is more resource-intensive, and the greater availability of ready-prepared meals meets a demand to reduce the time spent on daily 'chores'. In turn, these pre-prepared, convenience and snack foods often contain extra sugar and fat to increase palatability, making them more appealing to consumers. Energy rich, high fat, high sugar diets have a greater tendency to promote weight gain, especially in those who are less active. There is also good reason to believe people are simultaneously becoming less physically active. Whilst more people may be working outside the home than previously allowing less time for home activities, occupations

are more sedentary than ever before. Improvements in communications and the IT revolution mean that more work can be done from the desk, with less need to move around and expend energy. Likewise, changes in living patterns mean fewer people have the time, energy or inclination to devote to pastimes that are predominantly about expending physical resources. The numbers of people resorting to sedentary pastimes like watching television has simultaneously increased (Office of Population Censuses and Surveys, HMSO 1994; Prentice and Jebb 1995).

There is reasonably good evidence that changes in lifestyle are contributing to the obesity epidemic. In a powerfully argued paper, Prentice and Jebb (1995) use population data to illustrate these changes. They describe the increase in fat intake in the last 50 years. In the 1940s, each kJ of carbohydrate in the diet was associated with 0.6 kJ of fat. In the 1990's this has increased to 0.9 kJ of fat, a relative increase of 50%. It seems that the proportion of fat in the diet is particularly important, more so than the intake of sugars. For example, Prentice and Jebb cite a study by Bolton-Smith and Woodward (1994) of 11,600 Scottish men and women. In contrast to popular beliefs, those consuming the highest intake of sugars were much less likely to be obese than low-sugar consumers. This is probably explained in terms of the 'fat-sugar seesaw', whereby high sugar consumers are likely to eat less fat. Accordingly, obesity rates were highest in those with the highest fat to sugar ratio. Other studies also implicate fat in weight gain: while excess carbohydrate intake is effectively regulated by carbohydrate-oxidation, no such corresponding mechanism exists for fat intake. Dietary fat is also dense in energy and has a limited effect on suppressing appetite and enhancing fat oxidation (Westrate 1995).

However, these arguments are compounded by data from UK National Food Surveys undertaken by the Ministry of Agriculture, Fisheries and Food (MAFF 1940-1994, MAFF 1992). These indicate that since the 1970s, British people appear to be eating less overall, and not generally consuming more alcohol, soft drinks and confectionery. Prentice and Jebb (1995) propose that this contradiction in overall consumption decline but obesity increase can only be explained in terms of the energy-expenditure side of the equation. They note how motorised transport, mechanised equipment, and energy-saving domestic appliances and pastimes have led to a reduction in physical activity levels. Only 20% of men and 10% of women are employed in active occupations (Allied Dunbar National Fitness Survey 1992). The average person in England now watches over 26 hours of television a week, compared with 13 hours in

the 1960s (Office of Population Censuses and Surveys, HMSO 1994). The Allied Dunbar Fitness Survey (1992) and the Health Survey for England 1991 (White, Nicolaas, Foster, Browne *et al.* 1993), both indicate that 30-35% of men and women undertake less than four 20-minute periods of exercise in a month, and only 20-30% participate in vigorous activity of any type. In a Finnish study of 12,000 people (Rissanen, Heliovaara, Knekt, Reunanen *et al.* 1991), low activity levels were found to be a greater risk factor for obesity than any measure of habitual diet. Likewise, from UK epidemiological data (MAFF 1940-1994; White *et al.* 1993; Knight 1984; Gregory, Foster, Tyler and Wiseman 1990; Central Statistical Office 1994) the prevalence of obesity appears to be unrelated to intake of total energy or fat, and more closely related to proxy measures of physical activity such as car ownership and television viewing (Prentice and Jebb 1995). In general, caution needs to be aired in inferring causal links from such associations. Nevertheless, taken as a whole, these arguments are compelling.

2.4 Integrating the explanations of obesity

It is clear that obesity has a complex aetiology. Probably all of the factors described above contribute to its occurrence, at the individual and population level. Egger and Swinburn (1997) have proposed a useful model that integrates many of the factors already described (**Figure 2.1**). They suggest there are '*three main influences on equilibrium levels of body fat – biological, behavioural, and environmental – mediated through energy intake or energy expenditure, or both, but moderated by physiological adjustments during periods of energy imbalance. The level of body fat is not seen as a 'set point' like a thermostat fixed on an exact temperature but as a 'setting point' that depends on the net effects of the other components of the model and that changes as they change.*' (p.477).

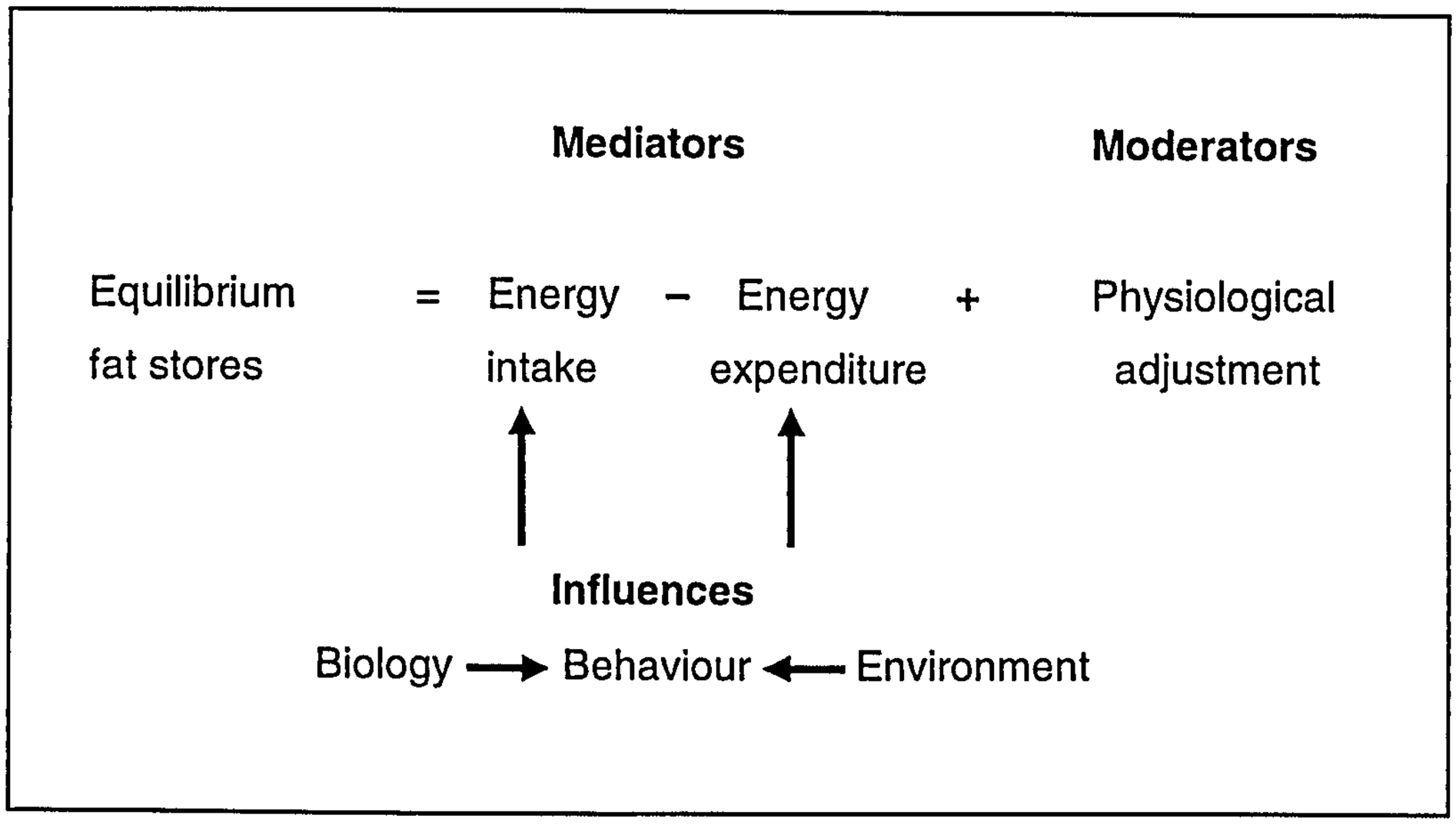

Figure 2.1: 'An ecological paradigm for understanding overfatness and obesity' (Egger and Swinburn 1997)

The biological influences referred to in this model include those already described: age, sex, hormones, genetics, and race. Egger and Swinburn (1997) note that behavioural influences result from a complex interaction of habits, emotions, cognitions, attitudes and beliefs, determining the choice of diet and activities. Environmental factors can be categorised in terms of the macro or micro. Macro influences include for example, policy, legislation, industry, availability and quality of products, pricing, and access to facilities, and determine the prevalence of obesity in a population. Micro influences such as local availability of services and products, family income and facilities, and family, peer and school attitudes and practices, work in conjunction with behavioural and biological factors to determine whether an *individual* becomes obese.

2.5 Consequences of the rise – Is obesity harmful to health?

Empirical evidence indicating increased mortality with increased weight originally came from the Society of Actuaries Build and Blood Pressure Study carried out on 4.5 million life insurance policies between 1935 and 1954 (Society of Actuaries 1959). The results led to publication of the well-known Metropolitan Life Insurance Company tables of ideal weights (Metropolitan Life Insurance Company 1959), which are still in

widespread use. Another Build and Blood Pressure Study was carried out in 1979, which gave *higher* desirable weights than the earlier study, but the finding that weights above the 'ideal' increased the risk of mortality was supported (Society of Actuaries 1980, Metropolitan Life Insurance Company 1983).

The risks associated with above average body weight are not clear-cut, but the level of overweight does appear to be one factor that determines the degree of risk. During the 1960s and 1970s, Keys (1979, 1980) carried out a ten-year study of 12,000 men in seven countries, and found a relationship between weight and chronic heart disease, but only in the very grossly overweight and for those of marked leanness. Other investigators found that risk was *lowest* for men slightly above average weight. Risk increased with weight, but started at 20% above average (Kannel and Thom 1979; Sorlie, Gordon and Kannel 1980). Similarly, Andres (1980) re-analysed data from prominent epidemiological studies and found a danger for those more than 30% overweight. Later, Troiano, Frongillo, Sobal and Levitsky (1996) re-analysed data from 19 large cohort studies (total N = 356,747), and for white men found a U-shaped relationship between mortality and BMI, with increased risk for low and high BMI (<23 or >28). This was the case for non-smokers and those with no evidence of disease at outset. A similar pattern was observed in smokers, although the risk of mortality was generally greater. The pattern for women was less clear due to the availability of less data, and the authors report no apparent relationship between BMI and mortality for women. However from the data presented, it appears that risk increases substantially at a BMI of around 32 and above. The authors emphasise that the risk from BMIs only slightly under recommended levels are comparable to the risk observed at the high end of the BMI distribution. They suggest this has previously been understated, even in primary studies that have reported the same curvilinear relationship between BMI and mortality (for example, Keys 1979, 1980). In addition, they refer to the linear relationship described in the often-cited insurance Build and Blood Pressure Study 1959 and Build Study 1979 (Society of Actuaries 1959, 1980), that does not describe the pattern of risk from lower BMIs observed here. They propose this is due to a lack of representativeness in the included sample (health insurance customers), who were of higher socio-economic status than less selected samples.

It is generally agreed that obesity (a level of overweight at the higher end of the scale) is harmful to health. However, the risk is not uniform. For example, there is variation in associated risk factors across different European populations that does not appear

to be explained by smoking habits or physical activity levels. These appear to be dependent on the presence of other biological and environmental risk factors (Seidell 1995) although it is difficult to pinpoint what these might be.

One possibility is the distribution of body fat within the body. Bjorntorp (1985) found there was a higher incidence of various health problems with abdominal obesity (around the waist area) than for peripheral obesity. This is sometimes referred to as the 'apples' and 'pears' distinction, which suggests differential risks dependent on the predominant location of fatty tissues (waist area fat versus that around the hips and thighs, respectively). Similarly, Tarui, Tokunaga, Fujioka and Matsuzawa (1991) have reported that metabolic and circulatory disturbances are far more frequently associated with visceral fat obesity (within the internal organs, and by definition more likely to occur in the waist and stomach area) than with subcutaneous fat obesity.

Further discrepancies in research findings may arise from some studies failing to take into account lifestyle factors, such as nutrition or smoking. Some people may be overweight because they consume generally unhealthy foods (high fat, high sugar, low fibre, low in complex carbohydrates), and these factors are implicated in ill health (USDHHS 1988b; Greenwald and Sondik 1986; HoN 1992). The American diet has been implicated in three of the four top leading causes of death: heart disease, cancer, and cerebrovascular disease (stroke). Likewise, in the UK, diet has been highlighted as a contributing factor in these diseases (HoN 1992; Our Healthier Nation – OHN 1998). However, while a poor diet may enhance the probability of certain health problems, and *may* increase the propensity to become overweight, it does not necessarily equate with overweight in itself. On the other hand, smokers tend to weigh less and die earlier possibly leading to an under-estimate of the risks of being overweight (by artificially increasing the risks associated with lower weight levels).

Another factor is the tendency for weight gain with age. It may be that this is an entirely natural process. Andres (1995) has suggested that some moderate weight gain through the life cycle (for example, 6-7 pounds a decade for those of average height) may be normal and not unhealthy. This tendency could lead to an over estimate of the risks of weight gain. On the other hand, Prentice and Jebb (1995) have proposed that reduced physical activity levels over the life cycle is the main cause of age-related weight gain in Britain, especially given current dietary habits.

Therefore, gains in weight over the life cycle may be less to do with the physiological effects of ageing and more to do with changes in lifestyle.

In addition to the physical risks of obesity, frequent commentary is made as to the psychological consequences of being overweight. Much of this focuses around the social stigma associated with obesity and the impact this has on overweight people. However, some of the effects may have been overstated, as many investigators have failed to find differences in psychological functioning between obese and non-obese people (SIGN 1996; Friedman and Brownell 1995; Stunkard and Wadden 1992). Nevertheless, Friedman and Brownell (1995) suggest that this flies in the face of clinical experience, and may be due to the fact that not enough account is taken of individual differences in the psychological *response* to obesity, much as there are great variations in the explanations for the *causes* of obesity at an individual level. Furthermore, these conclusions may be confused by the fact that early studies failed to explain the *cause* of obesity in terms of psychological factors. This may have led to an incorrect assumption that the *consequences* of obesity could also not be explained in psychological terms. They suggest a new approach may be to identify the individuals who are at psychological risk. The psychosocial consequences of obesity will be discussed in more detail in the next chapter.

As we have seen, extreme levels of excess weight do appear to carry a risk to physical health. As such, the government White Paper the Health of the Nation (HoN 1992) focuses on the reduction of obesity (BMI 30+) rather than overweight (BMI 25-30). Furthermore, there are benefits associated with weight loss for obese people, as shown by short-term studies. These include a reduction in cardiovascular risk factors (e.g., lipids, insulin and blood pressure) and improvement in psychological status (Garrow 1988). Long-term studies may yet reveal similar findings. A large, ongoing controlled study of obesity treatment, the Swedish Obese Study (SOS), will provide data on hard endpoints, but preliminary analysis of the data at four years suggests that weight loss for the obese results in improvements in quality of life measures (Karlsson, Sullivan and Sjöström 1997) and a reduction in morbidity (Narbro, Agren, Jonsson, Larsson *et al.* 1997).

2.6 Obesity – A psychosocial problem

2.6.1 The history of beliefs about obesity

Despite the recent increases in the prevalence of obesity in industrialised nations, the phenomenon of obesity is not new in itself. Through the ages, the condition has been given a number of different labels: corpulence, excess adiposity, grand embonpoint, pinguedinis, and polysarcia (Bray 1990). George Bray (1990) undertook one of the most comprehensive explorations of historical beliefs about and attitudes to overweight, from which much of the following summary is taken. He reported that cases of massive obesity have been identified in stone age carvings. This is all the more surprising from a time when one would presume the hunter-gatherer lifestyle to have protected against the possibility of weight gain. He also referred to the twenty five thousand year old Venus of Willendorf, one of a number of ancient artefacts of large female figures thought to portray a positive image of fertility or motherhood. This view of overweight and fecundity was later to change: Hippocrates suggested that obesity was associated with menstrual problems and infertility. At this time, obesity was generally considered a medical problem associated with poor health. Hippocrates described sudden death as more likely in the overweight than the normal weight person. The value of reduced dietary intake, increased physical exercise and reducing the amount of sleep were identified early in medical history. However, Hippocrates' advice took a somewhat unusual form by today's standards, with recommendations to undertake hard labour, sleep on a hard bed, eat fatty food for greater satiation and walk naked as long as possible.

At around the same time, Galen described two types of obesity, natural 'moderate' obesity, and morbid 'immoderate' obesity. He described the 'hygenic art' maintaining good health in those that obeyed, but failing in those who disobeyed it. In this way, Galen appeared to view obesity in terms of the personal failings of an individual.

Bray's history also indicates parallels between these Greco-Roman views and later Arabic views, prevalent from the C12th to C15th. Arabic scholars were familiar with the concept of obesity. A leading figure, Avicenna, wrote a key text that was important throughout this time. It described methods for reducing obesity, including encouraging rapid progress of food through the body to avoid absorption, eating bulky but 'feebly nutritious' food, having baths frequently before eating, and taking hard

exercise. Later in the C16th and C17th, Hippocrates and Galen were still widely cited, but new, physical and chemical explanations for bodily functions were introduced. The first writings specifically about obesity described it as an internal problem, caused by such things as an imbalance of bodily chemicals or mechanical malfunction. This new mechanical focus meant less focus on the personal characteristics of overweight people.

In the C18th and C19th, the 'moralistic' view seemed to re-emerge. In the C18th, a number of doctoral theses on obesity were published, along with the first monographs in English on the topic. Interestingly, given the current situation, in 1727 Thomas Short saw obesity as an increasing problem, saying: *'I believe no age did ever afford more instances of corpulency than our own'*. Although the concept of cells had not yet been formally introduced, he referred to fat being stored in small bags in the body. He also described a number of secondary factors: the quality of the air (damp and city air leading to more obesity); the types of food eaten (large amount of soft, smooth, sweet, fat or oily foods); a lack of exercise because of 'sloth and idleness' meaning the body is less able to perform its necessary evacuations (especially by perspiration); 'a cheerful temper'; and frequent drinking (hence explaining his observation that alehouse owners were often overweight). In 1760, Malcolm Flemyng described obesity as a disease with a tendency to shorten life. He put obesity down to a number of factors, such as consuming large amounts of the wrong kind of foods. However, he also noted that this principle did not apply to all overweight people, with some eating small amounts of food, and some thin people having large appetites. The second cause he described was 'too lax a texture of the cellular or fatty membrane', noting that this had a tendency to run in families, making him one of the first to propose this familial link. He also described an abnormal state of the blood as leading to fat storage, and 'defective evacuation' of bodily oils through urine, faeces and sweat as contributing to obesity. The recommended treatments were dietary changes (less food altogether and specifically less fat), exercise, cold baths and greater evacuations through increased muscular activity (rather than by purgatives).

In 1785, Rigby gave a description of obesity that is very close to today's concepts. He described it as resulting from an energy intake that was greater than required, because of either eating too much, or a pre-disposition to store food within the body, or by an imbalance between supply and use of energy. Thus, doctors recommended altered diet and increased physical activity as the treatment.

In the early C19th century, the focus on clinical medicine moved to Paris, resulting in the classifications of different types of obesity, such as pituitary obesity, a Prader-Willi type syndrome (not identified by that name at the time), and hypoventilation or Pickwickian syndrome. Later, the focus moved to German laboratory medicine. In 1837, the cell theory was first proposed in general medicine: it described the cell as the fundamental unit of all living things. Shortly afterwards, a description of the fat cell was put forward, and subsequently, in 1849, Hassall suggested that obesity may be due to an increased number of fat cells. A new emphasis on measurement in scientific medicine led Quetelet to propose the weight by height formula (Quetelet Index) now known as the body mass index (BMI), based on studies of populations in Belgium. Also, in the mid C19th, an English language book by Chambers described weight gain in terms of increased fat deposits. He also noted a hereditary tendency to weight gain, and commented on childhood obesity, believing it to be largely reversible.

Dieting books were in evidence from the mid C19th. Notably, in 1863 a book by Banting, a lay person, entitled *'A letter on corpulence addressed to the public'* was probably the first popular diet book, being translated into several languages and the focus of at least one conference. It was largely non-judgemental and indicated compassion towards overweight people.

In the C20th, research on obesity has increased enormously. Many of the concepts that determine the current beliefs systems and the basis for research have their roots in history. The term 'obesity' has replaced earlier labels. Obesity is recognised as a complex phenomenon with many causes. The 'moralistic' view is still widely apparent in C20th culture, despite having its roots in the time of Galen and possibly before. However, there is also an increasing awareness that overweight people are stigmatised and that this may have negative implications for physical and psychosocial health.

2.6.2 Negative attitudes and beliefs towards overweight people

In the previous section, it can be seen how beliefs about the causes of overweight are closely linked to attitudes towards the overweight person. Biological explanations for overweight and obesity assume less personal responsibility in the overweight person, resulting in less judgemental formulations. Explanations that focus on the actions or attributes of a person often preclude a 'moralistic' approach, with obesity described in terms of personal failings.

In industrialised societies, being overweight is widely articulated as being a stigmatising condition. An abundance of research appears to indicate that prejudicial attitudes towards overweight and obese people are widespread. To a lesser extent, studies report discriminating behaviours in line with negative opinions. However, it is important to note that this work has not been reviewed systematically, and without this synthesis, it is not possible to determine reliably the extent of prejudice and discrimination. It may be that this has been over- or even under-stated. It is especially important to bear this in mind given that many of the studies cited suffer from methodological weaknesses, such as a reliance on small sample sizes, lack of comparison groups, the use of simulations rather than real life situations, and the use of non-validated assessment techniques and subjective outcome measures. Harris and Hopwood (1982) note the data suggesting prejudice towards overweight people is weak because much is anecdotal, or based on ratings of drawings, photographs or descriptions, and Jarvie, Lahey, Graziano and Framer (1983) have criticised the use of forced-choice techniques. Robinson, Bacon and O'Reilly (1993) have noted how few measures have been examined for reliability or validity. Allison, Basile and Yuker (1991) suggest that it is difficult to draw firm conclusions from the literature, as some studies report negative attitudes and others do not. Also, it is possible that the large amount of commentary on negative attitudes towards overweight people may be selectively reinforcing – observers may believe in findings supporting the existence of negative perceptions and ignore or dismiss more favourable ratings. It may also lead to publication bias, where only studies reporting findings in line with current beliefs are published. The existence of publication bias is now well documented (Easterbrook, Berlin, Gopalan and Matthews 1991; Dickersin and Min 1993; Dickersin, Scherer and Lefebvre 1995). In essence, this means that even studies that are of sound

methodology may not be published if they are judged to be uninteresting by investigators, reviewers or editors (i.e., do not conform to prevailing expectations). It is with these factors in mind that the following summary of the literature is offered.

Overweight is often viewed as being physically unattractive (Lerner and Gellert 1969; Beck, Ward-Hull and McLean 1976; Lavrakas 1975) and in turn, being physically unattractive is perceived negatively (Adams 1977; Berscheid and Walster 1974). In a comprehensive narrative review of the literature, DeJong and Kleck (1986) found that overweight is routinely ranked as less desirable than a facial disfigurement or physical disability (e.g., Richardson, Hastorf, Goodman and Dornbusch 1961; Alessi and Anthony 1969). They postulate that these negative attitudes are borne out of certain stereotypical beliefs about what it means to be fat.

More will be said about the process of stereotyping later on, but suffice to say that in societies such as ours, overweight people tend to be assigned common group characteristics. These beliefs have historical roots (as described earlier) and are legitimised through strong cultural channels such as media representations and characterisations (for example, the portrayal of overweight people in popular soaps). DeJong and Kleck (1986) have suggested the overweight stereotype can be summarised in the following way. Overweight people are viewed as less intelligent; are least often chosen as friends and least often thought to have as many friends; are thought to suffer from this rejection and are described as 'lonely', 'shy', 'greedy for affection' and 'dependent'; and are lazy.

For example, Richardson *et al.* (1961) asked 10 and 11 year old children to rank order six line drawings of peers with different physical attributes. They consistently found, across different variables of race, sex, socio-economic background and urban or rural residence, that children rated the child with no physical disability most favourably, followed by a figures of child with leg braces and crutches, in a wheel chair, with a missing hand, and a facial disfigurement. The overweight child was viewed least favourably of all. Similar studies have found the overweight child to generally be ranked lowest, or second to bottom, but the most negative views generally occur in industrialised, westernised countries (DeJong and Kleck 1986).

Likewise, Worsley (1981) surveyed 138 Australian 16 year olds for their views of fat and thin male and female stimulus figures, using semantic differential rating scales. In

the general evaluation, accounting for 86% of the variance in principal components analysis, the participants were found to give more negative ratings to the fat figures who were generally seen as bad (poor appearance, lacking confidence, being sexually repulsive, tense, cruel, sad, weak-willed, stupid and bored) in comparison to ratings for self-perceptions or slim or ideal figures, who were generally seen as good (healthy, agile, elated, independent, fashionable, calm, accepted by others, smaller appetites). Boys and girls and those of different ethnic origins had very similar views of the fat and slim figures, with only minor effects for sex and origin (for example, those of a continental European origin tended to have more positive views of the fat figure). Worsley (1981) commented on how similar these main findings are to North American ones, and put this down to the similar cultural influences in the two countries.

These findings tend to be replicated in adults. For example, Harris and Smith (1983) studied 447 children and adults of both sexes and various ethnic origins and found that regardless of their own characteristics, overweight was viewed negatively. Underweight was also viewed more negatively than normal weight, but not as negatively as overweight.

Crandall (1994) has summarised the literature as suggesting overweight people are seen as unattractive, aesthetically displeasing, morally and emotionally impaired, alienated from their sexuality and discontent with themselves. This appears to have a number of social consequences, such as college and job discrimination, and generally lower socio-economic status. He likens fat prejudice to racism. Accordingly, he suggests that 'antifat' attitudes reinforce a world view consistent with the Protestant work ethic, self-determination, a belief in a just world, and the notion that people get what they deserve and deserve what they get. If a person believes that overweight is the overweight person's fault, then denigration and stigmatisation are more likely. Thus, overweight people are blamed for their fate because they are seen as the cause of it. In a series of studies, Crandall (1994) indeed found that among US undergraduates, dislike of overweight people and a perception that overweight is due to a lack of willpower were significantly correlated with conservative politics, belief in a just world, poverty control (i.e., that poverty is controlled by the individual), a Protestant work ethic, racism and authoritarianism. However, unlike racism, Crandall (1994) found that antifat sentiment is much less inhibited by the pressures of social desirability and is therefore more widely articulated: '*...antifat attitudes appear to be*

currently at the stage that racism was some 50 years ago: overt, expressible, and widely held.' (p.891.)

In the development of attitudes towards and beliefs about obese person assessment scales, Allison *et al.* (1991), used factor analysis to reveal that attitudes could be explained by three factors: 'Different Personalities' (the attribution of negative or different personality characteristics or inferior abilities), 'Social Difficulties' (experience or the cause of social problems) and 'Self-Esteem' (how obese persons perceive and evaluate themselves). In 638 respondents they found attitudes and beliefs to be strongly and consistently correlated, with more positive attitudes among those who believed obesity to be beyond individual control. Likewise, DeJong (1980) found that when high school girls were told that someone was overweight due to thyroid problem (something beyond personal control) that person was liked almost as much as a normal weight control, and significantly more than an overweight subject without a thyroid problem.

A perception that overweight is under the individual's control seems to evoke an assumption of failed responsibility and an image of self-indulgence, sloth, gluttony or failure of willpower. Such beliefs may be compounded, for example, by an assumption that it is easier to manipulate body shape than it actually is. Brownell (1991) has noted that there is a common misconception in western cultures that the body is infinitely malleable and that with the right combination of diet and exercise every person could reach the 'ideal' body weight and shape. Being overweight is therefore seen as a failure to successfully pursue the right behavioural options to a slimmer figure.

Negative attitudes towards overweight and obesity appear to exist across all ages and social groups, at least to some extent. For example, they have been documented in children as young as five (Lerner and Gellert 1969), in nine year olds (Hill and Silver 1995), and in teenagers (Worsley 1981) as well as adults (Harris and Smith 1983; Crandall 1994). They have been documented in men and women, in the general population and among health professionals, among normal and overweight people, and in people of different socio-economic groups (e.g., DeJong and Kleck 1986; Robinson *et al.* 1993). However, the findings are not always consistent, both in respect to who tends to hold the most negative attitudes and to how pervasive and widespread negative attitudes may be. Some studies indicate that both positive and

negative perceptions (stereotypes) exist together, although supposedly 'positive' stereotypes may be as equally unwelcome as negative ones (Robinson *et al.* 1993), as they do not give due consideration to the individual.

Some investigators suggest that there are gender effects with regard to attitudes. For example, DeJong and Kleck (1986) suggested that *'almost without exception, females are less accepting of overweight peers than males (Richardson 1977)'* (p.67). However, they also note that the studies cited to support this statement often included ranking by participants of same-sex targets, so the finding could reflect less acceptance of overweight, female peers generally, less acceptance of overweight others by females, or both. Crandall and Biernat (1990), Maiman, Wang, Becker, Finlay *et al.* (1979) and Robinson *et al.* (1993) all found that women were more negative than men in their attitudes towards overweight people and overweight. Young and Powell (1985) and Chetwynd, Stewart and Powell (1974) found that male and female respondents used *different* adjectives to describe overweight people. Other investigators have found gender to play only a minor role (Worsley 1981; Hill and Silver 1995). In fact, although it seems that gender effects may exist, these do not appear to be particularly consistent. Harris and Smith (1983) found that in 447 children and adults of both sexes and various ethnic backgrounds, perceivers negatively valued overweight regardless of their own characteristics.

Psychological theories of the relationship between attitudes and behaviour will be discussed in more detail later, but for now, it is worth pointing out that a common criticism of attitude measurement is the assumption of a causal link between attitudes and behaviour (Fishbein and Ajzen 1975). However, investigations of behaviour towards overweight people do at least appear to reflect the negative attitudes that have been described. Sarlio-Lähteenkorva, Stunkard and Rissanen (1995) suggest that obese persons are less likely to be admitted to good schools, to enter desirable professions and to receive equal pay for their work. For example, Canning and Mayer (1966, 1967) found that the proportion of overweight individuals being accepted for college entry was much lower than that of their normal weight counterparts. This was despite the fact that high school grades, IQs, days absent from school, involvement in school activities, parental socio-economic status and desires to go to college were all similar. They also found fewer overweight individuals in college than in high school. As they could not find a negative bias in how high school teachers graded the overweight, they believed the college admissions interviewers were the most likely

source of prejudice. Nevertheless, it is important to remember that this suggestion is speculative and it is not possible tell if this is in fact the *cause* of the observed difference.

Further examples of discrimination are also available. Pingitore, Dugoni, Tindale and Spring (1994) asked 320 participants to rate job applicants, using videotaped simulated interviews with professional actors in a normal weight condition or padded out to look overweight. Their findings indicated bias against hiring overweight applicants, especially females. The strongest bias appeared to occur in participants who were satisfied with their own body shape and who saw body as central to self-concept.

Rothblum, Miller and Garbutt (1988) explored the potential for job discrimination by asking 104 students to rate bogus applicants for jobs based on two types of resumes (CVs): sales ('for a challenging position in the field of sales') and people ('for a business position that involves working with people'). To control for the impact of physical attractiveness, they included a comparison of photographs or written descriptions, of either normal weight or obese applicants. The photographs of obese and normal weight people had been rated previously for attractiveness by a different group of students. As none of the photographs of the overweight people were judged high on attractiveness, the photographs used for the overweight-normal weight comparison were all relatively low on physical attractiveness. Results indicated only the ratings for the sales resume showed a significant applicant weight effect and a significant interaction between weight and the medium (photograph versus written description). In the written description, obese targets were rated more negatively on potential to be good supervisors, self-discipline, professional appearance, personal hygiene and ability to do a strenuous job. There were no significant differences for other factors such as giving a good recommendation, being a good co-worker, being good to supervise, being self-confident, lazy, friendly and outgoing, or having a good sense of humour. In contrast, in the photograph condition, although obese applicants were rated more negatively on self-discipline, they were rated more positively on supervisory potential and professional appearance (with no significant differences for the other factors listed above). The authors suggest that these differences in the photograph and written description condition are due in part to the role of perceived attractiveness. In the written description, participants had to infer attractiveness and therefore were more likely to assume the overweight candidate was less attractive.

As a consequence they assigned more negative characteristics. It is not entirely clear why no differences were found in the 'people' resume comparison, but the investigators put this down to the possible role of a 'jolly' fat person stereotype and the perceived positive implications this would have for working with people.

The problem with using students as participants in studies like this is that they are unrepresentative of the wider population and are likely to be inexperienced in job recruitment procedures. Klesges, Klem, Hanson, Eck *et al.* (1990) reported a similar study using simulated interview procedures, but this time using real employees as participants. They asked 295 'white-collar' workers to examine and rate bogus 'job applicants' on the basis of job descriptions, resumes and short interviews. In a two by three design, participants offered ratings on a clearly qualified or marginally qualified applicant (from the resumes), who was either normal weight, overweight ('mildly obese'), or diabetic. Effects were found for the qualified-unqualified comparison, for example, participants were significantly more likely to recommend hiring the qualified applicant. However, more interestingly, a main effect was found for the general impressions of the applicant, with the overweight applicant rated less favourably than the normal weight one. Overweight and diabetic applicants were also rated significantly more negatively in terms of recommendations to hire and perceived work habits. Diabetic applicants were rated as most likely to have medically-related absenteeisms, followed by the overweight applicant, with the most positive ratings for the normal weight applicant. Overweight applicants were rated as more likely to have non-medical absences and to be less conscientious, and were rated more negatively in terms of interpersonal skills and problems, than both the diabetic and normal weight applicants.

In another study still more representative of real life, Benson, Severs, Tatgenhorst, and Loddengaard (1980) sent a bogus letter to public health administrators from an 'undergraduate' supposedly seeking information about her prospects of establishing a career in a health profession. In three different conditions, there was enclosed either (i) a photograph of a normal weight person, the proposed applicant, (ii) a photo of the same person padded out to look overweight, or (iii) no picture. In comparison to the normal weight 'applicant', the letter containing the photo of the overweight person elicited fewer responses (25% *vs.* 57%), was seen as less likely to get into a good graduate program (29% *vs.* 81%) and of getting a good job after training (29% *vs.* 56%).

As previously indicated, it is important to bear in mind the methodological limitations of these studies and the implications in terms of widespread generalisability. In addition, it is not possible to determine without a systematic review whether other studies indicating more favourable attitudes remain unpublished because they did not fit in with the prevailing beliefs that negative attitudes and behaviours are widespread and pervasive. However, these studies do indicate that it is possible and likely that some discrimination occurs and even if it occurs only some of the time, it is certainly something that warrants attention. Sexual, racial and disability discrimination legislation recognises and legitimises the current stance that people should not be treated unfairly on the basis of stereotypical characterisations. There is every reason to ensure overweight people are not discriminated against on the basis of their body size.

2.7 Where psychosocial and health problems meet

2.7.1 Social implications

Anti-fat prejudice seems to be one of the last bastions of accepted social exclusion. Commonly, people make anti-fat comments without consideration of reproach. Overweight people are on the receiving end of jokes and comments that are tolerated in a way now unfamiliar in other areas of social discrimination, such as race, gender and disability. Overweight characterisations in popular culture such as in television and cinema are often demeaning, implying personality problems and weakness of character. These provide us with powerful messages to enforce the idea that it is socially unacceptable to be overweight. It is no wonder that Crandall (1994) has commented that obesity prejudice is at the same stage as racism 50 years ago: overt, expressed and widespread.

Given the degree of prejudice, it is not surprising that many people are preoccupied with their body weight and shape. Brownell (1991) has remarked on how many people in our culture are seeking out the perfect body: a body that achieves today's aesthetic ideal of being extremely thin, which is also physically fit. This ideal seems to symbolise self-control, success and acceptance.

Despite the much-articulated stigma of being overweight, it is not clear that this results in distinct psychological problems for the overweight person. Population studies have failed to find a difference in global psychological status between obese and normal weight people (Stunkard and Wadden 1992; Friedman and Brownell 1995; SIGN 1996). Friedman and Brownell (1995) suggest this flies in the face of clinical experience and the strong negative bias towards overweight people. However, this apparent discrepancy may arise from the fact that many studies of overweight people are undertaken on clinical populations, and it seems that this group of overweight people is more likely to suffer psychological difficulties. For example, Brownell and Rodin (1994) argue that obese people who seek clinical treatment are the exception rather than the norm, are more likely to be binge-eaters (25-50% compared with 5% among obese people in general), and binge eating is itself associated with more psychopathological problems. Friedman and Brownell (1995) acknowledge there may be a subset of obese people who may be most at psychological risk, and it is these who should be targeted in providing suitable treatments.

One possibility is that it is extremely overweight people who are at greatest risk. For example, baseline measures for the Swedish Obese Subjects study found that in the mildly overweight, only other concomitant disorders such as binge eating separated obese and non-obese participants, but in the more severely overweight, there were more striking differences between obese and non-obese people on psychological tests and in terms of psychiatric disability (Sullivan, Karlsson, Sjöström, Backman *et al.* 1993).

In contrast, Stunkard and Wadden (1992) examined the available literature and while they also found binge eating and body image disparagement to be a complication of obesity, they did not find greater levels of psychopathology among the obese or severely obese in terms of depressive or affective disorders, or psychiatric illness. Likewise, in summarising the literature, the Scottish Intercollegiate Guidelines Network report on obesity (SIGN 1996) concludes there to be no distinct differences in psychological function between overweight and normal weight people.

Apart from the apparent differences between clinical and non-clinical populations, it seems that some confusion arises out of the classifications for what constitutes psychopathological problems. Some investigators appear to classify binge eating as a psychopathological disorder, while others concentrate on more general measures of

mental health, such as depression, anxiety and psychiatric illness. This is one factor that leads to apparent contradictions in the conclusions of investigators. Another is the methodology employed: while some studies focus on clinical populations, some also fail to include appropriate controls. For example, while some studies have found differences in psychological disturbances in obese people, Stunkard and Wadden (1992) have observed the levels were not higher in than among medical and surgical patients in general.

Even accepting the lack of clear differences in global psychological status between overweight and non-overweight people, it is clear that overweight people may suffer from the stigma associated with excess weight. For example, Hill and Williams (1998) surveyed 179 obese women from a non-clinical population. Although they found no differences in mental health status between obese (BMI 30-40) and morbidly obese (BMI 40+) women, the heaviest women expressed the greatest dissatisfaction with their body weight, shape and appearance and had the lowest self-esteem. Stunkard and Wadden (1992) note that studies conducted after surgical treatment and weight loss have shown an improvement in self-esteem and positive emotion, a reduction in body image disparagement, an increase in marital satisfaction (if there was a degree of satisfaction to begin with), and improvements in eating behaviour. Likewise, the Swedish Obese Study (SOS) four year data suggests that weight loss for the obese results in improvements in quality of life measures (Karlsson *et al.* 1997). These findings indicate that these aspects must have been impaired somewhat prior to surgery.

Further evidence for the negative impact of overweight on self-esteem and body satisfaction occurs in even in the youngest age groups. For example, Hill, Draper and Stack (1994) surveyed 379 nine-year old British girls and boys on aspects of body satisfaction, self-esteem and dietary restraint. They found that children at the two extremes in weight (overweight and underweight) had lower body esteem scores than the other categories (normal weight and slightly under and overweight), but the overweight children had the lowest body esteem of all. Girls also scored consistently lower than boys, although this was not significant. In terms of body shape preference, 41% of all girls wished they were thinner and only 18% wished they were broader, compared to 28% and 41% respectively in boys. Eighty percent of boys and girls in the overweight group wished they were thinner. In the other four weight categories, girls were generally more likely to wish they were thinner than boys. Overall, the

heaviest children had the lowest body esteem, a desire for thinness and higher levels of dietary restraint. Taken as a whole, these findings suggest great dissatisfaction with a larger body size. However, interestingly, there were no effects for general self-esteem.

Crandall and Biernat (1990) have suggested that the likelihood for low self-esteem among overweight women is linked to their own view of overweight and the world. Having already established that antifat attitudes were correlated with political conservatism across all weight levels, they also explored the role of self-relevance and self-esteem in attitudes towards overweight. In general, they found that self-esteem was only marginally associated with being overweight in women. However, when they correlated self-esteem with antifat attitudes they found that these were significantly associated in the heaviest women (but not in men). To understand why anyone would hold views that are detrimental to themselves, they again looked at to the role of social attitudes. They found that what distinguished the most negative and positive attitudes towards overweight in the heaviest women was the same as that in the entire sample – a conservative ideology.

2.7.2 Diet implications

It is hardly surprising that overweight people should be unhappy with their bodies, given the stigma associated with obesity. However, it could be argued that the apparent culture of non-acceptance towards overweight people is ultimately positive if it encourages people to adopt healthier lifestyles. Unfortunately, a preoccupation with weight does not necessarily equate with the uptake of healthier choices. The pressure to lose weight can result in inappropriate and misinformed responses, such as fad diets, or dieting in people who do not need to lose weight.

It has been suggested that weight pre-occupation and body weight dissatisfaction are so widespread as to be normative (Striegel-Moore, Silberstein and Rodin 1986). A preoccupation with weight can start early in life, being reported in children and adolescents (e.g., Wadden, Brown, Foster and Linowitz 1991; Hill and Silver 1995) and extends beyond the overweight, to normal weight and even underweight individuals. An abundance of articles, programs and advertisements promoting weight loss and exercise, on television, in magazines and other media channels feed

the desire to lose weight. Dieting books are best-sellers, including those criticised by experts or which promote untested ideas of weight control and eating.

It has even been suggested that the proportion of articles and advertisements promoting weight loss or body shape change in popular magazines can be linked to the prevalence of eating disorders. Andersen and DiDomenico (1992) propose that instead of simply reflecting weight and shape ideals of our society, the media impose (gender-linked) ideals, and that *'socio-cultural norms promoting thinness are an essential part of the onset of eating disorders, perhaps more than gender itself'* (p. 286). In fact, the industrialised nations' fascination with body weight has frequently been blamed for the increasing incidence of eating disorders in the last 20 years (e.g., Wilfley and Rodin 1995) and for cases in younger and younger age groups. Eating disorders have even been documented in children as young as seven (Bryant-Waugh and Lask 1995).

Nevertheless, it is apparent that weight concerns and dieting are much more widespread than are eating disorders (Wilson 1993), and therefore eating disorders can not be blamed entirely on a widespread pre-occupation with dieting. For example, in two large US surveys, 24% of men and 40% of women were found to be dieting (Horm and Anderson 1993; Serdula, Collins, Williamson, Anda *et al.* 1993).

Dieting can have its downsides. Many diet plans stipulate a reduction in calorie intake either directly, or by modification of the types of food consumed. The most spectacular reductions in weight come from diets that specifically consist of high protein and low fat and carbohydrate intake. This diet causes body fat loss, but also causes loss of water, which gives the impression of more fat loss than is real. This can be harmful, especially to the kidneys. Furthermore, when the diet is stopped, the weight lost in the excretion of water will be quickly regained. This type of diet creates the illusion of success, but is actually unhealthy. It does nothing to permanently alter the eating patterns that may contribute to weight gain.

Very low calorie diets (VLCDs) can be popular because they help people to lose weight quickly, but many individuals regain their weight as quickly as they lost it when they stop the diet (Brownell and Wadden 1986; Wadden, Van Itallie and Blackburn 1990). Repeated bouts of dieting can put individuals at physical risk due to weight-cycling (Rodin, Radke-Sharpe, Rebuffe-Scrive and Greenwood 1990; Brownell and

Rodin 1994) and weight-cycling also carries negative psychological and behavioural consequences in terms of increased psychopathology, life dissatisfaction and binge eating (Brownell and Rodin 1994). Furthermore, VLCDs are not recommended for people with cerebrovascular insufficiency (insufficient blood supply to the brain), recent myocardial infarction, liver or kidney complications, juvenile onset diabetes, or for pregnant women. Even healthy people may experience a number of unpleasant side-effects, including dizziness, constipation, temporary cessation of menstruation, dry skin, hair loss, fatigue and cold intolerance. As such, it is sometimes recommended they should not be used by anyone who is less than 30% overweight. Those who are not severely overweight tend to experience larger losses of lean body mass than the more severely overweight, which can result in dangerous damage to the heart and other organs. The loss of lean tissue also lowers the metabolic rate, which is counter productive and increases the difficulties in maintaining a desirable weight (Wadden *et al.* 1990).

Dieting has been argued as pointless in bringing about weight loss (Wooley and Wooley 1984) and as creating more problems that it solves (Polivy and Herman 1992). It has been reported that dieting can lead to emotional and cognitive disturbances as well as problems with eating, and in severe cases may contribute to the onset of eating disorders (e.g., Fairburn and Garner 1986; Garner, Rockert, Olmsted, Johnson *et al.* 1985; Polivy and Herman 1987; Striegel-Moore *et al.* 1986; Polivy and Herman 1992). As such, some studies report interventions to help people to recognise the negative factors associated with dieting (Bennett and Gurin 1982; Polivy and Herman 1983), and even to help people to stop dieting altogether (Polivy and Herman 1992). This has been termed the 'anti-dieting lobby'.

However, one of the problems of criticising dieting per se is the risk of throwing out the metaphorical baby with the bath-water: it can leave the overweight person and those treating overweight people without strategies for treating obesity, engendering feelings of helplessness. Brownell and Rodin (1994) suggest that all dieting attempts should not be lumped together, that the term 'dieting' is used to explain a wide variety of activities associated with food choice. Approaches such as reducing fat intake, increasing fruit and vegetable intake and increasing levels of physical activity are likely to have far different effects than aggressive VLCDs or untested fad diets.

In fact, it is likely that the most successful weight loss interventions are the ones that encourage long-term changes, rather than quick fixes. Brownell and Rodin (1994) suggest that estimates of the effects of weight loss interventions to date may be conservative, as they focus on clinical populations which represent only a small-subset of people who attempt to lose weight. Recent systematic reviews of the evidence suggest that combinations of techniques are more effective than single approaches (e.g., behavioural, diet, exercise and drug treatments), but even in these cases long-term maintenance of weight loss is difficult and long-term follow-up and maintenance interventions are necessary to sustain weight loss (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998). Brownell and Rodin (1994) suggest weight loss be treated in the context of a chronic care model in which obesity, like hypertension, is managed in the long-term with realistic goals, rather than ameliorated with brief treatments emphasising idealistic goals. Frank (1993) has suggested a similar treatment outlook.

2.7.3 Socio-economic implications

Another consequence of being overweight is that it appears to carry distinct social and economic disadvantages. For example, Jeffery, French, Forster and Spry (1991) found an inverse relationship between obesity and socio-economic status that could not be explained entirely by health behaviours such as diet, exercise, alcohol consumption and smoking. Higher socio-economic status (SES) individuals reported lower fat diets, more exercise and higher prevalence of dieting to control weight. Smoking rates were lower in higher SES men and women, and alcohol consumption was higher in upper SES women, both factors normally being associated with higher BMIs. SES was a good predictor of BMI after controlling for all health behaviours.

This association is strongly supported by other studies of the same topic. Sobal and Stunkard (1989) reviewed 144 published studies on the association between obesity and socio-economic status in many societies from all parts of the world. Using a broad definition of obesity (excessive amount of body fat calculated by a number of means, such as standard height-weight tables, various weight-height ratios or skin-fold thickness) and studies as the unit of analysis, they found a strong, inverse relationship between SES and obesity among women in industrialised societies (Belgium, Canada, Czechoslovakia, Germany, Holland, Israel, New Zealand, Norway,

Sweden, UK and the US). For men in industrialised countries, the findings were not consistent, with a bimodal distribution among included studies, with direct and inverse relationships observed between BMI and obesity. In 66 included studies, they found an inverse relationship in 52%, a direct relationship in 30%, and no clear relationship in 17% (the latter tended to be indicative of the smaller studies). Sobal and Stunkard suggest some of these inter-study differences are due to differences in behavioural and demographic factors of the included study populations. For example, there is a strong inverse relationship between smoking and SES, and smoking is associated with lower body weight. Therefore, smoking rates could provide an explanation for the direct obesity-SES relationship observed in some studies. Unfortunately, there were insufficient data on this and other variables to explain these between study differences.

Sobal and Stunkard (1989) also found that studies of children in developed countries indicated mixed patterns for the relationship between obesity and SES. However, there was a lot of *within* study consistency across the sexes, so that the existence of a relationship or not for girls in a study was generally the same for boys. Sobal and Stunkard suggest some of these inter-study differences are due to methodological differences or age differences in included children, but it would also seem likely that SES in children would be at least partially explained by parental SES.

The relationship between obesity and SES in developing countries is strong and direct, for both men, women and children (86%, 91% and 87% of included studies, respectively), in all the societies studied (Africa, Asia, North and South America, Australia and the Pacific Islands). That is, despite methodological weaknesses, obesity was consistently associated with *higher* SES. Sobal and Stunkard (1989) suggest that it is probable that this relationship is due to food shortages among the lower SES groups coupled with the positive view of overweight in developing countries. In many traditional cultures, overweight is seen as a sign of wealth and sexual attractiveness.

In explaining the association between SES and obesity, Sobal and Stunkard (1989) suggest that the strong negative attitudes towards obesity in industrialised countries, especially for women, motivates women to be thin. Women in higher SES groups diet more than those in lower groups, possibly because they have better access to resources that facilitate dieting, such as weight loss programs, dieting foods, and

exercise facilities. They also tend to have higher educational attainment, providing them with more knowledge about nutrition and lifestyle choices. They suggest higher SES is associated with more leisure time and higher levels of recreational physical activity. Another factor is social mobility: upwardly mobile women tend to be thinner, and there is a greater prevalence of obesity among the downwardly mobile. They suggest that in a society that stigmatises obesity, marital and occupational upward mobility are far less available to obese than to thin people. Finally, they suggest that both obesity and SES tend to be inherited from parents, along with lifestyle values that promote obesity or thinness. In combination with the tendency for greater calorie intake in the lower SES groups, more people will exceed the threshold for maintenance of normal body weight.

While it seems that the association between SES and obesity is strong, it is not clear whether obesity is more likely to result in a lower SES, or lower SES is more likely to lead to obesity, or perhaps some of both. One large cohort study provides some useful pointers for the cause of this association. In a random sample of 10,039 young people (aged 16 to 24 years), Gortmaker, Must, Perrin, Sobol *et al.* (1993) found that seven years later, women who were overweight at baseline (BMI above the 95th percentile for age and sex) had completed less years at school, were less likely to be married, had lower household incomes and had higher rates of household poverty than women who had not been married. Likewise, overweight men were less likely to be married, had lower household incomes and were less likely to have completed college (the latter two findings being of borderline significance). These differences were independent of baseline socio-economic status and aptitude test scores. In contrast, there were no such differences at follow-up for young people with other chronic physical conditions at baseline, such as asthma, spinal problems, epilepsy, diabetes or arthritis. Surprisingly, no differences were found for an effect of overweight on self-esteem once baseline variables were controlled (they did not explore other psychological measures). Gortmaker *et al.* (1993) conclude that the differences associated with overweight are probably related to the stigma of obesity, since important baseline variables and physical health factors could not explain them.

2.7.4 Health professionals' attitudes towards obesity

Health professionals have a role in promoting healthy weight loss among overweight and obese people, but the extent to which they routinely fulfil this role is not clear. As much as anyone, health professionals are social agents, transmitting prevailing cultural attitudes like the rest of the population. It would be surprising if their views towards overweight and obese people were not in line with those already described. In fact, there is some evidence to suggest that this is the case. However, as previously discussed, studies of attitudes towards the overweight are subject to methodological shortcomings and therefore any conclusions drawn from the literature must be somewhat tentative.

Studies reporting negative attitudes among health professionals have been available for a number of decades. Maddox, Back and Liederman (1968) and Maddox and Liederman (1969) explored the attitudes of doctors, house officers and student clerks working in an outpatient medical clinic, by asking them to complete ratings of several target persons. The majority of those responding described the obese patients as ugly, weak-willed and awkward.

Later, Breytspraak, McGee, Conger, Whatley *et al.* (1977) also reported negative attitudes among first year medical students. Students were asked to view video material of a simulated patient interview. Two versions were made, one using a normal weight subject and the other using the same subject padded out to look overweight. During the video, the target woman was seen to tell her doctor that although some test results were negative, she still felt nervous and irritable. Those seeing the overweight target described her as more nervous, incompetent and less likeable than the normal weight target. She was reported as being less likely to benefit from counselling, and more likely to have continuing problems through counselling.

Blumberg and Mellis (1985) also studied the attitudes of medical students. In a survey of 100 participants they used the semantic differential technique to describe the characteristics of targets in terms of general personality traits (e.g., pleasant/unpleasant), humanistic qualities (e.g., good/bad), body image (e.g.,

beautiful/ugly) or medical management qualities (e.g., easy/difficult to manage). They found that overall reactions to the normal weight were positive or neutral, to the moderately obese (not defined) were neutral or negative and to the morbidly obese were almost uniformly negative. In 11 of 12 adjective pairs, there were highly significant differences between the ratings of normal weight and morbidly obese people. In addition, in response to an item 'describe your initial reaction when you see a 350-pound person on the street', 59% of responses were derogatory, the most common negative response being disdain or disgust. Negative perceptions of the obese did not depend on whether the respondents had had previous contact with morbidly obese patients.

A similar pattern has been reported among qualified doctors. Price *et al.* (1987) examined the attitudes, beliefs and reported practices of 318 US family practice physicians, using Likert scales and multiple option questions. Most doctors believed normal weight was important to the health of their patients (94%), most felt they were obligated to inform patients about the risks of obesity (93%), that they were role models and should maintain normal weight themselves (90%), and 63% felt confident in prescribing weight loss programs, even though 70% thought it was a difficult thing to do. A roughly even split of doctors thought that counselling patients on weight loss was either inconvenient or gratifying. Despite this generally positive stance in relation to the value of treatment, they found that a significant number held negative or stereotypical attitudes towards obese patients. Sixty seven per cent described obese people as lacking in self-control, 39% as lazy, and 34% as sad. They concluded that there is considerable room for improvement in the beliefs, attitudes and practices towards obese patients.

Overweight bias has also been observed in other groups of health professionals who may be implicated in the provision of treatments. For example, Bagley, Conklin, Isherwood, Pechiulis *et al.* (1989) found in a sample of 107 nurses, 24.3% agreed with the statement 'caring for an obese patient usually repulses me', and 12.1% agreed with the statement 'I'd rather not touch an obese patient'. In another survey of 100 nurses, participants were given patient scenarios and shown one of four pictures of a stimulus patient: normal weight female, normal weight male, obese female, and obese male (Peternelj-Taylor 1989). The obese patients were rated most negatively overall. The role of social attractiveness appeared to be the important factor in these differences, compared to beliefs about the emotional health of patients and the

nurses' feelings toward the patient. However, the negative attitudes did not equate with beliefs that the obese patient would be more responsible than a normal weight patient during conflict situation scenario, or appear to result in a situation where a nurse was more likely to withdraw from providing appropriate care.

Oberrieder, Walker, Monroe and Adeyanju (1995) found negative attitudes amongst both dietetic students (N = 64) and dietitians (N = 234), as measured by the Bray Attitude Towards Obesity Scale. They also found an effect of the respondent's own weight, with 'healthful' weight dietitians (defined as BMI < 27.3 for men and < 27.8 for women) having slightly more negative attitudes than overweight ones. They noted that neither work experience nor dietetic training appeared to address the problem of obesity stereotypes and suggested that dietetics educators in undergraduate and continuing education programs would do well to address this issue.

In contrast, McArthur and Ross (1997) found neutral attitudes toward overweight clients among 439 registered dietitians, and suggested this may be due greater levels of training in obesity compared to other health professionals, such as doctors and nurses. These apparently neutral attitudes existed despite dietitians' beliefs that obesity was down to emotional problems – a factor that other studies suggest may contribute to negative perceptions. Interestingly, dietitians in this group who perceived themselves to be overweight (in fact two-thirds of those that described themselves as overweight were not according to their BMI) were more likely to have more negative views of themselves than of other overweight people, with self-blame, feelings of unattractiveness and worry documented.

McArthur (1995) also found more favourable attitudes among nutrition (and non-nutrition) students. Both groups rated overweight people as enjoyable company, trustworthy, as intelligent as others, and generally agreed with statements such as: overweight people should not be denied the foods they like, feel ashamed, or be discriminated against by employers. The two exceptions were that nutrition students tended to view overweight people as less attractive and both groups viewed overweight as unhealthy. These two groups were also asked about personal overweight, and were more positive towards overweight people in general than towards themselves being overweight. However, the questions about overweight were often hypothetical in nature, being analysed for all respondents regardless of their own weight. For example, participants were asked to agree or disagree with

statements such as 'when I am overweight...I am not enjoyable company' or '...I am less intelligent than when I am normal weight'. Asking respondents to imagine a scenario about some possible event in the past or future is likely to lead to recall bias or to errors based on expectation rather than direct experience.

It is not clear why views of personal overweight were worse than general perceptions of overweight in these two studies. However, these studies are different from many of the others in that they specifically focused on both types of perceptions. Other studies have focused entirely on general attitudes and then analysed the results using respondent weight level as an independent variable. It seems possible that the inclusion of personal overweight questions in a general questionnaire may have had a priming effect, prompting respondents to think more about the personal implications of overweight and resulting in more tolerance towards others, in a 'do unto others...' mentality.

Mental health professionals have also been surveyed for their views of obesity. Young and Powell (1985) found negative attitudes among a mixed group of 120 mental health professionals (e.g., counsellors, psychiatric social workers and nurses, psychologists and psychiatrists). Participants were given a case history of a client with a photograph of a smartly dressed woman that was manipulated to make her appear 'best weight', overweight (20% over best weight), or obese (40% over best weight). They were asked to respond to a series of items on a six point Likert scale. There were no significant weight effects for the professionals' interest in providing a therapeutic intervention or in their predictions that it would be helpful and lead to a successful prognosis. However, overall attitudes were most (significantly) negative towards the obese client and most favourable towards the best weight client. Of the 20 individual items, significant differences were observed between ratings for the obese and overweight client for eight and between the obese and best weight client for 12. The largest differences occurred in judgements of emotional behaviour and self-injurious behaviour. There were no significant overall or item differences between the overweight and best-weight client. The authors suggest that the obese clients came off the worst because they were most deviant from the norm: moderate overweight is relatively common and familiar to therapists. Effects were also found for respondent age and gender, with female and younger workers holding more negative views. There were no significant differences, however, for the respondent's own weight (not overweight versus overweight) for overall scores, although there were

differences on five of the 20 individual items. In these cases, the overweight respondents were more tolerant than their average weight counterparts. The authors suggest that judgements made about obese clients may be partially based on fact: that obesity is indicative of eating disorders or psychopathology such as an obsessive-compulsive disorder. However, it has already been explained that in terms of the literature on the aetiology of obesity, this is likely to be an incorrect assumption. Young and Powell (1985) also note that some beliefs are clearly erroneous, such as those implying sexual dysfunction or inadequate hygiene. It is interesting that sexual dysfunction is viewed as unlikely, although obsessive-compulsion is not. This is a reflection of the authors' own views and illustrates the misconceptions that may be held by even the relatively informed.

Agell and Rothblum (1991) found mixed attitudes towards obesity amongst psychologists. Two hundred and eighty two psychologists provided ratings on written case histories manipulated by weight (obese, non-obese) and gender. Factor analysis revealed eight factors within a perception inventory. In only two were attitudes significantly more negative towards the obese: appearance and embarrassment. Also, for one factor (softness/kindness), the obese client was rated more favourably, which the authors suggested might be due to the 'jolly fat person' stereotype. There were no main weight-gender interaction effects, although female respondents tended to be more negative in their ratings overall. This highlights a potential problem for studies that do not include a suitable comparison: if one gender appears more negative in its views of overweight, this may be because they are more negative in their ratings in general, rather than specifically about overweight. Agell and Rothblum (1991) also reported that although some negative attitudes did appear, these did not generalise to more negative diagnoses or treatment recommendations.

These studies indicate that negative attitudes are apparent amongst some health professionals. However, it is difficult to draw strong conclusions on the intensity or prevalence of such perceptions from the available literature – the employed methodologies are diverse, the quality variable, and the findings inconsistent. Some studies report gender, age or respondent weight effects, but the direction of these effects is not always consistent. It can not be said that the findings are universally negative. It is apparent from some of these studies, namely those that present proportions of responses on specific items, that not all health professionals hold negative views and in some cases it may only be a minority. In these cases, studies

may still report the findings as indicating negative attitudes, when in fact the majority may be positive or neutral. On the other hand, given the fact that many studies of attitudes necessarily rely on self-report measures (it is hard to measure attitudes any other way), it is also possible that some of the problems are understated. Self-report measures are particularly vulnerable to social desirability bias, and may lead to an underestimation of the effects. Many commentators believe there is still a role for challenging the assumptions and negative views associated with obesity (Frank 1993; HEA 1995; Price *et al.* 1987; EHCB:3:2 1997).

2.8 A theoretical basis for obesity attitudes studies?

The studies of obesity attitudes summarised so far have on the whole been data-, rather than theory-driven. This approach has highlighted a number of themes to explain why negative attitudes towards obese people may exist. For example, the observer's beliefs about what causes obesity, the perception that the overweight person is personally responsible for their weight, the existence of the 'fat person stereotype', and the wider social and cultural climate have all been noted as significant factors.

The purpose of this section is to describe some of the psychological theories that may help to explain lay and health professional attitudes towards obesity. To this end, both the social and health psychology disciplines offer useful insights. Social psychology *'focuses on human interaction, exploring all the ways in which our behaviours affect and are affected by others'* (Deaux, Dane and Wrightsman 1993, p.2). In other words, the emphasis is on understanding how people's thoughts, feelings and behaviours are influenced by the others around them (Allport 1985). Health psychology offers further insights because such concepts are explored specifically within the field of health, in the application to patients, professionals and service provision.

2.8.1 Attitude theories

The concept of 'attitudes' has received much attention within the fields of social and health psychology. There are, therefore, good opportunities for using this information to understand more about obesity attitudes and their potential impact on health

professionals' practice. Eagley and Chaiken (1993) have defined an attitude as *'a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour'* (p.1). While a 'psychological tendency' may incorporate a behavioural component, other prominent theorists have gone further in emphasising this dimension to attitudes. For example, Fishbein and Ajzen (1975) have defined attitudes as *'learned predispositions to respond in a consistently favourable or unfavourable way towards a given object, person or event'* (from Hayes 1993, p.91). In this way, attitudes have been viewed as a mental state linked to the propensity for action of a particular kind.

Early views of attitudes were apparently unidimensional, exploring the global responses of one social group compared to another with regard to a target (e.g., men's and women's views of prohibition). This view was supported by the observation that people who behave in different ways are often predictable in their reported attitudes. However, the view that attitudes could reliably predict behaviour was challenged by a well-known study undertaken by LaPière (LaPière 1934). This showed that the attitudes people say they hold do not always correspond to their behaviours. LaPière and two Chinese friends travelled around America, visiting 251 hotels, restaurants and other establishments, at a time when prejudice towards the Chinese was widespread. They were refused service only once. When LaPière contacted the same services about six months later, asking whether they accepted Chinese guests, 90% said they did not. This lead to the conclusion that the attitudes people report do not always predict how they will behave.

Nevertheless, as Ajzen and Fishbein (1980) observed, even with such examples most investigators have not rejected the notion of a link between attitudes and behaviour. Instead, they looked for alternative explanations for the attitude-behaviour relationship. One such explanation focussed on a criticism first expressed by Allport (1935), that unidimensional affective or evaluative measures failed to explain the complexity of the attitudes concept.

A popular alternative to the unidimensional view of attitudes is the three-component model. In this model, attitudes are explained in terms of a person's beliefs and ideas about the attitude target (cognitive or 'thought' component), his or her feelings about the target (affective component), and his or her action tendencies towards the object (conative or behavioural dimension). A schematic representation of the three-

component view was provided by Rosenberg and Hovland (1960), as in **Figure 2.1** below. The model implies that all three components must be measured in order to provide a reliable description of attitudes. Previous failures to explain behaviour in terms of attitudes could therefore be explained by the fact that most attitude measures were describing only the affective component.

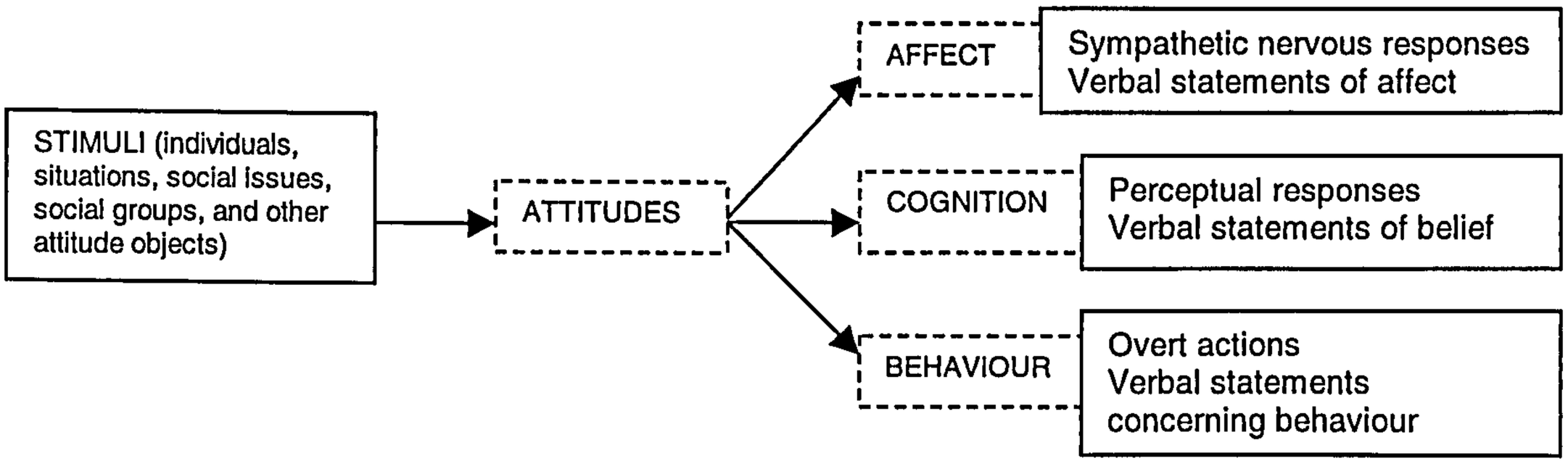

Figure 2.1: Three component view of attitudes, Rosenberg and Hovland (1960).

In early work on the tripartite nature of attitudes, participants completed a number of questionnaire measures designed to include cognitive, affective and behavioural components, so that correlations within and between the three could be obtained to provide a measure of discriminant validity. This was tested in studies that asked participants to answer questions about their likes and dislikes of an attitude object (affect), their beliefs (cognitions) and then compared these with each other and a measure of self reported behaviour. Using this method, Ostrom (1969) undertook a survey on the church and Kothandapani (1971) one on contraception. Such studies appeared to support the three component model. However, when the same data was subsequently re-analysed with more sophisticated statistical models, some investigators found two dimensions, while others argued that the unidimensional approach was supported (Eagley and Chaiken 1993).

Fishbein and Ajzen (1975) have supported the notion that beliefs and attitudes can be viewed as separate concepts, in that beliefs are neutral statements, but attitudes involve an emotional, evaluative component. For example, 'women are good at cooking' is a statement of belief, but an attitude provides some evaluation of whether it is a positive thing that women are good cooks. However, it can equally be argued that the distinction between beliefs and affect is not always clear, in that a statement

of belief may also include an implicit or explicit evaluative component (Eagley and Chaiken 1993). For example, it seems reasonable to suggest that most (western) people might interpret an apparent belief statement such as 'fat people lack willpower' as including an assumption that a lack of willpower is not a positive attribute. Thus, it can be difficult to tell where a belief 'ends' and an attitude 'begins'.

The debate over which model is most helpful continues. Breckler (1984) has proposed that the model used depends on the attitude object being studied, so that a single affective component might be more relevant when beliefs about the attitude object are simple, small in number and uncontradictory. However, where beliefs are more complex and sometimes conflicting, the multidimensional approach may be more helpful. Petty and Cacioppo (1981) have argued that precisely because people sometimes think or act differently from how they feel, the affective component is the only relevant indicator of the evaluative nature of attitudes (which is why the terms affect and evaluation have been used interchangeably in the unidimensional model): *'the term attitude should be used to refer to a general, enduring positive or negative feeling about some person, object or issue'* (Petty and Cacioppo 1981, p.7). On the other hand, Eagley and Chaiken (1993) see no problem with the possibility of inconsistency between the three components, and suggest that 'attitudes could be based on affective, behavioural, *or* [not the authors' emphasis] cognitive input' (p.116). Where high consistency exists, this may be more indicative of the unidimensional view of attitudes. In fact, in terms of empirical evidence, the jury is still out on whether the uni- or multi-dimensional explanation of attitudes is most useful (Stahlberg and Frey 1996). In general, neither model of attitudes is consistently good at predicting behaviours, but most theorists support the general notion that attitudes *predispose* people to respond in a certain way (e.g., Allport 1935; Rosenberg and Hovland 1960; Campbell 1963; Fishbein and Ajzen 1975).

2.8.2 Where do attitudes come from?

A number of theories have been put forward to describe how we develop attitudes. A few have suggested attitudes may be inherited through dispositions to certain traits, which influence the types of attitudes held (Eysenck and Wilson 1975; McGuire 1985). However, this view tends to derive from the fact that attitudes appear to run within families. Of course, this does not prove a genetic element, since families provide a

strong learning environment. Eagley and Chaiken (1993) have suggested that although some attitudes may have a genetic component, those most widely studied by social psychologists are probably learnt.

In explaining attitude formation, Stroebe and Jonas (1996) have noted that early theorists were very much influenced by behaviourist learning theories, so that attitudinal responses were seen as being strengthened through processes of classical and instrumental (operant) conditioning. In classical conditioning, an initially neutral stimulus gradually acquires an ability to evoke a particular response through repeated association with a stimulus that had already evoked the response (the most well known example provided by Pavlov's dogs). For example, Staats and Staats (1958) used words that had positive or negative associations presented to students aurally immediately after a visual representation of the name of a nationality (Swedish and Dutch). For half the students, the Dutch nationality was consistently paired with positive adjectives and the Swedish with negative adjectives, while the order was switched for the other half. Other nationalities were linked to neutral words. When subjects were later asked to rate the nationalities on semantic differential scales, the nationality that had been paired with the positive words elicited more favourable responses than the nationality that had been linked with negative words. Further experiments along similar lines led Stroebe and Jonas (1996) to conclude that attitudes may be unwittingly influenced by the context in which an attitude object has been experienced. In fact, the advertising industry has deliberately exploited such observations by creating seemingly unrelated, positive images around products so that the audience associates them with the 'feel-good' factor. The transmission of views merely by association has important implications for the development of obesity-attitudes, since the cultural messages conveyed about overweight people are frequently negative. It could be argued that negative attitudes form through the persuasive nature of being around other people who make negative statements about overweight people, or negative images of overweight people in the mass media.

In classical conditioning, the 'organism' plays a passive role, so that it has no control over the response that is initially elicited. In instrumental conditioning, the 'organism' plays a less passive role, so that it has to first produce a response before it can be reinforced (Stroebe and Jonas 1996). For example, Verplanck (1955) showed that study participants (students) could be made to increase or decrease the number of opinion statements they made in a conversation based on the proportion of times

another student experimenter agreed or disagreed with them. Agreement acted as a positive reinforcer, increasing the number of opinion statements made. In the case of obesity attitudes, a child who is learning to make negative statements about overweight people will have those views reinforced by the approving responses of people around him or her.

As social learning theories emerged, psychologists began to suggest that a response could be learnt *without* the process of reinforcement: that simply the observation of another person (a model) performing a certain action is sufficient for learning to occur in the observer. The actions of the model act as a source of information, which the observer may use to perform the same behaviour later on. For example, children are thought to learn many behaviours from simply observing their parents or other key role models. In the same way, Bandura (1972) suggested that children pick up *attitudes and ideas* very easily from observing others around them. A mother applying makeup may be unaware she is serving as a model to her daughter, until the daughter starts applying make-up herself during play (Deaux *et al.* 1993). Likewise, a daughter observing her mother express dissatisfaction with weight gain may learn to adopt similar attitudes about body shape herself.

Stroebe and Jonas (1996) have concluded that the evidence that attitudes can be formed through classical and instrumental conditioning is strong. It seems likely that obesity attitudes will be formed through passive associations (e.g., an overweight person portrayed in a television soap opera as stereotypically lazy, exceptionally fond of food and weak to temptation), and more active processes of approving responses (e.g., laughter at anti-fat jokes) from family and peers. Learning simply through the observation of others may also be important (Deaux *et al.* 1993). It seems likely that simply noticing how others express themselves in relation to overweight people may play an important role. Generally, Fishbein and Ajzen (1975) have also proposed that attitudes are acquired through social living, partly through families, and partly through others in the wider community, and Tajfel (1978) has commented that our social identity is closely linked with the attitudes we develop. He notes that *'...there is little doubt that our ideas about what is beautiful or ugly are, to a large extent, determined by the social context in which they are developed; so too are our religious beliefs or our political and social ideologies'* (p.302). The relevance of this statement to obesity-attitude formation is evident, since there can be little doubt that body shape and size are inextricably linked with western perceptions of attractiveness.

2.8.3 Attribution theory

Theories that explain the nature of opinion formation provide a further clue to the development of negative obesity attitudes. For example, attribution theory is useful in this context because it describes a set of principles to explain how people draw causal inferences about other people's behaviour (Tajfel and Fraser 1978). The origins of the theory stem from the work of Heider (1944, 1958) on phenomenal causality. He described people as 'naïve scientists' (Heider 1958), gathering information on observable behaviour and using it to formulate theories about the (unobservable) causes of that behaviour. He suggested people prefer causes that are stable and predictable, therefore providing some sense of order and control. Central to the idea is the distinction between personal (internal) and impersonal (external) causality, for example, whether a stick that has fallen on a person's head has been thrown deliberately, or has dropped from a rotting tree. The key is the decision about whether a given action is due to something about the person performing it, or some other external factor. Related to the perception of personal causes is the notion of intention – whether an act was deliberate or not. In this way, Jones and Davis (1965) have argued that one of the most important aspects of attributions is how 'intentionality' is assessed. The goal of the attribution process is to infer that an observed behaviour and the intention that produced it correspond to some underlying stable quality in the person. If it is believed an action is intentional, inferences are made about the person at the source of that behaviour. This includes an assessment of the person's knowledge and ability – that the person had an idea about the outcomes of his or her behaviour and was capable of producing these outcomes intentionally. The attribution of intention, then, is a step in the assignment of more stable characteristics of the person, such as disposition and personality. Such inferences about the person are known as 'correspondent inferences'. The central concept is the perceiver's judgement that the observed person's behaviour is caused by, or corresponds to a particular trait.

Some relevance to the obesity-attitudes area is apparent. Although being obese is a state rather than a behaviour, it seems that similar principles may apply, because certain assumptions (beliefs) are held about the behaviours associated with being overweight. Some of the obesity literature suggests that negative attitudes may be

determined by the belief that overweight people are if not intentionally overweight, at least not intentionally of a more average weight. Overweight people may be perceived as responsible either because they are seen to have knowingly acted in a way that might promote weight gain, or because once they are overweight, they have not acted to change their situation. A perception that social rules have been so flagrantly ignored may lead the observer to try to explain such 'strange' behaviour by assigning particular personality characteristics to overweight people. The existence of widespread beliefs about the characteristics of overweight people, in the form of the obesity stereotype, are readily at hand to provide the necessary explanation. Unfortunately, so far, this description of attribution theory does not explain why people might more readily alight on personality characteristics to explain obesity (internal causality – which usually incorporates some kind of negative judgement), in preference to such possibilities as the role of genetics (external causality, leading to a more neutral evaluation). However, investigators have noted the tendency for bias in the attribution process, so that the observers are more likely to attribute causes to the individual than the situation – this has been termed the 'fundamental attribution error' (Ross 1977). For example, Ross, Amabile and Steinmentz (1977) randomly assigned participants to the contestant or questioner role in a quiz game. Even though all participants were aware of the random nature of the allocation, they still rated questioners as more knowledgeable, thus ignoring the relevant situational variables. Such bias may explain why people are more likely to explain obesity in terms of personality characteristics than situational factors (the huge changes in lifestyles in industrialised nations in recent decades).

2.8.4 Social representations

Hinton (1993) has noted that attribution theories often ignore the social context, and that the underlying social rules provide explanations in themselves. (In fact, European social psychology has tended towards consideration of social issues, unlike the more individualistic approach taken by north Americans.) The theory of social representations (Moscovici 1981) is informative here because it has been used to explain apparently common knowledge applied to everyday lives in social situations – the fact that people in smaller or larger social groups develop a common set of shared beliefs. Such 'social representations' often consist of 'knowledge' passed down through generations of families, or through social institutions, although some may be more recent. This common knowledge or understanding is sometimes known as 'lay

epistemology'. This reflects and describes assumptions and ideas common to a society, so that Moscovici (1981) has argued that there is a difference between scientific knowledge and the common knowledge that most people (including scientists and professionals) live their lives by. Thus, in the case of the obesity stereotype, such information about what it means to be overweight is transmitted through communities, and may remain largely unchallenged, even among those who supposedly have more objective sources of information. For example, Herzlich (1973) proposed that the underlying theory a doctor has about illness determines the way in which that doctor treats a patient. A doctor who believes a cause to be physical will provide a different approach to one who thinks it is psychological. Thus, lay beliefs about what it means to be overweight, absorbed over many years, may dominate a doctor's thinking and interfere with his or her ability to receive more accurate information about the causes and treatments of obesity. Consequently, these would interfere with the doctor's ability to make a more objective assessment of an overweight patient.

2.8.5 Stereotypes and prejudice

As people develop and learn to understand the world around them within their specific socio-cultural context, there seems little doubt that stereotypes inform the learning process. Stereotypes define a 'schema' or a set of *beliefs* someone may hold about the attributes of another based on their particular social group (e.g., Eagley and Chaiken 1993). Thus, as Deaux *et al.* (1993) have explained, when someone sees a person with red hair, his or her red-haired person schema is activated (assuming they have one), so that the response to the red-haired person is based on beliefs about and experiences of red-haired people. Although stereotypes may be consciously overwritten, their activation is thought to be automatic, so that the only way to avoid reacting to them is to not hold them in the first place. Stereotypes can apparently be quickly and easily developed and can have persuasive effects. For example, Hill, Lewicki, Czyzewska and Boss (1989) showed study participants short video episodes of people apparently thinking about a personal problem. Half the clips were of women with a problem, and half of men. Before and two weeks after viewing the tapes, participants were asked to rate the 'sadness' of men and women they knew. Before the tapes, men and women were rated equally on 'sadness' (i.e., there was no gender-specific sadness stereotype), but afterwards, the participants who had viewed

tapes of men reported the men they knew to be more sad than women they knew. Likewise, participants who had watched the tape of women rated them as more sad. This showed that a stereotype associated with strangers could be brought to bear on people the participants actually knew, about whom they had prior information.

The process of stereotyping is thought to involve three stages (Secord and Backman 1974). The first step is to identify a common category (e.g., being overweight), the second is to assign characteristics to people in that category (e.g., lazy, lacking in willpower, and having emotional problems), and the third is to assume all members of the category share such characteristics (i.e., all overweight people are lazy, lacking in willpower, and have emotional problems). The obesity stereotype proposed by DeJong and Kleck (1986) is consistent with this process. They have suggested that overweight people are viewed as less intelligent; are least often chosen as friends and least often thought to have as many friends; are thought to suffer from this rejection and are described as 'lonely', 'shy', 'greedy for affection', 'dependent' and 'lazy'.

One way of understanding the process of stereotyping is to see it in terms of the 'cognitive miser' (Taylor and Fiske 1978), as a kind of information-processing short cut: *'...a category-based cognitive response to another person. Apart from prejudice (affect) and discrimination (behaviour), stereotyping describes people's beliefs (cognitions) about an individual based on group membership. Category-based or stereotypic responses contrast with fully individuated, attribute-by-attribute consideration of another person.'* (Fiske 1993, p.623). In other words, attributes are assigned on the basis of a perception of a common group (e.g., being female, black or overweight), so that stereotypes provide a quick and easy description of someone. Few personal resources (time, cognitive processes) need to be extended in accommodating the many characteristics of an individual. However, the costs of this short cut are that the assumptions about a person or group of people may be wholly incorrect.

Although stereotypes are not always negative, they do appear to be the foundation upon which prejudice and discrimination are built. The perception of common group membership and the belief that group members share the same characteristics mean that little account is given to a person as a unique individual. Thus, prejudice follows more readily. Prejudice has been described as: *'a fixed, prepared attitude, applied to a target regardless of the target's own individuality or nature. The prejudiced*

individual doesn't weigh up alternative possibilities or explanations when judging others; rather, the outcome of interpersonal evaluation is predicted and judged in advance, on the basis of some arbitrary attribute possessed by the target' (Hayes 1993, p.119). Or, to put it more simply, *'as defined by most psychologists, prejudice is a negative attitude'* (Davey 1983, p.9; see also Eagley and Chaiken 1993).

A number of theories have been proposed to explain why prejudice occurs. For example, the authoritarian personality theory proposed by Adorno and colleagues in the 1950s (Adorno, Frenkel-Brunswick, Levinson and Sanford 1950) was very influential in shaping views of the individual in relation to prejudice. The theory proposed that individuals are prejudiced because of their personality, which itself was shaped by a rigid and disciplinarian parental upbringing. These early experiences produced aggression, which could not be expressed towards dominant parents, so manifested against other, safer targets (some identifiable out-group).

However, others have noted that prejudice goes beyond individual motivations. In a key text from 1958, Allport (Allport 1958) identified six orientations used by theorists to explain prejudice, which still provide a useful summary of many contemporary theories:

- historical and economic: the emphasis being that many prejudices have a long history, which may be linked to the fact that one group has traditionally been exploited for the economic gain of another (e.g., the black slave trade)
- sociocultural: emphasising the social and cultural factors that determine the existence of prejudice (as in some of the explanations provided above, as well as social changes that may promote competition for certain resources, such as value placed on competence and training combined with high unemployment – Deaux *et al.* 1993)
- situational: emphasis on current factors that influence the emergence of negative beliefs about others (e.g., prejudice stemming from particular conflicts, such as negative stereotypes of Germans emanating from two world wars)
- psychodynamic: emphasis on the prejudiced person's own inner conflicts, either in terms of acting out frustration associated with deprivation, or prejudice stemming from particular personality characteristics
- phenomenological: emphasis on immediate influences (such as the current experience of a person perceived to belong to a particular group)

- earned reputation: emphasis on the fact that there may be a kernel of truth in a particular stereotype (e.g., that different cultures have different behavioural tendencies or traditions)

Davey (1983) has argued that theories of prejudice can in fact be broadly grouped into two main streams of thinking, those emphasising the role of individual motivations, frustrations and needs (individual emphasis), and those taking into account political, cultural, religious or economic factors (group emphasis). Deaux *et al.* (1993) have commented that the pervasiveness of prejudice and discrimination indicates that each has more than one source, so that all theoretical approaches must be considered. However, some of the theoretical approaches summarised by Allport (1958) explain obesity prejudice better than others. Those based around the consequences of competing for resources (innate aggression theories) do not appear to explain obesity prejudice very well, since there is little competition for food in societies where obesity prejudice is most pernicious. In fact, the opposite could be said to be true: as food has become more widely available in industrialised nations, so disdain towards overweight people has become more apparent. This appears to be associated with the belief that such people have failed to control their access to this widely available resource.

As previously noted, Crandall (1994) found a dislike of overweight people to be correlated with conservative ideology and authoritarianism, as well as commenting that antifat attitudes appear to be *'widely held'* (p.891), suggesting the involvement of both individual and social factors. In fact, it has already been acknowledged that many commentators have noted the widespread existence of negative attitudes towards overweight people in westernised countries. It might even be argued that in such cultures, obesity prejudice is so common as to be normative, indicating that powerful social factors are indeed at play. Therefore, theories that emphasise the cultural transmission of ideas (which become ingrained in the collective psyche) appear to be more appropriate in explaining obesity stereotypes and prejudice. The proposal that ideas about obese people are socially transmitted is convincing not least because different cultures hold diametrically opposed views of obesity (either positive or negative). Historical factors also appear to play a role, since as it has been observed, some of the current beliefs about obesity have a long tradition.

So why is the western view of obesity so widespread and enduring? It has already been demonstrated that the beliefs about obesity have a long history. One reason may be that stereotypes are apt to become self-reinforcing, with information that confirms expectations more likely to be taken on board than information that refutes it. The consequence of this selective information processing is described as an 'illusory correlation', since illusion is created by expectations overriding objective observations (e.g., Hamilton and Rose 1980). Fiedler (1996) has noted that *'stereotypical biases in the perception, encoding and recall of relevant observations help to explain the persistence of many social stereotypes in spite of disconfirming evidence'* (p.153). Thus, there are inherent biases in the process of stereotyping, so that it is easier for such beliefs to perpetuate than to change.

Furthermore, it has been suggested that one of the functions that stereotypes serve is to assimilate the large volume of social information that confronts people in their everyday lives (Fiske 1993). They provide a ready and easy means of understanding the world, and offer no incentive in themselves for people to change their views, since such processes would require effort and time. Enduring stereotypes might then be seen as a form of lay epistemology – a means of explaining the world simply, through assumptions that are handed down through generations, and they endure because they do not require the effort associated with assimilating new information. In seeking to understand why someone is overweight, existing belief systems in the form of stereotypes can be readily attributed to the individual. People may learn such beliefs simply through being around others who express them, or through more active processes of reinforcement. Beliefs are passed on largely unchallenged and become self-perpetuating.

In the same way that attitude theories describe a link between beliefs, attitudes and behaviour, stereotypes (beliefs) are often viewed as the building blocks to prejudice (attitude), which in turn is seen as a precursor to discrimination (behaviour). Indeed, because of their close relationship, the terms stereotypes, prejudice and discrimination are often used interchangeably, despite being distinct concepts (Deaux *et al.* 1993). Discrimination is the acting out of prejudice, with *'specific behaviours toward members of a group that are unfair in comparison with behaviour toward members of other groups'* (Deaux *et al.* 1993, p.355). Such behaviours may occur in covert or explicit ways. The potential for discrimination on the basis of gender, race and physical disability is recognised as such a significant problem in many countries

that legislation has been introduced to mitigate against it. Discrimination on the basis of sexual orientation, age and religion is also widely acknowledged. Other forms of behaviour bias are either not generally acknowledged, or not perceived to cause widespread problems. Thus, although obesity-prejudice is widely articulated in the literature, and some available studies indicate discrimination may be a problem in educational, work and health settings, little attention is paid in general to the consequences of obesity discrimination.

2.8.6 Theoretical applications in the health-care setting

As previously demonstrated, defining the relationship between attitudes and behaviour is not without problems. As the discipline of health psychology has developed, a number of theories have been refined or developed to explore the link within the health-care setting. For example, expectancy-value models (Conner 1993; Marteau 1995), such as the health belief model (Rosenstock 1990), the theory of planned behaviour (Ajzen 1991; Ajzen and Madden 1986), and Rotter's social learning theory (Rotter 1954) are all popular approaches. Such theories *'assume that behaviour and decisions are based on elaborative but subjective, cost/benefit analysis of the outcome of different sources of action* (Conner 1993, p.24). In other words, people weigh up the pros and cons of taking up or abstaining from particular behaviours that may promote or damage health. More recently, Schwarzer's (1992) Health Action Process Approach and Prochaska and DiClemente's (1982) stages of change or transtheoretical model have been useful for exploring the role of people's 'readiness' to change their actions. These theoretical (social cognition) models have been used to try to explain the link between people's cognitions and behaviours (note that here the term 'cognitions' is used as a general one to encapsulate other concepts such as knowledge, beliefs, perceptions, attitudes or feelings). Following this, interventions may be designed that target salient cognitions, with a view to changing health-related behaviours.

Mostly, however, such theories have been used to examine how *patient's* cognitions influence the choice of various health-related behaviours. They have sometimes, but less often, been applied to explain variations in what health professionals' do (Marteau 1995). In addition, given their emphasis on health behaviours, they do not translate well to consideration of the effects of prejudice. For example, an

intervention designed to change someone's smoking behaviour is very different to one designed to change stereotypes and prejudice. For one thing, there is far less personal benefit to be had through changing beliefs about someone else. For another, the theoretical underpinnings are very different: the expectancy-value models focus on the expenditure of cognitive energy in weighing up various *behaviour* alternatives, while stereotyping theories are based on ideas of cognitive energy-saving in evaluating a *target*.

In fact, within the health psychology discipline, there appears to have been little attempt to explore the possible impact of health professionals' prejudices on their practice. Where the health professionals' role has been considered, this seems to have focussed on improving patients' adherence to treatments and professional-patient communication. The latter often focuses on the way information is collected and relayed by professionals and its subsequent effect on patients. Although this offers opportunities for considering the influence of patient characteristics on health professionals' perceptions and behaviours, this does not appear to have been undertaken explicitly. For example, in a number of reviews of doctor-patient communication (Simpson, Buckman, Stewart, Maguire, Lipkin, Novack and Till 1991; Stewart 1995; Ong, DeHaes, Hoos and Lammes 1995; Williams, Weinman and Dale 1998), none specifically addressed the possibilities of prejudice and discrimination amongst doctors, although one (Ong *et al.* 1995) did note that various socio-demographic, psychological and psychosocial variables may influence the doctor-patient relationship and communication.

In terms of health professionals' prejudices, therefore, it is necessary to go back to the social psychological literature for insights. Explanations for the existence of negative obesity attitudes that focus on the social transmission of shared ideas are compelling because of the culture-specific nature of obesity prejudice. It is proposed that health professionals' ideas about overweight people are learned through the social transmission of ideas – a form of lay epistemology that may override objective clinical information. Thus health professionals share similar views to other members of the cultural community. The obesity stereotype is key, since it provides an easily transmittable, enduring summary of the overweight person. For example, from previous studies, the obesity stereotype appears to describe overweight people as lazy, lacking in willpower and having emotional or psychological problems (e.g., DeJong and Kleck 1986). Such beliefs related to the personality or traits of an

individual suggest the role of personal responsibility (intent) that attributions to situational factors do not. Overweight people are seen as responsible for their situation because they have knowingly contributed to it, or have failed to intentionally change it.

Although the exact relationship between stereotypes, prejudice and discrimination has not been defined as a distinct model, there is a consensus amongst many psychologists that stereotypes (beliefs about a perceived group) are essential components of prejudice (negative attitudes towards the group), which in turn may lead to discrimination (negative behaviours) (e.g., Davey 1983; Deaux *et al.* 1993; Fiske 1993; Hayes 1993). Such ideas of the belief-attitude-behaviour relationship appear to parallel with attitude theories. As Eagley and Chaiken (1993) have noted, stereotypes describe a set of beliefs, and prejudice is the existence of negative attitudes. Discrimination is the acting out of prejudice. Thus, from the attitudes literature, it can be assumed that people with negative attitudes towards overweight people will, at the very least, be more *inclined* to behave in a negative way towards them. Therefore, in terms of health care delivery, there is a danger that any negative views health professionals hold will affect their practice with overweight people, meaning that they may not be providing the best care possible for this group of patients.

2.9 Rationale for Study 1: Health professionals' views of overweight people and smokers

Within Marteau's (1995) framework, Chapter 3 explores the cognitions of selected health professionals in relation to overweight and obese people. The general obesity attitudes literature suggests that key beliefs about obesity include that it is due to some internal, personal characteristics (such as lack of willpower, personality or emotional problems), and that obese people are personally responsible for their situation, thus potentially describing the obesity stereotype. Such beliefs have been linked to negative attitudes (prejudice) towards overweight people. There have also been indications that the degree of negativity depends on the level of severity of overweight (i.e., the more overweight someone is, the more likely he or she is to experience negative attitudes from others (Blumberg and Mellis 1985; Young and Powell 1985)), but this aspect of attitudes has not been explored widely. It is also not clear how *beliefs* about overweight are influenced by the degree of severity.

Therefore, this thesis explores health professionals' views of both moderately overweight and extremely overweight (obese) people in terms of their beliefs about the causes, their general attitudes, and their perceptions of the personal responsibility of overweight people to respond to their situation.

Previous studies have been criticised for failing to include appropriate comparisons, therefore health professionals' views of overweight and obese people were compared to those towards smokers. Smokers are a useful comparison group because, as in the treatment of obese people, smoking presents a distinct health risk and the treatment of smoking represents a challenge to health professionals in terms of effecting long-term success rates.

In a two by two, independent, factorial design, respondents were asked questions about either moderately overweight people, extremely overweight (obese) people, moderate smokers or heavy smokers. The independent measures design means that participants were less aware of the responses relative to weight level than if the same respondents were asked questions about both moderate and extreme levels.

Doctors and clinical psychologists were chosen as the survey sample, because both professions are implicated in the treatment of obesity, albeit through different mechanisms. In addition, the professions share similarities in terms of their training schedules: a minimum of six years training with both taught and applied elements.

2.10 The 'consumer' – What do overweight people think?

In the framework proposed by Marteau (1995), the importance of patient (consumer) cognitions has been highlighted. It is of interest to explore patient cognitions because of how they relate to their own behaviour and health outcomes, but also in terms of the interplay between health professionals' cognitions and behaviours. It has already been proposed that health professionals and lay people share similar stereotypes and prejudices about overweight people, because the powerful nature of these culturally transmitted ideas overrides any objective, scientific knowledge that health professionals may receive. It aids our understanding, therefore, to determine what beliefs and attitudes non-professionals actually do hold, whether they are similar or

different to those of health care providers, and what implications these findings may have for health service provision.

In addition, current philosophy in health care research and provision supports the role of the consumer in health care decision-making (e.g., Bastian 1994; Oliver, Entwistle and Hodnett 1998). This is because it is increasingly acknowledged that what the health care provider, researcher, or policy maker thinks is important is not always the same as what the consumer (the person receiving the health care) thinks is important. There is intuitive appeal in obtaining consumer views in order to inform health care procedures. However, despite this, the active involvement of consumers in these procedures is relatively new. It is perhaps for this reason that there is very little published work directly exploring the views of overweight and obese people on obesity itself. In what appears to be a lone study of its nature, Murphree (1994) suggests that in the case of weight loss, incorporating patient perceptions into a treatment regimen may help to improve weight loss methods and results. He used focus groups to get an idea of patients' perceptions of doctors' and dietitians' efforts to treat obesity. He ran two groups of a total of 26 overweight, self-selected patients from a general medicine clinic. Each group met three times, to discuss one of the following three topics relating to obesity: life experiences, diet modification and exercise. He found that all participants reported having experienced social difficulties associated with their weight, some practical (seating sizes and finding fashionable clothes) and some of a more overt discriminatory nature, such as negative comments and job discrimination. Several participants reported low esteem and feeling unattractive. The groups came up with specific suggestions around treatment. They felt group activities such as Weight Watchers could help with weight loss, rather than lone activities, but that they also needed help with child care and travel to allow them to attend sessions. Participants reported receiving diet sheets and low-calorie recipes from doctors and dietitians, but felt low satisfaction with this sort of approach and reported throwing away the information. They perceived suggested diets to be low in taste and texture, thought that this kind of individual approach did not work, and did not want to see dietitians again for dietary advice. Several participants found dieting caused feelings of deprivation, which could lead to overeating, which in turn could lead to feelings of guilt and anger. Although people reported the value of exercise, none wanted to exercise and reported that the more overweight they got, the less inclined they felt to undertake physical activity. Participants reported pain and inconvenience around exercising, and found it difficult to motivate themselves to go

out to exercise after getting home from work, suggesting facilities en-route to home would be much more convenient. Again the role of social support was emphasised, with suggestions for accompanied rather than lone exercise activities.

This study is useful in that it provides insights into what overweight people themselves think are important issues around weight loss: group approaches, exercise facilities 'on the way home', transport and child care, and modification of suggested recipes with an emphasis on taste and texture. The small and volunteer nature of the sample in this study make generalisations difficult, even among similar patient groups, but the findings could be considered a starting point to understanding patients' perceptions of weight loss interventions.

Studies specifically exploring the similarities and differences between professional and patient views are also rare. Adams, Smith, Wilbur and Grady (1993) surveyed both overweight patients and health professionals to explore the relevance of obesity to these two populations in terms of a undertaking a specific clinical action: pelvic examinations. In a survey of 1316 doctors, a substantial minority (17%) reported a reluctance to perform pelvic examinations on obese patients, but also 83% of doctors reported not liking undertaking pelvic examinations on reluctant patients. In the community survey of 291 (self-selected) women, the same investigators found the very overweight were more reluctant to undergo pelvic examinations. Here, surveying both groups gave an interesting insight into the role reluctance played in undertaking this important preventive care procedure.

Another potentially important variable in considering consumers' views is the role of the respondents' own weight in their perceptions of overweight and obesity. For example, in the study by Crandall (1994) described above, antifat attitudes were no less apparent in heavier participants. Likewise, Allison *et al.* (1991) found no difference between the attitudes of 514 members of the National Association to Advance Fat Acceptance (NAAFA – overweight people who one could reasonably expect to have more positive views about obesity) and 124 graduate and undergraduate students. However, they did observe that NAAFA members scored significantly higher on the beliefs scale, revealing they viewed obesity as less within individual control than undergraduates.

Counts, Jones, Frame, Jarvie *et al.* (1986) also found little difference between obese and normal weight children's perceptions of obese individuals. Comparing 12 obese and 12 non-obese children, they showed each one a photograph of an obese and non-obese person, of similar height, wearing the same space suits and helmets concealing their faces. Each participant was asked to choose which of the two 'space people' best represented a number of characteristics, such as being a better partner for a space game, smarter, friendlier, etc. There were no significant differences in the ratings of the obese and non-obese participants. However, the normal weight target (space person) was significantly more often selected on the positive characteristics overall (and on the individual items 'better partner' and 'better leader'), and the obese target was more often selected on the negative characteristics overall (and the individual item 'more sad').

On the other hand, Robinson *et al.* (1993) found that normal weight people were more likely to have 'fat phobic' attitudes. In a survey of 1,135 people recruited from a variety of sources (attendees at a lecture on body image, psychotherapy clients, college students, members of weight loss groups), 9% were overweight and 9% were severely overweight. The investigators used a 50 item, five point differential scale to determine participant attitudes towards overweight. Factor analysis revealed six dimensions. Respondents tended to stereotype obese people as being 'Undisciplined, Inactive and Unappealing' and as having 'Emotional and Psychological Problems'. However, they did not tend to hold strong stereotypes of obese people as 'Grouchy and Unfriendly'; having 'Poor Hygiene'; being 'Passive'; or being 'Stupid and Uncreative'. It was found that the degree of fat phobia was related to the respondent's BMI: those who were average or underweight were more likely to have negative views than those who were overweight. Robinson *et al.* also found that younger respondents (< 55 years), female, those who had more than a high school education and were non-medical professionals were more likely to have negative attitudes.

2.11 Rationale for Study 2: Dieters' views of overweight people, and for: Comparing the views of health professionals and dieters

Study 2 considers the role of the 'consumer' in health care by exploring dieters' views of overweight and obese people, using the same approach as that outlined for health professionals. Thus, within Marteau's (1995) framework, patients' cognitions are

considered. This serves two purposes: to summarise the key beliefs and attitudes of consumers with a view to describing those that underpin the obesity stereotype in this group; and to give due consideration to the consumer in a matter that is important from both health professional and lay perspectives.

The study incorporates an examination of the effect of the respondents' own weight on their perceptions of overweight and obesity, since previous investigators have considered this to be a potentially salient variable, but the findings have been inconsistent. Participants were members of weight loss groups. They were targeted as a means of identifying groups of people at a range of weight levels who were motivated to lose or maintain weight loss. In this way, the perceptions of normal weight, overweight, and very overweight people were explored.

In addition, a direct comparison between dieters' and health professionals' views explored the beliefs of 'consumers' relative to health care providers. It appears that no other studies of obesity-attitudes have been undertaken which have compared directly the views of these two groups. The intention of the comparison was to shed light on the similarities and differences between these two groups of people who both have a vested interest in weight loss. Similarities may be expected in that both groups are subject to conveyance of the same cultural ideas and stereotypes. However, differences may also be expected in that dieters and health professionals view the problem from different sides of the service provision experience, and therefore from different perspectives. The information gained may help providers in understanding patients and aid them in delivering more effective interventions. It can be viewed as one facet in the repertoire of options that may help professionals deliver better health care.

2.12 The relationship between obesity beliefs, attitudes and practice: Rationale for Study 3: Dietitians' views and reported weight management practices

Within the psychological literature, much attention has been focused on the concept of attitudes and the implications for behaviour in relation to the attitude 'object'. There is still debate over whether the unidimensional or three component view of attitudes is more appropriate. This debate centres around the constituent parts of attitudes: whether attitudes are defined on the whole in terms of an affective evaluation, or

whether they are the composite, to some degree or another, of beliefs (cognitive or 'thought' elements), affect (feelings and evaluation of the object) and behavioural dispositions (tendencies to respond in a particular way). In both cases, however, most theorists agree that attitudes mean that people are disposed to behave in a way consistent with those attitudes, even if the association is not always clear and strong. Likewise theories of stereotyping, prejudice and discrimination suggest a close relationship between belief systems, attitudes and behaviour. However, the exact relationship between beliefs, attitudes and behaviour remains one that is open to debate and scrutiny (Stroebe and Jonas 1996).

Likewise, within the obesity attitudes literature, negative beliefs and attitudes have been assumed to increase the likelihood of discriminatory behaviours towards obese people. The available data seems to suggest this may be so, although information about behaviour is collected less frequently than attitude data. Furthermore, the studies reported to date have tended to focus on cognitions *or* behaviour (more will be said about the latter below), rather than a combination of both. Study 3, therefore, explored the beliefs, attitudes and reported practices of dietitians in relation to overweight and obese people, and then explored the relationships between these three dimensions. Thus, within Marteau's (1995) framework, health professionals' behaviour and the selection of medical treatments and procedures are considered, along with the relationship of these behaviours to professionals' cognitions.

Dietitians were studied as another group of key health professionals implicated in the management of weight problems. Firstly, the patterns of beliefs and attitudes were explored across the two weight levels, to determine if they were consistent with the findings of Studies 1 and 2. Secondly, the reported practices were described for both weight levels. Finally, the relationships between beliefs and attitudes, and beliefs, attitudes and practice were explored using multiple regression analyses to test for associations between the three concepts.

2.13 Could health professionals' practice be improved?

The possibility that some health professionals hold negative stereotypes and attitudes towards obese people raises concerns that the practice of providers may be adversely affected. Perhaps health professionals are more negative and dismissive of the

overweight patient during consultation, which in turn may cause the overweight person to be less inclined to consult health professionals. Perhaps they will miss key information about the patient by attending to the weight, but not to other important clinical factors. In short, stereotypic beliefs and negative attitudes about overweight people may be acting in the clinical arena and adversely influencing clinical decision-making. Health professionals may be making less than optimal practice choices as a result.

Evidence to suggest that some health professionals' practice is negatively affected by the presence of obesity tends to come from the attitudes literature and data of reported intentions or practices. There are also a few studies of behaviour in real life situations. In one example, Evans, Harries, Dennis and Dean (1995) examined the prescribing of lipid lowering agents amongst 35 doctors given case scenarios and cues for cholesterol levels and a number of associated risk factors for coronary heart disease. They found that doctors were less likely to treat overweight people (and sometimes smokers) and explicitly stated this as their policy.

In the study by Adams *et al.* (1993) described earlier, doctors' and obese women's perceptions of pelvic examinations were explored. These suggested reluctance was a key factor for both parties. The authors suggest that the attitudes of doctors and patients may interact to leave obese patients at greater risk due to a relative reduction in preventive care procedures. However, without a measure of practice, it is not possible to say whether reported reluctance does in fact lead to reductions in the number of examinations performed. While doctors may not relish the prospect of undertaking exams on specific groups of patients, a sense of clinical responsibility should outweigh any reluctance.

One study that included an objective measure of provider performance found no difference in provider practice as a function of patient weight. Lubitz, Litzelman, Dittus and Tierney (1995) collected data on 15 faculty and 77 resident doctors in a general medical clinic, delivering care to 1,321 women eligible for cervical smears. The rate of smears was 21% for non-obese women, 20% for obese (130-200% of ideal weight) women and 20% for morbidly obese (> 200% of ideal) women. Although delays were more likely to occur in tests for morbidly obese women than for obese or non-obese women, this did not result in any differences in the number of tests performed by weight category. Of course, this is only one study of a specific clinical action, in a

specific population, and it is not possible to generalise to other clinical areas and settings.

Although the evidence for practice being impaired by negative perceptions of the overweight person is scant, lack of evidence of an effect is not the same as evidence of no effect. While relatively neglected in terms of rigorous research, many commentators believe that obesity-related practice does fall short of desirable (Frank 1993, HEA 1995, Price *et al.* 1987). These beliefs are based on attitude studies, reported intentions and practice, and personal experience. For example, based on his experience of a career in treating obesity, Frank (1993) offers a persuasive argument that obesity management is less than optimal. He suggests that it is a problem largely neglected by the medical profession, being treated with scorn, contempt and indifference. He notes that this is partly due to a perception that it is difficult to treat, but also points to an insidious belief that obesity is really the patient's fault, even though this is not borne of fact. Unlike most other clinical areas, it seems that obesity prejudice appears to legitimise frustrations with treatment and justifies its apparent withdrawal. The point is aptly made: health professionals would not abandon a diabetic because there is no cure for diabetes, neglect a schizophrenic patient because the relapse rate is high, or discard a patient with AIDS because they caught their disease. He suggests a change in orientation: *'It is not a curable disease. We should have no expectation that losing the weight will affect the basic physiologic abnormality any more than normalizing the blood glucose resolves the disease of diabetes.'* (p.2133). Health professionals would do well to see obesity as a chronic problem that needs long-term care. Failure to do so results in perceived failure and the handing over of the management of obesity to the largely untested commercial sector and 'snake oil' merchants.

In fact, the current view of health care delivery *in general* is that much practice falls short of best standards. This is the case even when evidence about practice is very clear cut and relatively easy to implement. For example, good evidence of the effectiveness of thrombolytic therapy in reducing mortality for acute myocardial infarction became available in 1986-88, when the results of large-scale trials were published. However, in a study of the Trent region of the UK, Ketley and Woods (1993) found that although use of thrombolytics rose steadily in years subsequent to the publications, it reached a plateau in 1991-92. Even at this time, they estimated that only 35-50% of *suitable* patients were treated with a thrombolytic. Likewise,

Antman, Lau, Kupelnick, Mosteller *et al.* (1992) found a pronounced time lag between clear evidence of effectiveness of treatments for myocardial infarction and text book and review recommendations for practice by clinical experts in line with the evidence.

Consider obesity: a history dogged by changing and often conflicting perceptions about the causes (e.g., personality versus biology), until recently a lack of good evidence on effectiveness, leading to a lack of knowledge or confusion about the best treatment options, and an apparent lack of service options in the public health sector. In these circumstances, it almost seems preposterous to assume that practice could be anywhere near desirable. Superimpose on this situation an apparent overt and widespread stigma associated with obesity and a culture of 'blaming the victim'. It can only be assumed that this situation affects at least some practitioners' motivations to work with obese people. Recent reports tend to highlight the fact that negative perceptions towards obese people do exist among health professionals and recommend that these are challenged with a view to improving practice (HEA 1995, EHCB:3:2 1997). In fact, rather than simply improving attitudes, a measure of positive discrimination may be necessary in the clinical arena. Stunkard and Wadden (1992) suggest that: *'Practitioners should be aware that severely obese persons are subjected to prejudice and discrimination and should be treated with an extra measure of compassion and concern to help alleviate their feelings of rejection and shame.'* (p.524S).

2.13.1 Rationale for Study 4: A systematic review of interventions to improve health professionals' management of obesity

Precious little is known about how health professionals' management of obesity might be improved. A number of factors have been identified as potentially interfering with good clinical practice in relation to overweight and obese people (e.g., provider and patient cognitions, access to services). Like other clinical areas, there is no reason to assume the clinical management of obesity is near optimal levels. In fact, in light of the potential for negativity in relation to this patient group, there is good reason to believe practice will fall short of ideal. There is an urgent need for strategies to improve management to be developed and properly tested. However, before new interventions are designed, it is now considered good practice in health services research to undertake a systematic review of the evidence. Indeed, some of the large

funding agencies now consider this to be essential (e.g., the Medical Research Council). There are a number of reasons why this is so. The cost of undertaking primary research can be prohibitive, and it is essential that previous good quality work is not unnecessarily replicated, thus wasting valuable resources. Likewise, it is unethical to involve patients in research that will not provide additional useful information. It is not possible to get an accurate and reliable picture of the current state of the evidence until systematic review methodology is employed. Unlike traditional narrative reviews, a systematic review of a particular topic should include exhaustive searches for published *and* unpublished studies and employ clear research methods, stating the decision rules for inclusion and quality assessment of studies in advance, in order to eliminate as many biases from the review process as possible. The findings of a systematic review are the first step in identifying what knowledge is already available on a topic, and what remains to be discovered.

Thus, in considering both the role of attitudes in health professionals' management of overweight and obese patients, and other important contextual issues, the final study asks the question: can health professionals' practice in this area be improved? A systematic review of health professionals' management of obesity puts the exploration of attitudes and behaviour into the practical context of improving the clinical management of overweight and obese people and their health outcomes. Marteau's (1995) framework suggests that health professionals' behaviours (and indirectly their cognitions) may influence patients' cognitions and behaviours, which in turn influence patient outcomes. It also suggests that health professionals' cognitions and behaviours exert a direct influence on the choice of medical procedures and treatments with patients. The underlying rationale to this final study is, therefore, that if practice is improved then outcomes for patients will also be improved. Thus, this study considers the evidence for different strategies to improve practice in the area. It incorporates strategies for improving attitudes, but also investigates whether there are other strategies that might be undertaken to improve practice in this area.

2.14 Concluding comments

Much commentary has been given over to the stigma associated with overweight and obesity in industrialised countries. There is some evidence, although not clear-cut, to suggest that negative beliefs (stereotypes) and attitudes (prejudice) do exist and that

these may manifest in discriminatory practices towards overweight and obese people. Obesity is a big public health problem. Health professionals have the potential to play a key role in obesity prevention and treatment and yet relatively little is known about current practice and how to help practitioners fulfil this role. Previous work suggests that at least some health professionals may hold negative views towards overweight and obese patients, but the intensity or degree of these unhelpful attitudes is not clear. Therefore, Study 1 explores the attitudes and beliefs of health professionals with regard to obesity, and compares these to those of smoking: a widespread habit that also holds huge implications for public health. Both obesity and smoking have implications in terms of patient and health professional behaviours. Study 2 explores the views of dieters, as people with a vested interest in weight loss and maintenance. It examines how these are different or similar to those of health professionals, with a view to understanding if health professionals and lay people hold similar stereotypes and attitudes, and for informing the process of delivering weight loss treatments and obesity-related health care in general.

Much debate has been given over in the psychological literature to the relationship between attitudes and practice. Although the exact components of attitudes have yet to be defined, many theorists agree that there is some relationship between beliefs, attitudes and behaviour. Theories of prejudice also assume that beliefs and attitudes are linked to behaviour in some way, in the form of discrimination. Study 3 explores the views of dietitians, their reported overweight and obesity management practices, and examines the relationships between obesity beliefs, attitudes and practice.

The obesity attitudes literature suggests that negative attitudes towards obesity exist amongst health professionals, and to a lesser degree, that practice may also be affected. Even without widespread obesity practice data, intuitively it seems likely that the overt obesity prejudices articulated in our culture will have some effect on professional practice. Also, given the now widespread view and supporting empirical evidence that much clinical practice falls short of ideal, there is every reason to believe that the same is true for obesity management. In fact, in conjunction with the possible role of obesity stigma, a lack of good clear information on treatment options, and a whole host of areas where practice may be improved, there is every reason to believe practice in this area could be improved. Study 4 explores the strategies that have already been undertaken to try to improve health professionals' management of obesity and the delivery of health care for overweight and obese patients.

Therefore, the aims of this thesis are:

- To describe the key beliefs that may underpin the obesity stereotype among health professionals
- To explore the attitudes of health professionals towards moderately and extremely overweight people
- To describe the key beliefs that may underpin the obesity stereotype among dieters (consumers)
- To explore the attitudes of dieters towards moderately and extremely overweight people
- To compare health professionals' and dieters' cognitions of overweight and obesity
- To consider the implications for service provision of health professionals' and dieters' cognitions of overweight and obesity
- To examine the relationship between beliefs, attitudes and practices amongst health professionals
- To investigate the ways in which service provision for obese people may be improved

3. Health professionals' views of overweight people and smokers

3.1 Introduction

Health professionals are ideally placed to play a key role in the treatment of obesity since they are in the position to counsel significant numbers of people on lifestyle matters and healthy weight loss (RCGP 1986). Their access to patients could be utilised to develop wide-reaching strategies to tackle the obesity problem. However, the extent to which health professionals might routinely be involved in effective obesity management is not clear.

In Chapter 2, it has been suggested that health professionals may hold negative beliefs and attitudes towards overweight and obese people. In line with Marteau's (1995) framework, it could reasonably be suggested that such prejudicial attitudes result in negative (discriminatory) practices, in that they interfere with the motivation and performance of professionals working with this patient group. This could in turn reduce the opportunity for effecting successful patient change (patient cognitions, behaviours and health outcomes).

Negative attitudes have been observed to some degree amongst many different health care professionals, in medical students and qualified practitioners (Maddox *et al.* 1968; Maddox and Liederman 1969; Breytspraak *et al.* 1977; Blumberg and Mellis 1985; Price *et al.* 1987), nurses (Bagley *et al.* 1989; Peternelj-Taylor 1989), dietetic students and dietitians (Oberrieder *et al.* 1995), and mental health professionals (Young and Powell 1985). This is an important consideration as all these professions are involved in the treatment of obesity. However, it is difficult to draw strong conclusions on the intensity or prevalence of such perceptions from the available literature – the employed methodologies are diverse, the quality variable, and the findings not necessarily consistent. It is possible that negative attitudes have been overstated. For example, investigators may be guilty of biased reporting, concluding that negative attitudes are prevalent even when observed in only the minority of those whose opinions have been canvassed. The possibility of publication bias may further confound conclusions, with findings supporting the prevailing view being more likely to

be published (Easterbrook *et al.* 1991; Dickersin and Min 1993; Dickersin *et al.* 1995). Some studies have reported neutral, mixed or positive attitudes (Agell and Rothblum 1991; McArthur 1995; McArthur and Ross 1997; Robinson *et al.* 1993), suggesting negative attitudes may not be pervasive in all populations. Furthermore, much of the existing work on attitudes towards obesity has a North American bias, and relatively little is known about the views of UK health professionals.

In addition, previous studies of health professionals' obesity cognitions have not specifically set out to describe the key beliefs that may underpin the obesity stereotype amongst health professionals and how these may relate to prejudice. The study described in this chapter was therefore designed to explore the beliefs and attitudes of UK health providers towards overweight and obesity. It focuses on some of the main issues highlighted by the obesity literature in Chapter 2: beliefs about the causes, attitudes towards, and the perception of personal responsibility of the overweight or obese person in response to their condition. In this way, an exploration of these concepts may help to describe the obesity stereotype and related obesity attitudes. As different levels of severity of overweight may hold different implications for health risk, provider perceptions and treatment, the study also examined the impact of level of severity (moderate versus extreme/obese) on participant responses.

Health professionals' views of overweight and obese people were compared to their views of smokers. It is important to have a comparison group, because without one it is not possible to determine how respondents' attitudes compare with those towards other patients. It may be that health professionals have broadly the same views of all patients. Smokers were chosen here, because as with the treatment of obese people, health professionals frequently encounter smokers, smoking presents a distinct health risk, and the treatment of smoking represents a challenge to health professionals in terms of effecting long-term success rates.

3.2 Objectives

The study addressed the question: what are the key cognitions of health professionals' in relation to moderately and extremely overweight people? The main aims of the survey were to (i) describe the key beliefs about moderately and extremely overweight people that may underpin the obesity stereotype among health

professionals, (ii) to explore the attitudes of health professionals towards moderately and extremely overweight people, and (ii) to compare and contrast health professionals' views of overweight people with those of smokers. The survey also addressed the following hypotheses:

1. Health professionals are more likely to view the causes of overweight as internal to (controllable by) the overweight person than they are to view the causes of smoking as internal to the smoker.
2. Health professionals are more likely to view overweight people as more responsible for their situation than smokers.
3. Health professionals' beliefs about the causes of overweight and smoking are influenced by the level of severity (moderate or extreme).
4. Health professionals' beliefs about the responsibility of overweight people and smokers are influenced by the level of severity (moderate or extreme).
5. Health professionals' are more likely to report more negative attitudes towards obese people than moderately overweight people and smokers.

3.3 Methods

3.3.1 Participants

Participants were all general practitioners (GPs) and clinical psychologists (CPs) identified from the Leeds and Bradford health districts. GPs were identified from lists obtained from Leeds and Bradford Family Health Services Authorities (FHSAs), and CPs from the Northern and Yorkshire Regional Health Authority's regional register. The total number of participants surveyed was 764; 670 GPs (Leeds area: N = 406; Bradford area: N = 264) and 94 CPs (Leeds area: N = 61; Bradford area: N = 33). Unless otherwise stated, the participants are referred to collectively as health professionals.

3.3.2 Design

The survey employed a two by two, independent, factorial design (health status by level of severity). Thus, respondents were allocated to receive one of four

questionnaires about either: (i) moderately overweight people; (ii) extremely overweight people; (iii) moderate smokers; or (iv) heavy smokers.

All participants were sent a questionnaire by post, with a covering letter requesting their help, explaining the survey and assuring confidentiality. Achieving adequate response rates is a notorious problem with surveys. To promote the return of questionnaires, a covering letter explaining the study included with the mailing was written on University of Leeds headed paper, in an attempt to give authority to the source. In addition, an incentive scheme (£20 book token) and two reminder letters were used. Each potential respondent was provided with a stamped addressed envelope (SAE) in which to return his or her questionnaire. All responses were returned to the investigator at the University of Leeds. Participation was entirely voluntary and therefore consent was implicit in the return of completed questionnaires.

3.3.3 Materials

Questionnaires were developed to explore health professionals' beliefs about, attitudes towards, and perceptions of responsibility of the overweight person, using smoking as a comparative health area. The two areas (overweight and smoking) were defined in terms of the two levels of severity: moderate and extreme. Thus, the four corresponding versions of the questionnaire were developed according to the same format, incorporating sections on (i) the demographic details of respondents, (ii) beliefs about the causes of overweight or smoking, (iii) attitudes towards the overweight person or smoker, and (iv) perceptions of responsibility of the overweight person or smoker. These latter three sections were developed according to the descriptions given below. An example of the core elements of the questionnaire is given in **Appendix 3.1.**

1. *Beliefs about the causes of overweight.* In Chapter 2, it has been suggested that a person's perceptions of the cause of obesity may be linked to their attitudes towards obese people. Such beliefs may be important in defining the obesity stereotype. Therefore, this section was included in order to explore each respondent's perceptions of the causes of overweight and obesity. The items were devised using elements of both Bray, York and DeLany's (1992) survey of causative factors of obesity and Allison *et al.*'s (1991) Beliefs About Obese Persons (BAOP) scale. Bray

et al. (1992) undertook a survey of 50 physicians and scientists from the US and Europe involved in obesity research. They asked about perceived effectiveness of treatments, as well as eight questions about the perceived causes of obesity that were incorporated into the current questionnaire: lack of willpower, physical inactivity, carbohydrate craving, depression leading to overeating, genetic factors, metabolic defects, fat cell defects, and repeated dieting (weight-cycling). Allison *et al.*'s (1991) used the BAOP (in conjunction with the Attitudes Towards Obese Persons – ATOP – scale described below), to survey 514 National Association to Advance Fat Acceptance (NAAFA) members, as well as 72 undergraduate and 52 postgraduate students. The BAOP scale consists of eight items which, in addition to factors similar to those used in Bray *et al.*'s survey, include questions on addiction, eating problems and emotional eating. Both scales were adapted and extended for use in the study described here. Additional items were formulated to explore some of the issues that emerged from the literature review: age, gender, socio-economic status, and personality.

As far as possible, the same questions were used to explore beliefs about smoking (e.g., emotion-related and demographic factors, genetics, and lack of willpower). However, for the questionnaires on smoking, some of the irrelevant obesity items were removed (e.g., physical inactivity, repeated dieting, and fat cell and metabolic defects) and more smoking-relevant items were added (e.g., advertising, lack of other meaningful activities, repeated attempts at quitting).

2. *Attitudes towards the overweight person.* This section used Allison *et al.*'s (1991) ATOP scale. The ATOP consists of twenty items that cover a range of issues including attractiveness, perceived self-esteem, and social inclusion. The ATOP was developed from previous scales – the Attitudes Towards Disabled Persons (ATDP) scale (Yuker and Block 1986) and the disparaging image factor of the Maiman, Wang, Becker, Finlay *et al.* (1979) scale. In aiming to produce a psychometrically adequate scale, Allison *et al.* undertook measures of consistency and factor analysis procedures. They found the ATOP to have good reliability (alpha coefficient 0.80 - 0.84) and a simple factor structure of three factors accounting for 42% of the variance: 'Different Personality', 'Social Difficulties', and 'Self-Esteem'. Whereas Allison *et al.* originally used the term 'obese people', in the present study this was changed to 'moderately overweight people' or 'extremely overweight people', according to the version of the questionnaire on overweight.

In order to allow a direct comparison, the same attitude items were used in the questionnaires on smoking, so that the terms 'moderately overweight people' and 'extremely overweight people' were replaced with 'moderate smokers' and 'heavy smokers'.

3. *Perceptions of responsibility of the overweight person.* In Chapter 2 it was suggested that negative attitudes towards overweight people may be due in part to the perception that the overweight person is personally responsible for their condition, and for failing to do something to change it. Again, such beliefs may be key in describing the obesity stereotype. However, no scale specifically exploring personal responsibility in relation to obesity could be located. Therefore, the investigator developed the questions in this section. These aimed to cover concepts of general responsibility; responsibility to recognise overweight as a problem, motivate themselves to change, seek help, and be aware of the effect their weight might have on others; and the legitimisation of pressurising overweight people to change.

For each of the three sections of the questionnaire, a six-point Likert scale was used for respondents to indicate the level of agreement with each statement. (For the beliefs about causes items, 1 = not important, 6 = extremely important. For the attitudes and responsibility scales, 1 = strongly disagree, 6 = strongly agree.)

Each questionnaire pack was distributed in a University of Leeds, A4, brown, manila envelope and contained: a covering letter (one A4 page), a questionnaire (seven A4 pages), a demographic data sheet (one A4 page), a free prize draw slip (one third of an A4 page) and a stamped self-addressed envelope (SAE).

3.3.4 Procedure

All identified GPs and CPs were allocated to one of the four groups by alternation, alphabetically according to surname. All questionnaires and related correspondence were distributed by post. As some participants were based at the same practice or department, this ensured questionnaire types were not clustered by geographical location. All questionnaire packs were distributed by post between May and July

1994. The first follow up letter was sent at the end of August 1994 and the second at the beginning of October 1994.

3.3.5 Data analysis

SPSS for Windows was used to create a database, and for statistical analysis. To test for demographic differences across groups, chi squared tests and one-way analyses of variance were used for categorical and continuous data, respectively.

Three-way, independent ANOVAs (respondent profession, health status and level of severity) were undertaken initially to determine whether differences existed between GP and CP responses. There were many more similarities than differences between the two groups (significant differences have been noted in the relevant sections). The observed differences were main effects for profession, but not interactions with health status or level, indicating the pattern of responses to be very similar for both groups. Therefore, responses for both groups of professionals were combined. (See **Appendix 3.2.1, 3.2.2, 3.2.3** for table of the mean scores for causative factors, attitudes and responsibility, respectively according to occupation, health status and level of severity.)

Thus, two-way, independent ANOVAs (health status by level of severity) were used to test for differences in respondents' views across the four questionnaire categories. To take into account the large number of tests undertaken, to avoid the possibility of Type I errors, the level of significance was raised to the 1% level.

The original developers of the attitude scale (Allison *et al.* 1991) used factor analysis as a means of testing the psychometric properties of the scale, along with a test for the internal consistency of the scale. Factor analysis can be used to investigate whether the items within a scale may be grouped in a meaningful way to describe a smaller number of underlying principles or 'latent variables' (Kinnear and Gray 1994), thus acting as one means of validation. To determine whether the attitude scale reproduced similar factor structures with the present sample of UK health professionals, for the two different health statuses, factor analyses were undertaken separately for the overweight and smoking questionnaires. Cronbach's alpha was also determined to assess the degree of internal consistency of the scale when

applied to both health statuses. For the same reasons, these procedures were also undertaken on the responsibility scale data.

3.4 Results

Two hundred and fifty five (33.4%) health professionals participated in the survey. More GPs (N = 204) than CPs (N = 51) took part, but the response rate was proportionally higher amongst CPs (54.2%) than GPs (30.4%). **Table 3.1** summarises the demographic and background details of the respondents according to questionnaire type.

Table 3.1: Demographic details of respondents

	QUESTIONNAIRE TYPE				
RESPONDENTS	OVERWEIGHT		SMOKING		OVERALL
	MODERATE	EXTREME	MODERATE	HEAVY	
N (%)	69 (27.1)	47 (18.4)	76 (29.8)	63 (24.7)	255
Gender:					
F:N (%)	33 (47.8)	22 (46.8)	43 (56.6)	28 (44.4)	126 (49.4)
M:N (%)	36 (52.2)	24 (51.1)	33 (43.4)	34 (54.0)	127 (49.8)
Age: mean (SD)	41.5 (8.66)	41.4 (8.33)	41.0 (8.59)	39.9 (8.86)	40.9 (8.60)
Occupation:					
GP: N (%)	58 (84.1)	36 (76.6)	60 (79.0)	50 (79.4)	204 (80)
CP: N (%)	11 (15.9)	11 (23.4)	16 (21.1)	13 (20.6)	51 (20)
Years in profession: Mean (SD)	14.7 (9.16)	15.6 (9.38)	14.5 (9.03)	13.2 (8.35)	14.4 (8.95)
Ethnic origin: white or British: N (%)	58 (84.1)	41 (87.2)	68 (89.5)	57 (90.5)	224 (87.8)
Asian: N (%)	3 (4.35)	2 (4.26)	6 (7.89)	3 (4.76)	14 (5.49)
Chinese or oriental: N (%)	2 (2.90)	0 (0)	1 (1.32)	0 (0)	3 (1.18)
European: N (%)	2 (2.90)	1 (2.13)	0 (0)	1 (1.59)	4 (1.57)
Black: N (%)	0 (0)	1 (2.13)	0 (0)	1 (1.59)	2 (0.78)
Other: N (%)	2 (2.90)	2 (4.26)	1 (1.32)	1 (1.59)	6 (2.35)

There were similar numbers of men and women, and an approximate 80:20 split of general practitioners (GPs) to clinical psychologists (CPs), in each group. The mean age of respondents was 40.9 years, and the mean number of years spent in their

profession 14.4. Nearly 90% (87.8) described their ethnic origin as 'white', 'British' or 'Caucasian', with other ethnic populations, including 'Asian', 'Chinese' or 'Oriental' and 'black', being represented in small numbers.

Chi squared tests revealed no significant differences between respondents for: the numbers in each cell, the proportions of males and females, GPs and CPs and those describing themselves as white, Caucasian or British in ethnic origin. One-way ANOVAs for age and number of years in profession also showed no significant differences across groups. Thus, the characteristics of respondents in each group indicate they were similar enough to allow meaningful comparisons of the dependent variables.

Table 3.2 gives further details particular to the respondents of the 'overweight' questionnaires (both levels) only. The overall means for reported personal characteristics are: 1.73 metres for height, and 69.4 kgs, 74.4 kgs and 66.3 kgs for weight, highest ever weight and ideal weight, respectively. This equates to present, highest ever and ideal BMI means of 23.2, 24.9 and 22.1, respectively. Independent t-tests revealed no significant differences between these characteristics across the two levels of questionnaire.

Table 3.2: Heights, weights and BMIs of respondents (means ± SDs)

	QUESTIONNAIRE TYPE		
RESPONDENTS	OVERWEIGHT		OVERALL
	MODERATE	EXTREME	
Height/m	1.73 (0.09)	1.72 (0.11)	1.73 (0.10)
Weight/kg	69.3 (12.5)	69.4 (12.5)	69.4 (12.5)
Highest weight/kg	75.4 (18.2)	73.0 (13.5)	74.4 (16.3)
Ideal weight/kg	66.1 (9.81)	66.6 (12.0)	66.3 (10.7)
BMI	23.1 (3.07)	23.3 (2.54)	23.2 (2.85)
Highest BMI	25.1 (4.82)	24.5 (3.14)	24.9 (4.81)
Ideal BMI	22.0 (1.81)	22.2 (1.84)	22.1 (1.82)

Respondents of the two levels of questionnaire also had similar perceptions of what constitutes moderate or extreme overweight. Independent t-tests showed no significant differences in the responses given for the two levels. Means for the

categorisation of moderate and extreme overweight approximated at 3 (20%) and 5 (45%) respectively, at both levels.

Table 3.3 gives further details particular to the respondents of the 'smoking' questionnaires (both levels) only. There were similar numbers of smokers, non-smokers and ex-smokers among respondents of the two levels of 'smoking' questionnaire (the 'other' category refers to one 'occasional smoker'). The number of smokers at each level was too small to perform meaningful statistical analysis. Therefore, for the purpose of carrying out a reliable chi squared test, a comparison was made between the numbers of non-smokers and ex-smokers according to the two levels. No significant differences were found. Smokers reported smoking a mean of 6.99 cigarettes a day. Ex-smokers reported having smoked a mean of 12.2 cigarettes per day. An independent t-test showed no significant difference between the two groups.

Table 3.3: Smoking status of respondents

	QUESTIONNAIRE TYPE		
RESPONDENTS	SMOKING		OVERALL
	MODERATE	HEAVY	
Smoker: N (%)	7 (9.21)	5 (7.94)	12 (8.63)
Non-smoker: N (%)	54 (71.1)	45 (71.4)	99 (71.2)
Ex-smoker: N (%)	15 (19.7)	12 (19.1)	27 (19.4)
Other: N (%)	0 (0)	1 (1.59)	1 (0.72)
If smoker, cigarettes/day: mean (SD)	6.77 (9.10)	7.17 (8.71)	6.99 (8.31)
If ex-smoker, cigarettes/day: mean (SD)	11.0 (8.35)	13.5 (6.83)	12.2 (7.63)
When stopped, years ago: mean (SD)	12.2 (8.99)	16.8 (10.0)	14.3 (9.56)

Respondents to the two levels of questionnaire also had similar perceptions of what constitutes a moderate or heavy smoker. For both questionnaire types, the mean for the categorisation of moderate smokers was around 9.4 cigarettes per day, while it was 21 cigarettes per day for the heavy smokers. There were no significant differences for these categorisations.

3.4.1 Summary of the characteristics of respondents

Respondents in all four groups had similar demographic characteristics. Responders to the 'overweight' questionnaire also indicated that the two groups had similar BMIs

and similar perceptions of what characterised moderate and extreme overweight (an average of 20% and 45% above ideal body weight, respectively). Amongst respondents of the two levels of 'smoking' questionnaire, the proportions of smokers, non-smokers and ex-smokers were also similar, as were their perceptions of moderate and heavy smoking (9.4 and 21 cigarettes per day, respectively).

3.4.2 Causative factors

Table 3.4 summarises the means for causative factor items common to both smoking and overweight questionnaires, where significant effects were found for items rated as more important to being overweight than to being a smoker.

Table 3.4: Causative factor ratings significantly more important to being overweight than for being a smoker (means ± SDs)

	QUESTIONNAIRE TYPE				
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		
	MODERATE	EXTREME	MODERATE	HEAVY	
Depression	4.26 (1.20)	4.23 (1.29)	3.30 (1.20)	3.63 (1.22)	***
Genetic	4.01 (1.18)	3.79 (1.38)	1.72 (0.99)	1.82 (1.04)	***
A person's gender	3.10 (1.37)	3.02 (1.47)	2.41 (1.23)	2.51 (1.27)	***
Mood changes, leading to...	4.20 (1.15)	3.96 (1.04)	3.58 (1.13)	3.51 (1.24)	***

*** = significant health status effect $p < 0.001$

From **Table 3.4**, the following items were perceived as significantly more important in causing someone to be overweight than to be a smoker: depression ($F [1, 251] = 25.1$, $p < 0.001$), genetic factors ($F [1, 251] = 217.1$, $p < 0.001$), gender ($F [1, 251] = 12.8$, $p < 0.001$) and mood changes ($F [1, 251] = 13.5$, $p < 0.001$).

One item was rated as significantly more important in causing someone to smoke: interpersonal factors (mean (SD): moderately overweight = 4.16 (1.07), extremely overweight = 4.13 (1.13), moderate smoker = 5.03 (0.94), heavy smoker = 4.87 (1.01), $F [1, 251] = 37.9$, $p < 0.001$). There were no significant level or interaction effects for any of the causative factor items.

(See **Appendix 3.3.1** for a table of all causative factor means for common questionnaire variables, with significance levels, by health status and level. See **Appendix 3.3.2** and **Appendix 3.3.3** for tables of means for items particular to either the overweight or smoking questionnaires.)

3.4.2.1 Overweight versus smoking

Across the health statuses, the most important perceived causes of being overweight or a smoker were quite different: physical inactivity and interpersonal factors, respectively. Furthermore, depression was seen as an important contributing factor to being overweight, but not for smoking ($F [1, 251] = 25.1$, $p < 0.001$). Genetic factors were seen as a reasonably strong factor causing people to become overweight (more so at the moderate level), but viewed as unimportant in causing people to smoke ($F [1, 251] = 217.1$, $p < 0.001$). Mood changes were seen as significantly more important factors in causing people to be overweight ($F [1, 251] = 13.5$, $p < 0.001$).

Some similarities also existed across the groups. For example, while interpersonal factors were rated as the strongest influence on smokers, and significantly more important than for overweight ($F [1, 251] = 37.9$, $p < 0.001$), they were also rated quite highly for causing overweight (either level). Gender was not rated especially highly in any of the groups (although it was rated significantly higher in terms of causing people to be overweight, $F [1, 251] = 12.8$, $p < 0.001$). Personality and addiction were ranked highly for smokers, and overweight, especially at the extreme level.

3.4.2.2 Level effects

For both levels of overweight, physical inactivity was rated as the most important causative factor. Other similarities across the levels were apparent: addiction, interpersonal factors, and depression were all rated quite highly. Many factors were apparently perceived as somewhat important (personality, external stressors, mood changes, genetic factors, lack of willpower, socio-economic status and repeated dieting). The items viewed as least important for both levels were age, gender, metabolic defects, and least important of all, fat cell defects. The similarity in perceived causes of moderate and extreme overweight is reinforced by finding a significant difference in the mean rating of only one variable, 'a person's age' ($t [114] = 2.84$, $p = 0.005$).

The patterns of causative factors were also very similar for smokers across both levels. Interpersonal factors (i.e., influence of peers and family) were perceived by respondents as the most important causative influence. Following this, the patterns of causative beliefs for both levels indicated similar patterns, with external stressors, addiction, and personality being ranked as the next most important influences upon smoking. Thus, the influence of nicotine, in combination with the individual's response to coping with stressful situations was suggested. Most of the other factors were rated as having a moderate impact on the likelihood of someone smoking. Age and gender were rated low, with genetic factors rated the least important causative factor of all, indicating that the health professionals surveyed did not believe in a genetic propensity to smoke. Independent t-tests were performed to examine for differences in the perceptions of respondents according to smoking severity (moderate versus heavy). No significant differences were found.

3.4.2.3 Health profession effects

The results of the three-way, independent ANOVAs of health status by level of severity by occupation indicated the following effects of respondent profession. For lack of willpower, main effects for occupation ($F [1, 247] = 18.1$, $p < 0.001$), and two-way interactions for health status and occupation ($F [1, 247] = 9.24$, $p < 0.01$) were found. This indicated that GPs, significantly more than clinical psychologists, perceived lack of willpower to be more important in determining whether someone is overweight, but not whether someone smokes. Of all the items, no other significant interaction effects were observed. Main effects for occupation were found for genetic factors ($F [1, 247] = 6.75$, $p = 0.01$) and personality ($F [1, 247] = 26.8$, $p < 0.001$). For both, GPs rated the items higher than CPs, seeing them as more important factors.

3.4.3 Attitudes

The item means, overall attitude score means and significant health status, level and interaction effects for the attitude section of the questionnaire are given in **Table 3.5.** Some items are reverse scored. In all cases, a higher score indicates more positive attitudes.

Table 3.5: Attitude ratings (means ± SDs)

	QUESTIONNAIRE TYPE				
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		
	MODERATE	EXTREME	MODERATE	HEAVY	
Sec2qu1: 'are as happy as'	3.36 (1.30)	2.55 (1.12)	3.67 (1.30)	3.09 (1.32)	**+++
Sec2qu2: 'feel not as good as'	3.61 (1.26)	2.73 (1.12)	4.16 (1.13)	3.85 (1.35)	***+++
Sec2qu3: 'are more self-conscious'	3.23 (1.13)	2.62 (1.15)	4.18 (1.10)	4.05 (1.31)	***
Sec2qu4: 'cannot be as successful workers'	4.57 (1.34)	3.81 (1.58)	4.67 (1.28)	4.43 (1.30)	++
Sec2qu5: 'people would not want to marry them'	4.28 (1.25)	3.19 (1.39)	2.84 (1.43)	2.26 (1.28)	***+++
Sec2qu6: 'are usually untidy'	5.25 (1.17)	4.98 (1.13)	4.55 (1.23)	4.10 (1.39)	***
Sec2qu7: 'are usually sociable'	3.26 (1.24)	3.09 (1.25)	3.32 (1.19)	3.34 (1.20)	
Sec2qu8: 'are not dissatisfied with themselves'	3.16 (1.04)	2.57 (1.02)	3.50 (1.06)	3.43 (1.15)	***
Sec2qu9: 'are as self-confident'	3.49 (1.16)	2.64 (0.94)	3.83 (1.17)	3.80 (1.20)	***++##
Sec2qu10: 'feel uncomfortable to associate with'	4.81 (0.97)	4.21 (1.28)	3.78 (1.25)	3.04 (1.24)	***+++
Sec2qu11: 'are often less aggressive'	4.62 (1.14)	4.19 (1.15)	4.97 (0.73)	4.55 (1.02)	**+++
Sec2qu12: 'have different personalities'	4.81 (1.13)	4.19 (1.23)	4.09 (1.35)	3.92 (1.20)	**
Sec2qu13: 'are ashamed'	2.72 (1.19)	2.34 (1.05)	2.87 (1.28)	3.11 (1.35)	**
Sec2qu14: 'resent others'	4.35 (1.22)	4.30 (1.21)	4.18 (1.25)	3.89 (0.96)	
Sec2qu15: 'are more emotional'	4.71 (1.03)	4.70 (1.06)	4.53 (1.06)	4.30 (1.11)	
Sec2qu16: 'can't expect to lead normal lives'	5.17 (1.14)	4.53 (1.40)	3.95 (1.51)	3.71 (1.58)	***
Sec2qu17: 'are just as healthy'	2.55 (1.24)	1.62 (0.92)	1.39 (0.99)	2.14 (1.82)	###

** = significant health status effect, $p < 0.01$, *** = $p < 0.001$.

++ = significant level effect, $p < 0.01$, +++ = $p < 0.001$

= significant Interaction effect, $p < 0.01$, ### = $p < 0.001$

Table 3.5 (cont.): Attitude ratings (means ± SDs)

	QUESTIONNAIRE TYPE				
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		
	MODERATE	EXTREME	MODERATE	HEAVY	
Sec2qu18: 'are just as sexually attractive'	3.29 (1.36)	2.09 (0.86)	2.72 (1.45)	2.63 (1.69)	+++##
Sec2qu19: 'tend to have family problems'	4.52 (1.16)	3.85 (1.40)	4.29 (1.21)	3.79 (1.24)	+++
Sec2qu20: 'worst thing to happen to happen to a person'	4.94 (1.27)	4.04 (1.55)	2.59 (1.67)	2.41 (1.34)	***++
OVERALL ATTITUDE SCORE	80.7 (12.6)	68.2 (12.2)	74.1 (12.2)	69.8 (10.9)	+++##

*** = significant health status effect, $p < 0.001$.

++ = significant level effect, $p < 0.01$, +++ = $p < 0.001$

= significant interaction effect, $p < 0.01$

3.4.3.1 Overweight versus smoking

In comparison to smokers, respondents rated overweight people as: less happy ($F [1, 251] = 6.84$, $p < 0.01$); less likely to feel as good as other people ($F [1, 251] = 28.6$, $p < 0.001$); more self-conscious ($F [1, 251] = 63.9$, $p < 0.001$); more dissatisfied with themselves ($F [1, 251] = 19.4$, $p < 0.001$); less self-confident ($F [1, 251] = 26.9$, $p < 0.001$); less aggressive ($F [1, 251] = 7.71$, $p < 0.01$); and more likely to be ashamed of their condition ($F [1, 251] = 8.42$, $p < 0.01$). All these items were given lower scores by respondents, indicating more negative attitudes. Taken together these findings describe a view of the overweight person that can be summarised in terms of 'self-esteem'. The pattern of responses suggest that respondents believed self-esteem was more of an issue for overweight people, compared to normal weight people (than for smokers compared to non-smokers).

In comparison to overweight people, respondents rated smokers more negatively for the following items: most people would not want to marry them ($F [1, 251] = 48.1$, $p < 0.001$); they are more untidy ($F [1, 251] = 24.9$, $p < 0.001$); people are more likely to feel uncomfortable when they associate with them ($F [1, 251] = 53.3$, $p < 0.001$); they are more likely to have different personalities ($F [1, 251] = 10.0$, $p < 0.01$); they should not expect to lead normal lives ($F [1, 251] = 32.2$, $p < 0.001$); and that one of the

worst things that could happen to someone would be to start smoking ($F [1, 251] = 113.5$, $p < 0.001$).

These items show a different emphasis to that found for responses to the overweight questionnaire, and seem to describe a perception of 'social difficulties' among smokers. This appeared to be seen as more of an issue for smokers, compared to non-smokers (than it is for overweight people compared to normal weight people).

These findings are supported by the results of the factor analyses on the overweight and smoking attitudes data. For the overweight data, three factors were extracted, accounting for 54.0% of the variance: 'Social difficulties', 'Self-esteem' and 'Attractiveness/Personal appeal' (see **Appendix 3.4.1**). The same three factors, accounting for 44.5% of the variance, were found for the for the smoking attitudes data (**Appendix 3.4.2**). This suggests that the attitude scales were measuring similar concepts for both health statuses. In both cases, factor structures supported the pattern of statistically significant differences found between overweight and smoking attitudes. This lends additional confidence to the conclusion that overweight people were seen as more likely to suffer in terms of self-esteem, while smokers were perceived more negatively in terms of having greater social difficulties.

3.4.3.2 Level effects

Significantly more negative responses were found towards the extreme level (for both overweight and smoking) for the following items: not as happy as others ($F [1, 251] = 18.3$, $p < 0.001$); feel not as good as other people ($F [1, 251] = 14.6$, $p < 0.001$); less likely to be as successful as workers ($F [1, 251] = 8.20$, $p < 0.01$); less likely to be wanted as a marriage partner ($F [1, 251] = 23.9$, $p < 0.001$); less self-confident ($F [1, 251] = 9.36$, $p < 0.01$); people are more likely to feel uncomfortable when they associate with them ($F [1, 251] = 19.5$, $p < 0.001$); less aggressive ($F [1, 251] = 11.1$, $p = 0.001$); less sexually attractive ($F [1, 251] = 13.2$, $p < 0.001$); more likely to have family problems ($F [1, 251] = 13.6$, $p < 0.001$); worst things that could happen to someone ($F [1, 251] = 8.38$, $p < 0.01$). Therefore it is apparent that the level of severity affects the attitudes of respondents, with by far the most negative attitudes towards the extreme level.

To further examine the implication of level of severity for overweight people, independent t-tests were performed on the two levels for the overweight health status. Significant differences for level were found for 14 of the 20 items (questions 1, 2, 3, 4, 5, 8, 9, 10, 12, 16, 17, 18, 19 and 20, smallest $t\ [114] = 2.77$, $p < 0.01$). In all cases the extremely overweight person was viewed more negatively. This further confirms the finding that level of severity is an important determinant of general attitudes towards overweight people. However, it was the self-esteem, sexual attractiveness and health items that were rated most negatively of all.

3.4.3.3 Interaction effects

While overweight people overall were seen as less self-confident than smokers, this was particularly marked at the extreme level, with extremely overweight people seen as the least confident of all ($F\ [1, 251] = 8.15$, $p < 0.01$). Although there was no significant health status or level effect for question 17 'are as healthy as', the interaction effect suggests that extremely overweight people were viewed as less healthy than moderately overweight people, but moderate smokers were viewed as less healthy than heavy smokers, and the least healthy of all four groups ($F\ [1, 251] = 25.7$, $p < 0.001$). This is an unusual finding in that one would expect heavy smokers to be viewed as less healthy than moderate smokers. While there was a significant level effect for the item on sexual attractiveness, so that those at the extreme/heavy level were perceived as less sexually attractive, extremely overweight people were perceived as the least sexually attractive of the four groups ($F\ [1, 251] = 9.71$, $p < 0.01$).

3.4.3.4 Total attitude score

Since attitude items were adapted for the two health statuses examined, it is possible that the attitude scale was not measuring the same concepts for both overweight and smoking. Cronbach's alpha for the 20 attitude items (all respondents) was calculated as 0.83[1], thus indicating good internal reliability of the scale and suggesting that the same overall concept was being measured by the items (Bryman and Cramer 1990).

---

[1] N.B. When data were split by health status, Cronbach's alpha was calculated as 0.88 and 0.82 for overweight and smoking questionnaires, respectively, indicating good internal reliability for the scale when applied to either health status.

Furthermore, the factor matrices in **Appendices 3.4.1** and **3.4.2** indicate that the item loadings on the three extracted factors were similar for both the smoking and overweight responses. This suggests that the different versions of the questionnaire were measuring broadly the same underlying issues.

Thus, it is reasonable to aggregate the data to give one overall attitude score. When two-way analysis of variance was performed for the total attitude score, a significant level effect was found ($F [1, 251] = 29.8$, $p < 0.001$), indicating more negative attitudes at the extreme level of the health conditions. A significant interaction effect was also found ($F [1, 251] = 7.20$, $p < 0.01$), with perceptions of the moderately overweight being the most positive of all four groups, and the extremely overweight being viewed the most negatively.

In this scale of 20 items, the possible range of total scores is 20 to 120, suggesting a hypothetical mid-point of 70. Using this as a rough guide, it can be seen that the moderately overweight and moderate smokers mean scores (± SDs) were above the mid-point (80.7 ± 12.6 and 74.1 ± 12.2, respectively), suggesting attitudes that were neutral to positive, while extremely overweight people and heavy smokers scored below the mid-point (68.2 ± 12.2 and 69.8 ± 10.9, respectively), suggesting neutral to negative attitudes.

3.4.3.5 Health profession effects

Three-way, independent ANOVAs of health status by level of severity by occupation revealed the following differences in the scores of the two professions. Main effects for occupation were found for questions 1, 4, 6, 11, 12, 15, 16, 18, 19, 20 (smallest $F [1, 247] = 2.75$, $p < 0.01$). For all of these GPs gave more negative ratings than clinical psychologists. Accordingly, for the overall attitude score, a main occupation effect was found ($F [1, 247] = 16.4$, $p < 0.001$), with the GP attitude score lower than that of clinical psychologists (i.e., more negative). No significant occupation-interactions were found. (See **Appendix 3.2.2** for table of the mean scores for attitude items, according to occupation, health status and level of severity, with observed significant differences.)

3.4.4 Responsibility

The item means, overall means, and significant health status, level and interaction effects for the 'responsibility' section of the questionnaire are given in **Table 3.6.** Some items are reverse-scored. In all cases, a higher score indicates more perceived responsibility on behalf of the overweight person/smoker.

Table 3.6: Responsibility ratings (means ± SDs)

	QUESTIONNAIRE TYPE				
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		
	MODERATE	EXTREME	MODERATE	HEAVY	
Sec3qu21: 'try to understand causes'	4.38 (1.10)	4.81 (1.17)	4.92 (1.03)	4.67 (1.22)	
Sec3qu22: 'motivate themselves'	4.11 (1.05)	4.45 (1.21)	5.21 (1.00)	4.88 (1.17)	***
Sec3qu23: 'seek professional advice/help'	3.43 (1.28)	4.06 (1.34)	4.51 (1.33)	4.52 (1.24)	***
Sec3qu24: 'recognise a problem exists'	4.10 (1.32)	4.77 (1.25)	5.33 (0.85)	5.15 (1.18)	***##
Sec3qu25: 'recognise risk to health'	4.48 (1.29)	5.40 (0.80)	5.70 (0.59)	5.63 (0.77)	***+++ ###
Sec3qu26: 'recognise impact on others'	3.43 (1.25)	3.55 (1.27)	5.24 (0.88)	5.00 (1.14)	***
Sec3qu27: 'left to be happy'	3.46 (1.20)	4.02 (1.33)	5.01 (0.96)	4.69 (1.21)	***##
Sec3qu28: 'recognise negative effect on others'	2.86 (1.19)	3.19 (1.26)	4.95 (1.14)	5.00 (1.08)	***
Sec3qu29: 'not be socially pressured'	3.12 (1.27)	3.38 (1.23)	4.92 (1.14)	4.65 (1.46)	***
Sec3qu30: 'be accepted whatever'	1.94 (1.21)	2.15 (1.39)	3.70 (1.47)	3.62 (1.55)	***
Sec3qu31: 'not be held responsible'	3.45 (1.34)	3.73 (1.38)	4.87 (1.02)	4.65 (1.28)	***
OVERALL RESPONSIBILITY SCORE	38.8 (8.43)	43.5 (8.44)	54.4 (7.05)	52.5 (8.50)	***###

*** = significant health status effect, $p < 0.001$.

+++ = significant level effect, $p < 0.001$

= significant interaction effect, $p < 0.01$, ### = $p < 0.001$

3.4.4.1 Overweight versus smokers

Table 3.6 indicates that although some of the item mean scores suggest overweight people were seen as somewhat responsible for recognising a problem and acting on it, there were in fact no items for which overweight people were rated significantly more responsible than smokers. The lowest rated scores for overweight people suggested that respondents believed they should be accepted as they are.

Table 3.6 also shows that smokers were rated as significantly more responsible than overweight people for most items. Respondents believed that smokers should motivate themselves to stop smoking ($F [1, 251] = 29.9$, $p < 0.001$) and should seek professional advice and help in order to help them stop more than they believed overweight people should take some action to lose weight ($F [1, 251] = 21.7$, $p < 0.001$). They also believed that smokers should recognise smoking as a problem ($F [1, 251] = 30.4$, $p < 0.001$) and risk to health ($F [1, 251] = 39.7$, $p < 0.001$) more than they saw being overweight as a problem and risk to the individual's health. Respondents perceived that smoking may influence the behaviour of close others, more than they perceived that the actions of overweight people were likely to have an influence on the behaviour of close others ($F [1, 251] = 128$, $p < 0.001$). In comparison to overweight people, respondents indicated they believed smokers: should not be left alone to be content/happy with their habit ($F [1, 251] = 56.5$, $p < 0.001$); should recognise that it might have a negative effect on others ($F [1, 251] = 174$, $p < 0.001$); should be subjected to social pressures to stop ($F [1, 251] = 89.6$, $p < 0.001$); should not be accepted regardless of their smoking behaviour ($F [1, 251] = 80.6$, $p < 0.001$); and should be held responsible for their smoking, even though it may be caused by a complex interaction of factors ($F [1, 251] = 54.1$, $p < 0.001$).

Noticeably, for the smoking questionnaires, all items in this section produced means fairly high on the scale, with all bar one ('should be accepted by others, whatever') scoring above 4, for both levels. This indicated a tendency for respondents to believe that smokers should be taking action and should be subjected to pressures to take action.

3.4.4.1.1 Results of factor analyses of responsibility data

Factor analyses undertaken separately on the overweight and smoking data once again indicated the same underlying factor structure for both health areas. Both analyses extracted two factors: 'Responsibility to act' and 'Acceptance', and in both cases these accounted for 56% of the variance (see **Appendices 3.4.3** and **3.4.4**).

For the analyses of the overweight data, the items loading on the observed factors generally reflected the patterns of the observed means, where items ranked most highly indicated that respondents believed overweight people should be recognising a problem and acting on it, while the lowest rated items indicated that they also believed overweight people should be accepted and not subjected to social pressures. Note that question 27 ('should be left to be happy') loaded on both factors, indicating some ambiguity for this item, while question 28 ('should recognise the negative effect on others') did not have a significant loading on either factor suggesting that it was not closely related to either of the observed factors.

For the smoking data, question 27 ('should be left to be happy') again loaded highly on both factors. The main difference between these factors and those for the overweight questionnaire is that here question 29 ('should not be subjected to social pressures') loaded on the first factor.

3.4.4.2 Level effects

Only one significant level effect was found, for those at the extreme level perceived as more responsible for recognising a risk to their health ($F [1, 251] = 14.1$, $p < 0.001$). Interestingly, for smoking, much less difference was found between the levels than had been observed for attitudes, and for a number of the items, moderate smokers were rated as more 'responsible to act' than the heavy smokers.

To further explore the impact of level of severity in the overweight health status, independent t-tests were performed for the two levels of the overweight questionnaire. Significant differences were found for: 'should recognise there is a problem' ($t [114] = -2.72$, $p < 0.01$); and 'should recognise a risk to their health' ($t [114] = -4.38$, $p < 0.001$), where these were rated more highly at the extreme level.

3.4.4.3 Interaction effects

Significant interaction effects were found for the items: 'should recognise that a problem exists' ($F [1, 251] = 8.30$, $p < 0.01$); 'should recognise the risk to health' ($F [1, 251] = 18.4$, $p < 0.001$); 'should be left to be happy' ($F [1, 251] = 8.93$, $p = 0.01$). Thus, respondents perceived that moderate smokers were the most responsible and moderately overweight people were the least responsible for: recognising that a problem exists and recognising a risk to their health. Furthermore, there was a view among respondents that moderately overweight people should be left alone to be content/happy with their body size and shape, while moderate smokers clearly should not be left to feel happy about their smoking behaviour.

3.4.4.4 Total responsibility score

Cronbach's alpha for the 11 responsibility items was calculated as 0.90[2], thus indicating good internal reliability of the scale and suggesting that it was measuring one overall idea (Bryman and Cramer 1990). Furthermore, the factor matrices in **Tables 3.9** and **3.10** indicated that the item loadings for the two factors were similar for both the smoking and overweight responses. Therefore it can be concluded that the different versions of the scale were measuring broadly the same underlying concepts.

Thus, it is reasonable to aggregate the data to give one overall 'responsibility' score. When a two-way ANOVA was performed for the overall score in this section, smokers were rated significantly higher than overweight people ($F [1, 251] = 142.8$, $p < 0.001$). Therefore, this indicates that they were seen as more responsible for doing something to improve their health status and were viewed as legitimate targets for not being accepted and being subjected to external pressures to change. A significant interaction effect ($F [1, 251] = 10.5$, $p < 0.001$) revealed that moderately overweight people were perceived as the least 'responsible to act' and were most likely to be accepted as they are.

---

[2] NB. When data were split by health status, Cronbach's alpha was calculated as 0.85 and 0.84 for overweight and smoking questionnaires, respectively, indicating internal good reliability for the scale when applied to either health status.

In this scale of 11 items, the range for total scores was 11 to 66, suggesting a hypothetical mid point of 27.5. Using this as a rough guide, it can be seen that all groups scored above the mid-point (38.8 ± 8.43, 43.5 ± 8.44, 54.4 ± 7.05, 52.5 ± 8.50, for moderately overweight, extremely overweight, moderate smokers and heavy smokers, respectively), suggesting that all were seen as at least somewhat responsible.

3.4.4.5 Health profession effects

Three-way, independent ANOVAs of health status by level of severity by occupation indicated the following significant effects. Main effects for occupation were found for nine of the 11 variables (questions 21, 22, 23, 24, 25, 26, 27, 28 and 29, smallest $F [1, 247] = 8.07$, $p < 0.01$). GPs rated all these items more highly, which is also reflected in a main occupation effect for the total responsibility score ($F [1, 247] = 59.2$, $p < 0.001$). This indicated that GPs saw people as being more responsible for doing something about their body weight or smoking habit and suggesting they were more likely to believe overweight people and smokers should be subjected to pressures to do something. No significant occupation-interactions were found.

3.4.5 Summary of results

3.4.5.1 Causative factors

The perceived causes of overweight were a mixture of controllable and uncontrollable factors. Health professionals rated physical inactivity as the most important factor in causing someone to be overweight (both levels). Addiction, personality, interpersonal factors and mood-related factors were rated highly for contributing both to overweight and smoking, but mood changes and depression were seen as significantly *more* important in causing someone to be overweight. Genetic factors were considered important in causing overweight, but not smoking (significant difference). Gender was rated as somewhat important in causing overweight, and significantly more so than for smoking. Interpersonal factors were seen as significantly more important for causing someone to smoke.

3.4.5.2 Attitudes

Overweight people were perceived as having a lower self-esteem than smokers, while smokers were seen as more socially isolated and different. Level effects were found, so that extremely overweight people were viewed more negatively than moderately overweight people, especially in terms of self-esteem, sexual attractiveness and health. However, even at this level, attitudes were negative to neutral, rather than overwhelmingly negative. Total attitude scores for the four groups revealed the most positive attitudes towards moderately overweight people, but the most negative attitudes towards the extremely overweight.

GPs tended to rate overweight people and smokers more negatively than clinical psychologists, this being a general tendency, rather than one dependent on the health status or level of severity.

3.4.5.3 Responsibility

As a whole, although overweight people were rated as somewhat responsible for doing something about their condition, they were seen as less responsible and more accepted than smokers. Two level effects were found for the overweight health status, with respondents rating it as *significantly* more important that the extremely overweight person recognise that a problem exists and as a risk to their health.

Occupation effects indicate that GPs were more likely to rate the target populations as being responsible for doing something about their health status, and not being accepted as they are.

3.5 Discussion

The summary of results presented under point **3.4.5** above indicate that the pattern of beliefs about the causes of overweight compared to smoking revealed some significant differences. It could be argued that a person's level of physical inactivity is within the control of the individual, whereas interpersonal factors are less so. Also, the greater importance placed on mood and depression in the overweight group, may relate to beliefs of emotional problems associated with weight gain, which may imply

the kind of character failing previously indicated in the literature. However, genetic factors, which are beyond the control of the individual, were also rated as important and considerably (significantly) more so than for smoking. Also, there were a number of similarities in the ratings for both overweight and smoking: addiction, personality, interpersonal factors and mood-related factors were rated as important. This suggests a mixed pattern of beliefs that does not lend itself to a strong conclusion of perceptions that the causes of overweight are more controllable than the causes of smoking. Thus, hypothesis 1 can not be accepted. Furthermore, smokers were overwhelmingly seen as more responsible and less accepted than overweight people, so that hypothesis 2 must be rejected.

Beliefs about the causes of overweight and smoking did not appear to be influenced by the level of severity of the condition, so that hypothesis 3 can be rejected. There was only one level effect for perceptions of responsibility for both groups combined (overweight and smoking), and two level effects were found for overweight questions only (with extremely overweight people viewed as more responsible). Combined with observed interaction effects, this suggests that level of severity is only occasionally an important consideration in perceptions of responsibility. The evidence therefore, is not strong enough to accept hypothesis 4.

Overall the most negative attitudes were found for the extremely overweight group, the most positive attitudes were observed towards the moderately overweight group, with attitudes towards smokers falling in between. Thus, hypothesis 5 can be accepted. However, it is useful to note that the pattern of attitudes for overweight and smoking were quite different. For overweight (both levels), many of the most negative item ratings were associated with a perception of lower self-esteem, but for smoking the most negative ratings were in terms of perceived social difficulties. Therefore, it could be argued that health professionals' attitudes towards overweight and obesity were mixed, rather than entirely negative.

Thus, beliefs about the causes of overweight and obesity can be summarised in the following way: perceptions for both levels were remarkably similar. Physical inactivity was rated as highly important, so too were mood-related items (external stressors and mood changes leading to overeating, and depression), and genetic factors. These factors appeared to distinguish overweight and smoking beliefs. Notably, perceived lack of willpower, so often noted as contributing to negative attitudes towards

overweight people, was rated only marginally (non-significantly) more important in causing someone to be overweight than to be a smoker. A couple of level effects were found for perceptions of personal responsibility, but these were generally not marked, indicating once again that these beliefs were very similar: that overweight people are somewhat responsible for their situation, but not as responsible as, and more accepted than, smokers. The pattern of results suggests that the overweight stereotype (as distinct from the smoking stereotype) is characterised by the beliefs that overweight is caused by physical inactivity, mood-related and genetic factors, and that overweight people are only partially responsible for responding to their situation. In this way, the beliefs do not appear to be summarised in terms of overweight being seen as particularly controllable, as suggested by previous investigators.

Although few level effects were found for beliefs, clear level effects were found for reported attitudes towards overweight people. Thus, despite previous speculation that perceptions of the causes and responsibility may be key to negative attitudes, this does not appear to be the case here. If one accepts the definition of a stereotype (set of beliefs) as distinct from prejudice (negative attitudes) it is difficult to offer a description of the obesity stereotype based on perceptions of causes and responsibility that relates to these observed attitude level effects. On the other hand, obese people were rated more negatively overall, and in particular, were seen to suffer from reduced self-esteem, and were perceived as less sexually attractive and less healthy. It seems that it is these concepts that encapsulate health professionals' current attitudes about what it means to be extremely overweight.

It has previously been noted that there is debate about the relative consistency or overlap between the concepts of beliefs and attitudes (e.g., Eagley and Chaiken 1993). This is based on the fact that beliefs may contain evaluative components, and attitudes may include a 'thought' dimension. It also follows that the apparent distinction between stereotypes and prejudice (by their very definitions in terms of beliefs and attitudes) is somewhat hazy. In fact, in the obesity attitudes literature, it appears that apparent *belief* and *attitude* statements have been used to describe obesity stereotypes. Therefore, it may be helpful to adopt the more general term *'cognitions'* for the purposed of describing the obesity stereotype and accompanying attitudes.

It appears that the overweight and obesity stereotype is made up of a mixture of the beliefs about causes and responsibility and the attitudes concepts described here. The key cognitions of health professionals in relation to overweight and obese people can be summarised by the fact that overweight (both levels) is seen as having mixed causes, that overweight people are seen as somewhat responsible (but not as responsible as smokers), and by perceptions that overweight people are seen as ordinary people with ordinary lives, but with reduced self-esteem, sexual attractiveness and health. However, it is these latter three aspects that appear to describe the obesity stereotype as distinct from the overweight stereotype, as it is here that strong level effects were found. Likewise, they may encapsulate the attitudes (prejudice) towards obese people. In any case, it is these key *cognitions* that differentiate health professionals' views of obese people from their views of moderately overweight people, and thus summarise the obesity stereotype.

From the literature, the perception of reduced self-esteem may be based somewhat on truth: that some overweight people do experience difficulties in terms of esteem (e.g., Stunkard and Wadden 1992; Crandall and Biernat 1990) presumably because of the social pressures towards thinness, although this is by no means a global finding (e.g., Friedman and Brownell 1995). Accordingly, one would expect extremely overweight people to experience the least social acceptance because they are the least like the norm (Young and Powell 1985) and the most difficulties in terms of self-esteem. Here, this may explain why health professionals have rated the esteem-related items more negatively for the extremely overweight group.

Also, the findings for sexual attractiveness and health are in line with McArthur's (1995) finding of reasonably favourable attitudes among nutrition and non-nutrition students except in terms of the same two dimensions, and Agell and Rothblum's (1991) finding that appearance was one of only two out of eight factors which were rated negatively among psychologists. It is also in agreement with others who have reported that overweight is seen as unattractive (Lerner and Gellert 1969; Beck *et al.* 1976; Lavrakas 1976; DeJong and Kleck 1986; Rothblum *et al.* 1988).

It needs to be remembered that extremely overweight people were not rated negatively for all items. For example, relatively positive views were indicated for all the following items: can be successful workers; are not untidy; others are not uncomfortable to associate with them; are not less aggressive; do not have different

personalities; do not resent others; are not more emotional; can expect to lead normal lives; do not have family problems; and it is not one of the worst things to happen to someone. That is, respondents did not view obese people as being as socially 'different' as smokers. Overweight people were viewed relatively favourably in terms of being ordinary people with ordinary lives. It may be that attitudes towards overweight people are not as bad as expected. In Chapter 2 it was suggested that the negativity towards overweight people might be overstated and that this area may be subject to reporting bias as well as some obvious methodological limitations. Also, in line with the current findings, other investigators have found neutral, mixed or favourable attitudes (Agell and Rothblum 1991; McArthur 1995; McArthur and Ross 1997). On the other hand, it is hard to believe that the much-articulated, widespread prejudice towards overweight people in westernised countries does not occur among health professionals. A likely explanation from the current data is that attitudes are mixed. Some cognitions are positive and some negative, and perceptions are likely to be more negative the further away from the norm the overweight person is perceived to be.

Also important is the reliance on self-report, used here as a means of exploring attitudes. This is inevitable with survey methodology (note that the strengths and weaknesses of survey methodology will be discussed in more detail below). Social desirability expectations introduce a strong possibility that health professionals may report more positive attitudes than they actually hold. Intellectually (cognitively) they may be aware of a need to treat all patients equitably, and therefore will be more likely to report good intentions, but the instinctive affective reaction (borne of strong cultural prejudices) may override this belief in practice. Health professionals are known, for example, to report better practices than they actually undertake, even when they are aware their behaviour is being monitored, and the clinical area is not subject to so much social bias (Lomas, Anderson, Domnick-Pierre, Vayda *et al.* 1989). It could be argued that obesity prejudice is thus understated in these findings. Nevertheless, it is also the case that previous attitude studies could have been subject to similar biases, and so the findings in relation to those studies may indeed hold true. Also, the possibility of social desirability bias does not undermine the relativity of the findings within the four groups of the present study, that is, the perceptions of the health statuses and levels relative to each other. Therefore, it is possible to be confident in the finding that moderately overweight people were perceived *relatively* positively, and smokers and extremely overweight people progressively more negatively. In addition,

the independent design means that health professionals were unaware of the overweight-smoking comparison, and therefore not able to manipulate their responses as a function of how desirable they perceived positive or negative views of smokers or overweight people might be.

A further point worth considering from the present study is that, with the exception of willpower, GPs and CPs had similar perceptions of the causes of overweight and obesity, but GPs were more negative in their attitude ratings and perceived greater responsibility among overweight people and smokers. It may be that willpower is an important variable in terms of GP perceptions (e.g., DeJong and Kleck 1986), and by manipulating their views on willpower, perceptions could otherwise be improved. However, this is not necessarily a causative relationship, and as the finding may be coincidental, further work would be necessary to lend credence to this reasoning (see Chapter 6). The findings suggest that GPs are generally more negative in their views than CPs. However, it could equally be argued that due to the nature of CP training, more CPs were aware of issues around prejudice and therefore may be more subject to social desirability bias.

There are a number of reasons why the pattern of attitudes towards obese people reported here is apparently not as negative as described by much of the earlier work. Firstly, the possibility of reporting and publication bias mentioned previously – that the existence of negative attitudes has previously been overemphasised. Also, the use of a comparison group here provided a benchmark against which to measure the responses. For studies without such a comparison, the findings may be over-interpreted as indicating that beliefs about causes, attitudes and perceptions of responsibility were more closely aligned than they actually were. By looking at the same issues with regard to another group of potential patients, it is possible to determine how closely each area is related. For example, it is possible to say that perceived self-esteem appears to be more of an issue with regard to weight, while perceived responsibility is more pronounced for smokers. Smoking is a useful comparison because health professionals will encounter smokers regularly in the course of their work and may experience similar frustrations about effecting long-term lifestyle changes in their patients. It is also possible that smoking is a misleading comparison. Perhaps there are particular issues relating to perceptions of smokers that skew the picture of attitudes towards overweight people: that it is a behaviour rather than a state, that smoking has much clearer implications for health, and

therefore health service provision and expenditure. Indeed, smokers may be another group of patients subject to strong prejudices from health professionals, thus minimising the apparent influences of a person's weight on health professionals' attitudes. However, it is not clear that a more appropriate comparison was available.

It would be useful to compare how the beliefs and attitudes described here compared to health professionals' cognitions of patients in general. However, this was not possible within the confines of the employed methodology (i.e., it was not possible to rephrase the questions to ask about people in general). Other techniques, such as vignettes or videos in which weight is manipulated may be more appropriate to this aim. Survey methodology has the distinct advantage of being able to reach large numbers relatively easily and explore large numbers of variables simultaneously, which is why it is so often utilised, but it also has its limitations, both in terms of design and administration. In terms of design, measurement of beliefs about obesity suffers from a lack of validated assessment instruments. It is conceivable that the questionnaire did not measure what it set out to measure. This is especially likely in the case of the 'responsibility' scale, which has not been tested elsewhere. However, tests for reliability and use of factor analysis suggests the attitude and responsibility scales had good internal consistency and appeared to be measuring similar concepts across the two health areas. It is still possible, however, that the questionnaire failed to tap into other key cognitions held by professionals that may be important in defining the obesity stereotype and related prejudices. Further work would be needed to explore other potentially relevant concepts, and to determine the validity and wide-scale generalisability of the instruments used here.

Allison *et al.* (1991) used the ATOP scale to survey NAAFA members, as well as graduate and undergraduate students. The original intention in using the scale was to compare the scores of the present survey with those of the original investigators. However, a discrepancy was discovered in the scoring system (provided by the first author on written request), and despite further communications no clarification was obtained, making it difficult to draw this comparison. Bearing the discrepancy in mind, and assuming the same scoring systems were used for both studies, the original investigators did report mean total attitude scores in the mid-60's, suggesting more negative attitudes than reported here. This would be an unusual finding in that one might expect NAAFA members to have more positive attitudes than health professionals. They also reported finding three factors accounting for 42% of the

variance (using principal components analysis, Varimax rotation and the scree test): *Different Personality*, *Social Difficulties* and *Self-Esteem.* In general terms, it appears that at least two of these factors (social difficulties and self-esteem) were found in the present study, although without the item loadings it is not possible to say how similar the findings were overall.

A further problem with surveys in general is obtaining adequate response rates. There is no universally-accepted level for defining an adequate response rate, although there is a view that it should be as high as possible, and that the need for a high response rate is linked to the purpose to which the findings will be put. The response rate to this survey was not high, limiting the generalisability of the findings. Within the confines of the available resources, it is difficult to determine how response rates could have been improved. Two reminders were used, a financial incentive, and authoritative, letter-headed paper. Until recently, due to the lack of empirical evidence, survey design and administration had been based on experience and conventional wisdom. However, a recent systematic review of survey methods has summarised the available evidence. This review suggests that the approaches used in the current survey may be useful in enhancing response rates (McColl, Jacoby, Thomas, Soutter *et al.* 1998). It also suggests that had the questionnaire covering letter been signed by someone known and respected by professionals, the participation rate may have been improved. Also, the response rate may have been improved if an additional questionnaire had been included with the second reminder letter. These points are incorporated in the postal survey of dietitians reported in Chapter 6.

Finally, it is worth remembering that the focus on attitude measurement described here does not provide information on the actual practice of health professionals relative to their perceptions of overweight and obesity. Study 3, therefore, examines the relationship between beliefs, attitudes and reported practice among dietitians.

The possible limitations with the current study have been outlined. In consideration of these, the findings must be interpreted with a certain amount of caution. Nevertheless, the following conclusions may be drawn from the study. Health professionals' perceptions of moderately overweight people were relatively favourable, but attitudes towards extremely overweight (obese) people indicated room for some improvement. Social desirability bias associated with self-report measures

means that positive perceptions of moderately overweight people can not be taken for granted, and negativity towards extremely overweight people could be more pronounced. The perception of low self-esteem and reduced sexual attractiveness and health appears to encapsulate the dimensions of attitudes towards obesity which were most negative. There was no clear pattern of beliefs (causes and responsibility) which described the observed differences in attitudes for the two weight levels. It also means defining the obesity stereotype in terms of these particular beliefs is not possible. This pattern of attitudes has not been described specifically elsewhere, and therefore it is difficult to speculate about what impact this may have on professional practice. It could be argued that a perception of reduced self-esteem, attractiveness and health could engender greater compassion among health professionals, but it seems more likely that it would evoke a pitying, but victim-blaming response.

Distinct level effects were found, and attitudes towards obese people were found to be most negative, although it is worth bearing in mind that even these were not overwhelmingly negative. Nevertheless, a priority in future studies would be to consider weight level effects and in particular the negative views' professionals may have of obese people. Given that obese people are at greater risk of associated health problems, this is doubly important. Treatment is vital, and barriers to good treatment such as negative attitudes or patients' reticence to visit professionals who treat them with disregard, must be addressed. Well-designed studies to improve obesity management would do well to build in a dimension for improving providers' perceptions of the target group. Chapter 7 will describe in more detail the state of the evidence with regard to improving health professionals' practice, and consider what may be done with regard to improving health professionals' management of obesity.

4. Dieters' views of overweight people

4.1 Introduction

In Chapter 3 health professionals' cognitions about overweight and obesity have been reported. In the present chapter, the corresponding beliefs and attitudes of 'consumers' are explored. In this context, 'consumer' is defined as a person who uses a weight loss or maintenance service, that is, someone who might generally be referred to as a 'dieter'.

Within Marteau's (1995) framework, it has been acknowledged that professional and patient cognitions are linked, and patient cognitions are important in influencing patient behaviours and health outcomes, as much as health professionals' cognitions relate to their practice choices. Overweight and obese people may seek the help of health professionals as one of a number of alternative approaches to treatment. For example, they may want information about the health risks or clinical advice and help with weight loss and maintenance. In consultation with health professionals, a number of factors may influence the patient's experience and the success of the clinical encounter, including their own cognitions of what it means to be overweight. Therefore, it is important to explore and describe obesity beliefs and attitudes amongst consumers, to consider what implications they may hold for professional-patient relationships, health care decisions and health outcomes.

Current philosophy in health care research and provision supports the role of the consumer in health care processes, including the gathering and dissemination of research information (e.g. Bastian 1994; Oliver *et al.* 1998). This initiative is not new. For example, in 1978 the World Health Organisation (WHO) stated that *'people have the right and duty to participate individually and collectively in the planning and implementation of their health care'* (from Bastian 1994). This is seen as necessary not least because consumers' perceptions of health matters may be different from those of policy makers and providers. Indeed, as services exist entirely to *service* the needs of users, it is inconceivable not to account for their views and therefore, health-related organisations are increasingly encouraged to move towards consumer inclusion. To this end, the recent government White Paper on Primary Care Groups (PCGs) stipulates the need for lay members on these committees (NHS Executive

1998). Likewise in research, some of the large funders request consumer representation on steering committees (e.g. the Medical Research Council). There are intellectual and practical challenges associated with obtaining a representative view from a diverse population, especially if it comes in the form of one or two people on a committee. Organisations may find it difficult to adapt to different language and procedural requirements for lay people, and even if they attempt inclusion may leave themselves open to criticisms of tokenism. Therefore, consumer participation has been slow to materialise in many quarters.

In theory, it is perhaps easier to explore the views of people through surveys and incorporate these views in the planning and delivery of health care. In this way, greater numbers of people can be canvassed for their views. However, even in this case, the views of consumers are frequently under-represented. In the case of obesity, there is apparently little published work directly exploring the views of overweight people on health care delivery or obesity in general. Some attitude studies have, however, explored the role of the respondent's weight in the perceptions of obesity. For example, Crandall (1994) found that antifat attitudes existed in heavier participants as well as in those of average weight. Allison *et al.* (1991) also found no difference between the attitudes of National Association to Advance Fat Acceptance (NAAFA) members – overweight people who one might reasonably expect to have more positive views about obesity – and graduate and undergraduate students. Likewise, Counts *et al.* (1986) found that among children, there was little difference between obese and normal weight children's perceptions of obese individuals (who were generally rated more negatively than normal weight targets). On the other hand, Robinson *et al.* (1993) found that normal weight people were more likely to have 'fat phobic' attitudes than their heavier counterparts.

In the only identified study of its kind, Murphree (1994) used focus groups to explore patients' perceptions of doctors' and dietitians' efforts to treat obesity and found that they reported low satisfaction and utility in the methods used by professionals (provision of diet sheets and low-calorie recipes). Patients also provided insights into what they thought might be helpful: commercial weight loss programs and the social support provided by group activities. This type of attempt to obtain the opinions of service users can provide useful information in tailoring treatments more readily to their needs. Unfortunately, the small number of participants makes generalisations

about the findings difficult and further studies to obtain the views of consumers are necessary.

In Chapters 2 and 3, it has been argued that health professionals' beliefs and attitudes about obesity are potentially important factors in the provision of treatments for this patient group. Here, it is reasoned that consumers' cognitions are also important. Just as health professionals' perceptions of obesity may influence their practice in relation to overweight people, so might overweight people's perceptions of obesity influence their behaviour in relation to health professionals. The following study explores consumers' beliefs and attitudes to overweight and obesity in the same way that health professionals' cognitions were studied in the previous chapter. In this way, the key beliefs that may underpin the obesity stereotype and related negative attitudes are investigated. Also, as outlined above, previous studies have highlighted the potential role that the respondent's own weight may have on perceptions of overweight and obesity, although these have not produced consistent results. No doubt some of the inconsistency in these findings is due to the type of data collected. It is not clear what influence consumers' weight level may have on the key themes highlighted so far: beliefs about causes and responsibility, and related attitudes. Given the balance of findings from existing studies, it might be reasonably assumed that beliefs and attitudes are not dependent on respondent weight level. However, this needs to be assessed. Therefore, the present study considers the views of people at different stages of weight loss or maintenance. Participants were also asked about their dieting history and consultations with health professionals about weight-related matters.

4.2 Objectives

The study addressed the question: what are the key cognitions of dieters in relation to moderately and extremely overweight people? The main aims of the survey were to (i) describe the key beliefs about moderately and extremely overweight people that may underpin the obesity stereotype among dieters (consumers), (ii) to explore the attitudes of dieters towards moderately and extremely overweight people, and (iii) to explore the implications for service provision. The survey also addressed the following hypotheses:

1. Beliefs about the causes and responsibility of moderately and extremely overweight people are not dependent on the dieters' own weight level (normal weight, moderately overweight or extremely overweight).
2. Attitudes towards moderately and extremely overweight people are not dependent on dieters' own weight level.
3. Dieters' beliefs about the causes of overweight are influenced by the level of severity of the condition (moderate or extreme).
4. Dieters' beliefs about the responsibility of overweight people are influenced by the level of severity (moderate or extreme).
5. Dieters' are more likely to report negative attitudes towards obese people than moderately overweight people.

4.3 Methods

4.3.1 Participants

Participants in this survey were those attending commercial weight loss groups in the Yorkshire area. Members of the Slimming World and Slimming Magazine's Club Ltd groups in Leeds, Huddersfield, Halifax, York and Harrogate were asked to participate in the survey.

Of 235 people who attended a slimming group meeting, 203 people participated in the survey (86.4%). At some meetings, some attendees stayed only for their initial weigh-in and not for the full session (this was a regular event, especially at the daytime meetings, and was said by participants to be due to competing commitments). The response rate as a proportion of the total numbers who appeared for any part of a session was 73.0% (N = 203/278).

4.3.2 Rationale for participant selection

Weight loss groups (rather than individuals) were targeted in order to locate sufficient numbers of participants for the survey. Initial intentions were to identify groups of dieters in both the public and private sectors. However, successive attempts to locate groups of dieters in the public sector proved unsuccessful: despite enquiries with dietetics services, only one NHS-run weight management group was identified in the

target areas. This group consisted of eight members, and was therefore likely to be unrepresentative of the dieting population at large. Therefore, only commercial groups were included.

Slimming clubs were identified from the Yellow Pages, leaflet drops and by personal communications. The Cambridge Diet, Weight Watchers, The Weight Management Club, Slimming World and Slimming Magazine's Club Ltd, were all approached with a request to survey their club members. Of these, the Cambridge Diet and Weight Management Club had no local groups and Weight Watchers had a blanket policy of allowing no researchers into their clubs. However, Slimming World and Slimming Magazine's Club Ltd head offices agreed to a survey of their members. All participants were members of these two organisations.

4.3.3 Consent

The investigator attended each group meeting to request the involvement of members. Depending on local arrangements, the survey was either explained to the group or to individual members. The voluntary and confidential nature of the survey was emphasised. Potential participants were given an information sheet and time to decide whether to participate. Each participant was asked to sign a consent form before completing the questionnaire.

4.3.4 Design

The survey was a three by two, independent, factorial design (respondent weight level by questionnaire type) to explore the attitudes and beliefs of dieters towards either moderately or extremely overweight people. The same scales as those used in Chapter 3 were employed. Thus, all respondents were allocated to receive one of two questionnaires about either (i) moderately overweight people or (ii) extremely overweight people; and their views were analysed according to whether their own body weight was (i) normal; (ii) moderately overweight; or (iii) extremely overweight (obese).

4.3.5 Materials

As in Chapter 3, questionnaires were designed to explore respondents' beliefs about, attitudes towards and perceptions of responsibility of the overweight person. Each questionnaire included the sections described in Chapter 3: demographic details; beliefs about the causes of overweight; attitudes towards the overweight person; and perceptions of responsibility of the overweight person. In addition, all participants were asked about their dieting history and experiences of consultations with health professionals about weight-related matters.

4.3.6 Procedure

Once the commercial organisations had given permission for a survey of their club members, the co-ordinators of the individual sessions were approached with details of the survey content and procedure, and an appointment was made to attend one of their sessions. Following this, a letter was sent to the co-ordinator confirming the appointment, describing the purpose of the survey and enclosing a copy of the questionnaire.

At each session, the investigator briefly described the survey to the potential participants and gave assurances of its voluntary and confidential nature. Participants were asked to read the covering letter explaining the survey, were invited to ask questions, and then asked to complete and sign the consent form before taking part in the survey. Questionnaires were distributed to each weight loss group member who consented to participate in the study. Alternate moderate level and extreme level questionnaires were distributed in turn to each participant, ensuring that equal numbers of each were completed. Completion was undertaken in the presence of the investigator and questionnaires were returned upon completion. Participants were asked not to discuss the questionnaire with other members until after completion. They were invited to direct any questions about the questionnaire to the investigator. All questionnaires were completed between March and June 1996.

4.3.7 Data analysis

Once again, SPSS for Windows was used to create a database and for statistical analysis. Tests for differences in demographic details, dieting history and prior consultations with health professionals for respondents of the two questionnaire types were undertaken, to ascertain whether the groups were sufficiently similar to allow meaningful comparisons.

The heights and weights of respondents were used to calculate their BMI and assign them to each of the three weight level categories. Normal weight was defined as BMI 20-24.9, overweight as BMI 25-29.9, and obesity as BMI ≥30. Three by two, independent ANOVAs (respondent weight level by questionnaire type) were used to test for differences in respondents' views across the four categories. The level of significance was again raised to the 1% level.

As in Chapter 3, factor analyses (principle components analyses with oblimin rotation) were undertaken for the attitude and responsibility scales, to determine their factor structures and act as a means of validation for the scale with the dieters' sample. Alpha coefficients were also calculated to determine the internal consistency of each scale.

4.4 Results

There were 102 (50.3%) and 101 (49.8%) respondents to the moderately overweight and extremely overweight questionnaires, respectively, giving a total of 203. However, three of the respondents to the moderately overweight questionnaires and eight of the respondents to the extremely overweight questionnaires failed to provide height or weight details, meaning their BMIs could not be calculated, and thus excluding them from the main analyses. One respondent had a BMI of <20 (underweight by conventional categorisation) and was excluded. Therefore, for the main comparisons according to the respondents' own BMI, data are for the remaining 191 respondents.

Tables 4.1, **4.2** and **4.3** summarise the demographic, height and weight details, and dieting behaviour details, respectively, of respondents according to questionnaire type.

Tests for differences in respondent characteristics for the two questionnaire types were undertaken. Chi squared tests were performed for categorical data (male *vs.* female; white or British *vs.* other; ever consulted heath professional: yes *vs.* no; type of professional consulted: GP *vs.* other; this was helpful: yes *vs.* no; the health professional understood: yes *vs.* no; would see a health professional in future: yes *vs.* no; would see: a dietitian *vs.* other health professional). Independent t-tests were carried out for continuous data. All tests for difference were non-significant.

Table 4.1: Demographic details of respondents by questionnaire type

	QUESTIONNAIRE TYPE	
RESPONDENTS	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT
N (%)	102 (50.25)	101 (49.75)
Gender:		
F:N (%)	98 (99.0)	96 (97.0)
M:N (%)	1 (1.01)	3 (3.03)
Age: mean (SD)	42.3 (11.2)	39.2 (11.0)
Years in profession: mean (SD)	12.6 (8.48)	9.97 (8.44)
Ethnic origin:	(16 missing)	(10 missing)
White or British: N (%)	85 (98.8)	88 (96.7)
Asian: N (%)	0 (0)	0 (0)
Chinese or oriental: N (%)	0 (0)	0 (0)
European: N (%)	0 (0)	0 (0)
Black: N (%)	1 (1.16)	2 (2.20)
Other: N (%)	0 (0)	1 (1.10)

In summary, respondents to the moderate and extreme level questionnaire types (respectively) had similar: proportions of females to males (98:1 *vs.* 96:3); those describing themselves as white or British *vs.* other ethnic origins (85:1 *vs.* 88:3); mean heights in metres (1.64 *vs.* 1.65); mean weights (76.5 *vs.* 74.9), highest ever weights (85.4 *vs.* 85.3) and ideal weights (62.3 *vs.* 62.0) in kilograms; mean BMIs (28.3 *vs.* 27.6), highest ever BMIs (31.7 *vs.* 31.3) and ideal BMIs (23.0 *vs.* 22.9); mean score for perceptions of moderately overweight (2.97 *vs.* 3.26, equating to approximately

20% and 23% overweight) and extremely overweight (5.76 *vs.* 5.78, equating to approximately 55% overweight).

Table 4.2: Weight details of respondents by questionnaire type (means ± SDs)

	QUESTIONNAIRE TYPE	
RESPONDENTS	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT
Height/m	1.64 (0.06)	1.65 (0.06)
Weight/kg	76.5 (14.8)	74.9 (14.7)
Highest weight/kg	85.4 (15.0)	85.3 (18.6)
Ideal weight/kg	62.3 (6.07)	62.0 (7.19)
BMI	28.3 (5.57)	27.6 (4.79)
Highest BMI	31.7 (5.83)	31.3 (5.79)
Ideal BMI	23.0 (1.64)	22.9 (1.70)

Table 4.3: Dieting behaviour of respondents by questionnaire type

	QUESTIONNAIRE TYPE	
RESPONDENTS	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT
Motivation to lose weight: mean (SD)	4.43 (1.37)	4.61 (1.19)
Length of diet/months: mean (SD)	4.31 (5.19)	5.42 (7.22)
Length of time trying to lose weight/months: mean (SD)	127.7 (121.9)	126.2 (120.0)
Have consulted health professional about weight loss: N (%)	34 (33.3)	35 (34.7)
Have seen a:[3]		
GP: N (%)	25 (73.5)	26 (74.3)
Dietitian: N (%)	14 (41.2)	13 (37.1)
Psychologist: N (%)	1 (2.94)	1 (2.86)
Nurse: N (%)	9 (26.5)	10 (28.6)
Therapist: N (%)	1 (2.94)	0 (0)
Counsellor: N (%)	3 (8.82)	1 (2.86)
No. of times have seen health professional: mean (SD)	4.18 (4.60)	8.80 (30.8)
Have seen health professional over/months: mean (SD)	101.1 (77.6)	91.1 (107.1)

[3] Categories not mutually exclusive

Table 4.3 (cont.): Dieting behaviour of respondents by questionnaire type

	QUESTIONNAIRE TYPE	
RESPONDENTS	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT
Seeing health professional was helpful		
Yes: N (%)	15 (44.2)	13 (37.1)
No: N (%)	17 (50)	17 (48.6)
Partially: N (%)	1 (2.94)	2 (5.71)
Health professional understood		
Yes: N (%)	18 (52.9)	16 (45.7)
No: N (%)	13 (38.2)	17 (48.6)
Partially: N (%)	1 (2.94)	0 (0)
Would see a health professional in future	(23 missing)	(25 missing)
Yes: N (%)	11 (10.8)	15 (14.9)
No: N (%)	68 (66.7)	61 (60.4)
Would see a:[4]		
GP: N (%)	16 (15.7)	17 (16.8)
Dietitian: N (%)	43 (42.1)	48 (47.5)
Psychologist: N (%)	8 (7.84)	4 (3.96)
Nurse: N (%)	6 (5.88)	7 (6.93)
Therapist: N (%)	8 (7.84)	3 (2.97)
Counsellor: N (%)	11 (10.8)	8 (7.92)

Also, in terms of dieting and consultation behaviour, the two groups reported similar: motivations to lose weight (4.43 *vs.* 4.61 on six point scale, 1 = 'hardly motivated at all', to 6 = 'very motivated'); mean length of current diet in months (4.31 *vs.* 5.42); mean period of time they had been trying to lose weight overall in months (127.7 *vs.* 126.2). Similar proportions had seen at least one health professional about weight loss (33.3% *vs.* 34.7%). Of these, those responding to the moderate level questionnaires reported having seen a health professional fewer times (4.18 *vs.* 8.80) although this difference was non-significant. In both groups, similar proportions of those who had seen a health professional about weight loss had seen a GP (73.5% *vs.* 74.3%), a dietitian (41.2% *vs.* 37.1%) or any other health professional (41.2% *vs.* 34.3%). Of these, similar numbers found their encounters with health professionals helpful (44.2% *vs.* 37.1%) and unhelpful (50% *vs.* 48.6%); and felt the health professional understood their situation (52.9% *vs.* 45.7%). Of all respondents, similar

[4] Categories not mutually exclusive

numbers reported they would see a health professional about weight loss in the future (10.8% *vs.* 14.9%), the preferred option being to see a dietitian (42.1% *vs.* 47.5%).

Therefore, respondents to the two questionnaire types were sufficiently similar to allow direct comparisons across the groups in terms of beliefs, attitudes and perceptions of responsibility.

4.4.1 Causative factors

Mean scores for respondents' beliefs about the causes of overweight are given in **Table 4.4.** There were no significant questionnaire type (moderate or extreme), respondent weight level (normal, overweight or obese), or interaction effects. Therefore, respondents did not view moderate and extreme overweight as having different causes. Also, beliefs about the causes of overweight did not appear to be determined by the respondent's own bodyweight.

Table 4.4 indicates that depression, lack of willpower, mood changes, external stressors, physical inactivity, addiction, repeated dieting were all rated as highly important factors (>4 on the scale) in causing someone to be overweight. Fat cell defect, a person's age, socio-economic status and gender were rated as least important (gender least of all). The perceptions of importance of the different factors were rated similarly for the two questionnaire types, meaning respondents viewed moderate and extreme overweight to have similar causes.

Table 4.4: Causative factor ratings by questionnaire type and respondent weight level (means ± SDs)

QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT			EXTREME OVERWEIGHT		
RESPONDENT WEIGHT LEVEL	NORMAL	MOD. OVWT	OBESE	NORMAL	MOD. OVWT	OBESE
Lack of willpower	4.66 (1.57)	5.07 (1.24)	4.80 (1.33)	4.53 (1.38)	5.07 (1.33)	5.30 (1.26)
Physical inactivity	4.13 (1.04)	4.59 (1.08)	4.64 (1.23)	4.40 (1.32)	4.23 (1.24)	4.73 (1.17)
Addiction	4.35 (1.21)	4.21 (1.18)	4.78 (1.26)	4.59 (1.13)	4.84 (1.21)	5.03 (1.26)
Depression	4.51 (1.22)	4.99 (1.09)	5.03 (1.03)	5.04 (0.81)	5.07 (0.80)	5.40 (1.12)
Genetics	3.54 (1.31)	3.48 (1.26)	3.90 (1.42)	3.37 (0.96)	3.38 (1.20)	4.13 (1.18)
Metabolic factors	3.25 (1.63)	3.82 (1.26)	3.94 (1.37)	3.89 (1.35)	3.56 (1.26)	4.22 (1.44)
Fat cell defect	2.98 (1.51)	3.39 (1.47)	3.49 (1.34)	3.05 (1.22)	3.04 (1.03)	3.48 (1.68)
Repeated dieting	3.63 (1.45)	4.25 (1.07)	4.22 (1.39)	3.77 (1.17)	3.98 (1.35)	4.44 (1.31)
A person's age	2.86 (1.68)	3.54 (1.46)	3.38 (1.68)	2.67 (1.15)	3.02 (1.33)	3.26 (1.32)
A person's gender	2.32 (1.30)	2.99 (1.72)	3.15 (1.48)	2.09 (1.20)	2.45 (1.35)	2.65 (1.58)
A person's SES	2.78 (1.25)	3.40 (1.50)	3.23 (1.50)	2.93 (1.26)	2.64 (1.35)	3.30 (1.55)
Personality	3.32 (1.59)	3.74 (1.60)	3.53 (1.61)	3.68 (1.26)	2.96 (1.43)	3.13 (1.89)
Interpersonal factors	3.88 (1.37)	3.62 (1.05)	3.77 (1.38)	3.60 (1.51)	3.49 (1.07)	3.65 (1.53)
External stressors, leading to...	4.32 (1.38)	4.69 (1.09)	4.69 (1.09)	4.60 (1.03)	4.25 (1.33)	4.81 (1.11)
Mood changes, leading to...	4.25 (1.45)	4.93 (0.84)	4.78 (1.18)	4.58 (1.00)	4.48 (1.28)	4.83 (1.15)

Table 4.5 summarises the attitude scores according to questionnaire type (moderate or extreme) and respondent weight level. In all cases, a higher score indicates more positive attitudes.

The only significant questionnaire type effect was found for item 'are as self-confident' ($F [1, 181] = 7.82$, $p < 0.01$). In this case, respondents judged extremely overweight people to be less self-confident than moderately overweight people. No respondent weight level effects or interactions were found. Therefore, it can be concluded that respondents had similar perceptions of overweight people, irrespective of their own bodyweight.

Table 4.5: Attitude ratings by questionnaire type and respondent weight level (means ± SDs)

QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT			EXTREME OVERWEIGHT			
RESPONDENT WEIGHT LEVEL	NORMAL	MOD. OVWT	OBESE	NORMAL	MOD. OVWT	OBESE	
Sec2qu1: 'are as happy as'	3.22 (1.37)	2.64 (1.52)	3.19 (1.55)	2.62 (1.47)	2.42 (1.51)	2.78 (1.59)	
Sec2qu2: 'feel not as good as'	3.33 (1.11)	3.00 (1.47)	3.22 (1.45)	2.52 (1.35)	3.39 (1.60)	3.43 (1.83)	
Sec2qu3: 'are more self-conscious'	2.59 (1.25)	2.14 (1.21)	2.16 (1.35)	2.31 (1.39)	2.49 (1.50)	2.17 (1.61)	
Sec2qu4: 'cannot be as successful workers'	4.68 (1.58)	4.82 (1.42)	5.10 (1.30)	4.45 (1.45)	4.75 (1.35)	3.78 (1.81)	
Sec2qu5: 'people would not want to marry them'	4.07 (1.64)	4.04 (1.53)	4.35 (1.51)	3.86 (1.68)	3.90 (1.52)	3.78 (1.93)	
Sec2qu6: 'are usually untidy'	4.93 (1.59)	4.66 (1.80)	5.30 (1.04)	4.86 (1.43)	5.39 (0.93)	5.26 (1.48)	
Sec2qu7: 'are usually sociable'	3.74 (1.48)	3.69 (1.31)	3.78 (1.48)	3.55 (1.30)	3.34 (1.24)	3.65 (1.70)	
Sec2qu8: 'are not dissatisfied with themselves'	3.24 (1.05)	3.31 (1.65)	2.84 (1.42)	2.76 (1.02)	2.47 (1.22)	2.78 (1.28)	
Sec2qu9: 'are as self-confident'	3.44 (1.19)	3.16 (1.42)	3.39 (1.46)	2.76 (1.27)	2.85 (1.48)	2.65 (1.47)	**
Sec2qu10: 'feel uncomfortable to associate with'	4.64 (1.20)	4.34 (1.46)	4.85 (1.13)	4.46 (1.27)	4.49 (1.25)	4.25 (1.40)	
Sec2qu11: 'are often less aggressive'	4.27 (1.25)	4.02 (1.30)	3.85 (1.17)	4.11 (1.21)	4.31 (1.36)	4.04 (1.02)	
Sec2qu12: 'have different personalities'	4.56 (1.47)	4.39 (1.45)	4.79 (1.18)	4.66 (1.14)	4.62 (1.48)	4.35 (1.47)	
Sec2qu13: 'are ashamed'	2.60 (1.29)	3.28 (1.68)	2.95 (1.47)	2.46 (1.10)	2.77 (1.56)	3.57 (1.67)	
Sec2qu14: 'resent others'	4.68 (1.16)	3.74 (1.44)	4.01 (1.39)	4.28 (1.22)	4.36 (1.33)	4.65 (1.50)	
Sec2qu15: 'are more emotional'	4.60 (1.21)	4.01 (1.50)	4.14 (1.41)	4.21 (1.11)	4.31 (1.44)	3.61 (1.47)	
Sec2qu16: 'can't expect to lead normal lives'	5.34 (1.05)	4.80 (1.59)	5.29 (1.29)	5.25 (1.01)	5.12 (1.24)	5.00 (1.48)	

** = significant questionnaire type effect, $p < 0.01$

Table 4.5 (cont.): Attitude ratings by questionnaire type and respondent weight level (means ± SDs)

QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT			EXTREME OVERWEIGHT		
RESPONDENT WEIGHT LEVEL	NORMAL	MOD. OVWT	OBESE	NORMAL	MOD. OVWT	OBESE
Sec2qu17: 'are just as healthy'	2.68 (1.50)	3.23 (1.53)	3.26 (1.44)	2.52 (1.56)	2.67 (1.54)	2.83 (1.53)
Sec2qu18: 'are just as sexually attractive'	3.23 (1.40)	3.47 (1.42)	3.64 (1.72)	3.01 (1.40)	2.87 (1.45)	3.30 (1.66)
Sec2qu19: 'tend to have family problems'	4.56 (1.52)	4.55 (1.44)	4.74 (1.50)	4.36 (1.26)	4.87 (1.15)	4.65 (1.70)
Sec2qu20: 'worst thing to happen to happen to a person'	4.19 (1.79)	4.21 (1.66)	3.92 (1.80)	3.66 (1.61)	3.90 (1.59)	3.00 (1.68)
OVERALL ATTITUDE SCORE	78.6 (9.18)	75.5 (10.0)	78.8 (12.0)	72.7 (11.9)	75.3 (12.0)	73.6 (11.4)

Overall, the items for which overweight people were rated most positively were: 'can expect to lead normal lives'; 'are not usually untidy'; 'can be as successful workers'; 'do not tend to have family problems'; 'people feel comfortable to associate with'; 'do not have different personalities'; 'are not more emotional'; 'people would marry them'; 'not the worst thing to happen to a person'; 'do not resent others'; 'are not less aggressive'; 'are usually sociable'. These ratings indicate that respondents viewed overweight people as not dissimilar to other people, as ordinary people with ordinary lives.

The items for which the perceptions of overweight people were most negative were: 'not as sexually attractive'; 'less self-confident'; 'feel not as good as'; 'dissatisfied with themselves'; 'not as healthy'; 'are ashamed'; 'are less happy'; 'are more self-conscious'. These items suggest that respondents perceived overweight people as having a lower self-esteem than normal weight people.

The results of the factor analysis generally support this pattern of results. Three factors were extracted, accounting for 36.8% of the variance: 'Social integration', 'Self-esteem/attractiveness', 'Self-esteem' (see **Appendix 4.1**). These findings suggest that dieters' view overweight people as socially integrated (ordinary people), but with reduced self-esteem. Note that while sexual attraction and health were

clearly linked to self-esteem (happiness with self), they also loaded on social integration. This indicates that respondents viewed these items in terms of both issues. It is not clear why items in the third factor, which also appears to describe self-esteem, did not load on the second factor.

4.4.2 Responsibility

Table 4.6 summarises the ratings of respondents for the responsibility items, by questionnaire type. In all cases, a higher score indicates more responsibility.

Table 4.6: Responsibility ratings by questionnaire type and respondent weight level (means ± SDs)

QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT			EXTREME OVERWEIGHT			
RESPONDENT WEIGHT LEVEL	NORMAL	MOD. OVWT	OBESE	NORMAL	MOD. OVWT	OBESE	
Sec3qu21: 'try to understand causes'	4.78 (1.37)	4.92 (1.30)	4.94 (1.44)	5.17 (1.28)	4.67 (1.42)	5.14 (1.39)	
Sec3qu22: 'motivate themselves'	4.59 (1.31)	4.78 (1.42)	4.53 (1.57)	4.66 (1.40)	4.56 (1.21)	5.23 (1.02)	
Sec3qu23: 'seek professional advice/help'	3.67 (1.52)	3.95 (1.73)	4.16 (1.61)	4.38 (1.45)	4.37 (1.40)	4.91 (1.34)	**
Sec3qu24: 'recognise a problem exists'	4.44 (1.37)	4.89 (1.29)	4.97 (1.38)	5.00 (1.44)	4.69 (1.30)	5.18 (1.26)	
Sec3qu25: 'recognise risk to health'	4.96 (1.26)	5.16 (1.07)	4.88 (1.38)	5.31 (1.42)	5.26 (0.91)	5.50 (0.80)	
Sec3qu26: 'recognise influence on others'	3.05 (1.32)	3.51 (1.64)	2.75 (1.67)	3.38 (1.45)	3.10 (1.43)	4.23 (1.80)	##
Sec3qu27: 'left to be happy'	3.44 (1.58)	3.51 (1.63)	3.48 (1.47)	3.59 (1.30)	3.64 (1.42)	3.36 (1.53)	
Sec3qu28: 'recognise negative effect on others'	2.52 (1.09)	3.19 (1.51)	3.00 (1.67)	2.93 (1.28)	3.10 (1.19)	3.00 (1.63)	

** = significant questionnaire type effect, = $p < 0.01$

= significant interaction effect, $p < 0.01$

Table 4.6 (cont.): Responsibility ratings by questionnaire type and respondent weight level (means ± SDs)

QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT			EXTREME OVERWEIGHT			
RESPONDENT WEIGHT LEVEL	NORMAL	MOD. OVWT	OBESE	NORMAL	MOD. OVWT	OBESE	
Sec3qu29: 'not be socially pressured'	2.44 (1.74)	3.04 (1.57)	2.22 (1.62)	3.24 (1.33)	3.00 (1.43)	2.18 (1.37)	++
Sec3qu30: 'be accepted whatever'	1.77 (1.38)	1.84 (1.32)	1.72 (1.44)	2.21 (1.26)	1.69 (0.92)	1.64 (1.05)	
Sec3qu31: 'not be held responsible'	3.25 (1.67)	2.73 (1.61)	2.94 (1.61)	3.59 (1.35)	2.72 (1.23)	2.95 (1.40)	
OVERALL RESPONSIBILITY SCORE	38.9 (8.60)	41.5 (7.14)	39.6 (6.14)	43.5 (8.38)	40.8 (8.10)	43.3 (7.31)	

++ = significant respondent weight effect, $p < 0.01$

A significant questionnaire type effect was found for: 'should seek professional advice/help' ($F [1, 180] = 7.60$, $p < 0.01$). In this case, extremely overweight people were seen as in more need of professional help than moderately overweight people. A significant respondent weight level effect was found for the item 'should not be socially pressured' ($F [2, 180] = 4.71$, $p = 0.01$). This means that obese respondents felt overweight people should not be subjected to social pressure to change. A significant interaction effect was found for: 'recognise the impact on others' ($F [2, 180] = 5.74$, $p < 0.01$). In this case, the obese respondents rated the extremely overweight (obese) person as most responsible for recognising the impact that their weight may have on others.

From **Table 4.6**, it can be seen that the responsibility items rated most highly for both levels of questionnaire were: overweight people should try to understand the causes, motivate themselves to lose weight, recognise a problem exists, and recognise the risk to their health. A questionnaire type effect also meant that respondents rated highly the need for extremely overweight people to seek professional advice or help. The lower rated items indicate respondents generally did not believe that being overweight may have a negative effect on others, and believed that overweight people should not be socially pressured to change or held responsible for their condition. The lowest scoring item indicates that respondents felt overweight people should be accepted as they are.

Results of the factor analysis once again add credence to the pattern of responses described above. Three factors were extracted, accounting for 62.0% of the variance: 'Responsibility to act', 'Affecting others' and 'Acceptance' (see **Appendix 4.2**). Respondents rated overweight people's responsibility to act quite highly, were more ambiguous about whether being overweight adversely affects others, and generally believed that overweight people should be accepted as they are and not pressured to change.

4.5 Discussion

Dieters' cognitions of overweight people have been explored. They tended to rate mood factors quite highly in contributing to overweight, with depression rated highest of all. Lack of willpower, physical inactivity, addiction and repeated dieting were also seen as important factors in causing someone to be overweight. There were no respondent weight level or questionnaire level effects. Thus, normal weight, moderately overweight and extremely overweight dieters had similar perceptions about the causes of overweight *and* obesity.

The respondents also viewed overweight people as quite responsible in terms of recognising a problem and doing something about it. This is conceivably a function of the fact that participants were paid members of weight loss clubs, taking action on their own situation. There was less agreement that bodyweight status may somehow influence others. Importantly, they also believed that overweight people should generally be accepted as they are. There were only three statistically significant effects for perceptions of responsibility: in comparison to moderately overweight people, respondents were more likely to think that extremely overweight people should seek professional help; obese respondents were more likely to agree that extremely overweight people should recognise the possible influence that being overweight might have on others; and in comparison to moderately overweight and normal weight respondents, obese respondents were more likely to agree that overweight people in general should be not subjected to social pressures to lose weight. Once again this illustrates that dieters at different weight levels had generally had the same beliefs about the responsibilities of overweight and obese people.

The pattern of attitudes towards overweight showed that overweight people were viewed quite positively in terms of being seen as ordinary people with ordinary lives. So, for example, they do not have more family problems, can be successful workers, and other people are comfortable with them. Noticeably, however, self-esteem-related factors were rated more negatively – that is, overweight people were seen as being more self-conscious, dissatisfied, ashamed, and less self-confident, sexually attractive and happy. With the exception of sexual attractiveness, this pattern seems to describe the internal effects of being overweight, rather than external, social ones. The attitudes appear to relate to the perception that many of the causes are to do with mood-related issues. The finding of only one significant effect (extremely overweight people were seen as less self-confident than moderately overweight people) indicates that the respondents had similar attitudes towards overweight and obesity, regardless of their own weight.

Therefore, in terms of describing the key beliefs that may underpin the obesity stereotype among dieters, it might be concluded that overweight people are seen as having emotional difficulties, lacking in willpower, being lazy when it comes to physical activity, and being responsible for acting on their situation. This set of beliefs relates fairly closely to the archetypal stereotype highlighted by the obesity attitudes literature. However, as in Chapter 3, the pattern of attitudes did not reveal a universally negative picture, to correspond to such beliefs – they were mixed. The most positive perceptions were in terms of social integration, but the most negative were in terms of perceived low self-esteem, sexual attractiveness and health. In previous chapters, it has also been noted that the distinction between attitudes and beliefs is not necessarily clear. Therefore, it is perhaps this whole collection of cognitions that summarises the obesity stereotype and corresponding attitudes: that there are some traditional beliefs, but that these do not relate to overwhelmingly negative views of overweight people.

In terms of the stated hypotheses therefore, hypotheses 1 and 2 can be accepted, since beliefs and attitudes were not dependent on dieters' own body weight. Hypotheses 3, 4 and 5 must be rejected, however, since the same cognitions were also not influenced by the level of severity upon which dieters' were commenting (moderate or extreme overweight).

These findings that cognitions were similar irrespective of the respondents' own weight are in line with those of Crandall (1994), Allison *et al.* (1991) and Counts *et al.* (1986), but contrary to those of Robinson *et al.* (1993) who found more negative attitudes among normal weight people than overweight people. Furthermore, unlike the health professionals surveyed in Chapter 3, dieters did not appear to view moderately overweight and obese people differently. More will be said about the similarities and differences between consumers and health professionals in Chapter 5, but this lack of respondent weight level and target weight level effects is worth further comment.

It seems probable that the general lack of level effects is at least partly due to the particular nature of the sample. Firstly, the normal weight dieters here were likely to be different from their normal weight counterparts in the general population in that they shared an understanding of what it meant to be overweight and to experience pressure to lose weight. One of the functions of slimming groups is to provide social support, with the emphasis very much upon mutual understanding and encouragement (which the dieters in Murphree's (1994) study suggested is very important). Thus, it could be suggested that because they related closely to this group, they had more sympathetic views towards them. Likewise, negative ratings around self-esteem described the internal effects associated with weight gain to which all group members may have been able to relate, regardless of their own weight at the time. Similar mechanisms could also describe why respondents did not view moderately and extremely overweight people all that differently. Group members share experiences with people of all different sizes, sharing the same struggles with weight loss or maintenance. They do not necessarily experience a clear distinction between moderate overweight and obesity. This kind of environment may engender a group affiliation not possible with those who attempt weight loss on their own. It seems likely that people who chose to diet alone would not have the experience of identifying with others and may hold more diverse views of overweight. The experience of group membership may also dissipate over time, meaning the views of those who once attended slimming groups may be different from those who currently attend a group.

It is also likely that the perceptions of the causes of overweight could be influenced to some extent by group membership and the information received at meetings. Although the evidence for 'emotional eating' is not strong, perhaps members are

encouraged to focus on emotional cues they associate with overeating. Likewise, as the emphasis within groups is on changing behaviours, it is likely that the role of willpower and physical activity would be emphasised, tapping into traditional beliefs, and causing all these factors to have been rated as quite important. However, the emphasis is also likely to be on dietary intake and it seems unlikely that members would be encouraged to view dieting as causing overweight, as this may discourage attendance (to what is after all a commercial venture). Alternatively, the emphasis within the group may be more to do with lifestyle changes and encouraging members to avoid more traditional 'dieting' approaches, so that members to not equate their attendance with dieting as such. However, these suggestions are essentially speculative and the actual content of the meetings would need to be studied in more detail in order to determine where dieters acquire their beliefs.

Given the likely differences between slimming group attendees and non-attendees, it could be argued that the findings here are not useful in obtaining the general view of health care 'consumers'. It is true that there are likely to be differences between members of commercial groups and those who consult health professionals about weight loss. As previously noted, groups were targeted because of the need to obtain sufficient numbers for the survey. Resource constraints meant that it was not possible to obtain these numbers by targeting individual health care consulters. In addition, despite the intention to find groups within the public sector, their availability was extremely limited. It seems reasonable to suggest that consumers would experience the same difficulties in accessing public sector organised programmes and would therefore be more likely to resort to commercial initiatives.

Participants in the study had been dieting for an average of approximately five months. They were not new to weight loss and had been trying to lose weight for an average of more than ten years. Even so, they reported high motivation to change (mean 4.5, on a six point scale, 6 = extremely motivated). About a third had previously consulted a health professional about weight loss, and three-quarters of these had seen their GP. Thus there was a reasonable number of health care consulters and non-consulters in the sample. Nevertheless, it is not possible to say for definite how similar or different the present sample might be from those who routinely consult health professionals to help them with weight loss. It is possible, for example, that a group of current health care consulters would be more prone to psychopathological problems (Brownell and Rodin 1994), and therefore might have

more extreme views than those presented here. On the other hand, it has previously been noted that people who consult health professionals about weight matters are in the minority. For example, Brownell and Rodin (1994) note that *'by far the vast majority of individuals who attempt to lose weight do so on their own, with books, magazines, or diets given to them by others; by joining exercise programs; or by enrolling in commercial or self-help programs'* (p.784). Also, citing O'Neil, Dansky, Kilpatrick and Brewerton (1992), they report that using a national probability sample, less than 20% of women who tried to lose 15 pounds or more did so with professionally directed programs or weight loss medications. Therefore, it is likely that the current sample is more representative of dieters than a sample of current health care consulters would have been. Furthermore, if lessons are to be learned about improving treatments, then access to effective public sector weight loss services needs to be improved, and it is likely to be people who are motivated to change, such as those in this survey, who would be most likely to utilise such services. Unfortunately, the present sample can tell us little about those who are not motivated to change in the first place.

So what can the present survey tell us about improving treatments to better suit consumers? Taking into account the limitations outlined above and in Chapter 3 with regard to the survey design, the findings need to be interpreted with a degree of caution. Nevertheless, there are a number of useful pointers that could be further explored. The strongest messages from the survey are that active dieters appeared to rate mood-related items quite highly, both in terms of the causes of overweight and in terms of the internal effect on the overweight person. Given the lack of evidence for emotional eating causing obesity, there is room for providing balanced information on the causes of obesity. It is important to note that dieters viewed mood as important, as it suggests this is one area that may be targeted in treatments. This may help health professionals to explore some of the emotional issues that face the dieter and to be more compassionate in their approach to treatment. There may also be an opportunity to provide more balanced information about the various factors contributing to weight gain (lifestyle, genetics, and socio-economic factors). It appears that dieters did appreciate the role of physical activity, and efforts to identify and remove the barriers to exercise behaviour may be able to build on this awareness among dieters (e.g. exercise on prescription initiatives).

Dieters of all weight levels appeared to view overweight people as ordinary people with ordinary lives. However, they reported that self-esteem is an important factor around excess weight. Following this line of reasoning, programs that take this into account and boost morale by providing balanced information about weight-related matters would be more likely to help people with weight loss. Likewise, care needs to be taken to avoid approaches that inadvertently denigrate overweight individuals and tap into feelings of low self-regard. For example, a program that sets unrealistic goals leading to failure will do nothing to improve the dieters' esteem. Overweight people need to be encouraged to feel good about themselves to empower them to lose weight. Certainly, dieters appear to appreciate that overweight people are responsible for doing something about their condition, but clearly they do not want to be marginalised as a means to motivating change.

In those surveyed, it did appear that from the consumers' perspective many health professionals are doing something wrong with regard to providing treatments. Although 40% of those who had consulted a health professional found it helpful, about half found the consultations unhelpful. Around the same numbers felt the health professional understood their situation. Only a minority (less than 15%) said they would consult a health professional again. Although these figures come from small numbers of people, and the dieters' dissatisfaction may arise in part from a disappointment that there is no instant remedy, there is certainly room to further explore the views of consumers with a mind to improving provision. This theme will be elaborated further in the next chapter.

5. Comparing the views of health professionals and dieters

5.1 Introduction

In Chapters 3 and 4, the cognitions of health professionals and dieters towards overweight people have been explored, as key components of Marteau's (1995) framework. In this chapter, a direct comparison is made between the views of these two groups of respondents. It has previously been argued that obesity prejudice is pervasive and that health professionals and lay people would be subject to broadly the same beliefs and attitudes about overweight and obesity, because cultural ideas are likely to outweigh any objective, scientific information health professionals may receive.

In addition, it has also been explained that consumer involvement in health-related matters is vital. Health consultations involve both health professionals and dieters – both have a vested interest in weight loss, but from very different perspectives. Thus, it may be expected that the perceptions of dieters would differ from those of the health professionals they may wish to consult. Such differences could result in different expectations among both parties and adversely influence the consultation process. Data from both parties can inform health care procedures in a way that information from only one group can not. An example of this is a study undertaken by Adams *et al.* (1993). They explored patients' and health professionals' views of pelvic examinations and found reluctance among a substantial minority (17%) of doctors to perform pelvic examinations on obese patients, and among the majority (83%) in undertaking pelvic examinations on reluctant patients. They also found very overweight patients were more reluctant to undergo pelvic examinations. Taken together, the implication is that the reluctance of both parties could interact to result in very overweight women being at greater risk of missing out on an essential preventive health care procedure. Therefore, it could be suggested that an intervention to improve screening uptake would ideally focus on both health professional and patient factors. A survey of only one of these groups may have led to different conclusions.

Direct comparisons of the views of consumers and health professionals appear to be few and far between. The extent to which different perspectives of the weight loss experience may override shared cultural stereotypes is not clear. Therefore, this

chapter explores the similarities and differences in the cognitions of both groups and the implications for health care delivery.

5.2 Objectives

The purpose of the comparison presented in this chapter was to answer the question: what are the similarities and differences in the cognitions of health professionals and dieters in relation to overweight and obesity? The main aims of this chapter were therefore (i) to compare health professionals' and dieters' cognitions in relation to overweight and obesity, and (ii) to explore the implications for health care provision. The comparison addressed the hypotheses:

1. Health professionals and dieters share the same beliefs about the causes of overweight and obesity
2. Health professionals and dieters share the same beliefs about the responsibility of overweight and obese people
3. Health professionals and dieters share the same attitudes towards overweight and obese people

5.3 Methods

Health professional and consumer data from Study 1 and Study 2 were re-analysed in a two by two, independent, factorial design: respondent category (health professional versus dieter) by questionnaire weight level (moderately overweight versus extremely overweight). Thus, health professionals' and dieters' perceptions of moderately overweight or extremely overweight people were compared. Two by two, independent ANOVAs were used to test for differences in respondents' views across the two weight categories. Once again, a 1% level of significance was employed.

A comparison of health professionals' and dieters' demographic details and weights were also undertaken to determine the differences between the two groups of respondents. Independent t-tests for continuous data and chi squared tests for categorical data were used.

5.4 Results

The results of the tests for difference in health professionals' and dieters' demographic details, and heights, weights and BMIs are summarised in **Tables 5.1** and **5.2.**

One hundred and sixteen health professionals and 203 dieters were included in the analyses. As might be expected, significant differences were found between the two groups of respondents. The ratio of men to women was much higher in the health professional group (60:55) than in the dieters group (4:194) (Pearson chi [1] = 112.5, $p < 0.001$). There were also more respondents describing themselves as something other than white or British (e.g. Asian, Chinese or oriental, European, black) in ethnic origin in the health professional group (Pearson chi [1] = 13.5, $p < 0.001$). It is worth noting that people from ethnic minorities are often under-represented in postal surveys (McColl *et al.* 1998). If this is assumed to be the case with the present survey then the ethnic differences between health professionals and dieters could be more pronounced than suggested here. Nevertheless, health professionals of Caucasian or British origin are still going to be in by far the greatest majority. The same can be said for the dieters group.

Table 5.1: Demographic details of respondents

RESPONDENTS	HEALTH PROFESSIONALS	DIETERS	
N	116	203	
Gender:			***
F:N	55	194	
M:N	60	4	
Age: mean (SD)	41.4 (8.49)	40.7 (11.2)	
Years in profession: mean (SD)	15.1 (9.22)	11.3 (8.53)	**
Ethnic origin:	(missing = 2)	(missing = 26)	***
White or British: N (%)	99 (85.3)	173 (85.2)	
Asian: N (%)	5 (4.31)	0 (0)	
Chinese or oriental: N (%)	2 (1.72)	0 (0)	
European: N (%)	3 (2.59)	0 (0)	
Black: N (%)	1 (0.86)	3 (1.48)	
Other: N (%)	4 (3.45)	1 (0.49)	

** = significant difference $p < 0.01$, *** = $p < 0.001$

Table 5.2: Heights, weights and BMIs of respondents (means ± SDs)

	HEALTH PROFESSIONALS	DIETERS	
Height/m	1.73 (0.10)	1.65 (0.06)	***
Weight/kg	69.36 (12.44)	75.70 (14.69)	***
Highest weight/kg	74.38 (16.30)	85.38 (16.88)	***
Ideal weight/kg	66.30 (10.70)	62.15 (6.65)	***
BMI	23.16 (2.86)	27.96 (5.21)	***
Highest BMI	24.87 (4.18)	31.53 (5.80)	***
Ideal BMI	22.11 (1.82)	22.92 (1.67)	***

*** = significant difference, $p < 0.001$.

Health professionals were found: to have spent more years in their current profession ($t [267] = 3.49$, $p < 0.001$); to be taller ($t [169] = 8.08$, $p < 0.001$, unequal variances); to weight less ($t [306] = -3.88$, $p < 0.001$) and to have a lower BMI ($t [303] = -10.4$, $p < 0.001$, unequal variances); to have a lower 'highest ever' weight ($t [303] = -5.53$, $p < 0.001$) and BMI ($t [283] = -11.5$, $p < 0.001$, unequal variances); and to have a higher ideal weight ($t [161] = 3.71$, $p < 0.001$, unequal variances), but slightly lower ideal BMI ($t [302] = -3.94$, $p < 0.001$) (the apparent discrepancy being accounted for by the difference in heights across the two groups, probably because of the greater proportion of males amongst health professionals).

In comparison to health professionals, dieters rated moderate and extreme overweight at significantly higher percentages above ideal body weight: health professionals believed moderate overweight to be on average in the region of 15-20% above ideal body weight, while dieters thought it to be just over 20% ($t [298] = -2.73$, $p < 0.01$, unequal variances). Health professionals rated extreme overweight as just under 45% above ideal body weight, while dieters believed it to be nearer to 60% ($t [285] = -4.82$, $p < 0.001$, unequal variances).

5.4.1 Causative factors

The means and standard deviations (in brackets) for the causative factor items are given in **Table 5.3.**

Table 5.3: Causative factor ratings by respondent and questionnaire overweight level (means ± SDs)

RESPONDENTS	HEALTH PROFESSIONALS		DIETERS		
QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	
Lack of willpower	3.84 (1.38)	4.13 (1.51)	4.86 (1.34)	4.99 (1.32)	***
Physical inactivity	4.70 (1.13)	4.61 (1.13)	4.49 (1.13)	4.44 (1.26)	
Addiction	4.10 (1.31)	4.40 (1.23)	4.47 (1.22)	4.87 (1.18)	**
Depression	4.26 (1.20)	4.23 (1.29)	4.90 (1.10)	5.15 (0.89)	***
Genetic	4.01 (1.18)	3.79 (1.38)	3.64 (1.31)	3.59 (1.15)	
Metabolic factors	2.62 (1.32)	2.98 (1.42)	3.67 (1.42)	3.85 (1.36)	***
Fat cell defect	2.39 (1.12)	2.63 (1.17)	3.30 (1.43)	3.15 (1.26)	***
Repeated dieting	3.76 (1.33)	3.57 (1.23)	4.06 (1.28)	4.04 (1.28)	
A person's age	3.49 (1.26)	2.83 (1.20)	3.33 (1.58)	2.98 (1.35)	++
A person's gender	3.10 (1.37)	3.02 (1.47)	2.84 (1.54)	2.42 (1.43)	
A person's SES	3.72 (1.27)	3.70 (1.25)	3.19 (1.41)	2.94 (1.39)	***
Personality	3.86 (1.34)	4.28 (1.26)	3.62 (1.59)	3.27 (1.52)	***
Interpersonal factors	4.16 (1.07)	4.13 (1.13)	3.70 (1.26)	3.62 (1.33)	**
External stressors, leading to...	4.35 (1.07)	3.91 (1.18)	4.53 (1.21)	4.55 (1.17)	**
Mood changes, leading to...	4.20 (1.15)	3.96 (1.04)	4.62 (1.23)	4.65 (1.15)	***

** = significant respondent effect, $p < 0.01$, *** = $p < 0.001$

++ = significant questionnaire weight level effect, $p < 0.01$

There were a number of statistically significant differences in the perceptions of health professionals and dieters. Compared to the health professionals, dieters rated the following factors as more important in causing someone to be overweight: lack of willpower ($F [1, 315] = 34.0$, $p < 0.001$); addiction ($F [1, 315] = 8.33$, $p < 0.01$); depression ($F [1, 315] = 36.6$, $p < 0.001$); metabolic factors ($F [1, 315] = 35.0$, $p < 0.001$); fat cell defect ($F [1, 315] = 22.5$, $p < 0.001$); external stressors leading to overeating ($F [1, 315] = 8.73$, $p < 0.01$); mood changes leading to overeating ($F [1, 315] = 16.3$, $p < 0.001$). These differences appear to suggest that dieters placed more emphasis on a number of factors in comparison to health professionals. In

particular, in addition to lack of willpower and addiction, mood-related causes for overweight figured more highly (i.e. depression, stress, mood).

Dieters rated depression as the most important cause of overweight. Unlike health professionals, they also rated lack of willpower as very important. Socio-demographic characteristics (age, gender and socio-economic status) were seen as relatively unimportant.

In comparison to dieters, health professionals rated a person's socio-economic status ($F [1, 315] = 16.7$, $p < 0.001$), personality ($F [1, 315] = 12.8$, $p < 0.001$), and interpersonal factors ($F [1, 315] = 11.3$, $p = 0.001$), as more important in causing someone to be overweight. These differences suggest that in comparison to dieters, health professionals placed more emphasis on personality and some of the social factors associated with weight gain.

Of all the factors, health professionals rated physical inactivity as being the most important factor in causing someone to be overweight, and mood-related factors and addiction were also seen as important (but dieters rated mood and addiction as significantly more important). Interpersonal factors and personality were rated quite highly by health professionals, significantly more so than for dieters. Socio-demographic factors (despite being rated more highly by health professionals than by dieters) figured less prominently. The two physiological explanations, metabolic factors and fat cell defects were rated as least important by health professionals and significantly less important than for dieters.

One questionnaire weight level effect was found, with a person's age being seen as more important for causing someone to be moderately overweight rather than extremely overweight ($F [1, 315] = 9.61$, $p < 0.01$). In these comparisons, level effects are of less interest, as these have already been described in Chapters 3 and 4 (health professionals' perceptions of overweight people were often determined by the degree of overweight, whereas there were few level effects for dieters). Interactions of level by respondent group are more interesting, but no such interactions were observed.

Therefore, there were some differences in health professionals' and dieters' perceptions of the causes of overweight. The most and least important causes of overweight were different; dieters generally viewed mood-related items as more

important, while health professionals placed more emphasis on physical activity. However, there were also similarities in beliefs across the two groups: depression, addiction, stress, mood and physical inactivity were seen as important by both.

5.4.2 Attitudes

Table 5.4 summarises the attitude ratings for the two groups of respondents by questionnaire type.

Table 5.4: Attitude ratings by respondent and overweight questionnaire type (means ± SDs)

RESPONDENTS	HEALTH PROFESSIONALS		DIETERS		
QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	
Sec2qu1: 'are as happy as'	3.36 (1.30)	2.55 (1.12)	2.97 (1.49)	2.58 (1.51)	+++
Sec2qu2: 'feel not as good as'	3.61 (1.26)	2.73 (1.12)	3.18 (1.36)	3.14 (1.60)	++
Sec2qu3: 'are more self-conscious'	3.23 (1.13)	2.62 (1.15)	2.24 (1.26)	2.38 (1.50)	***
Sec2qu4: 'cannot be as successful workers'	4.57 (1.34)	3.81 (1.58)	4.85 (1.45)	4.47 (1.53)	** +++
Sec2qu5: 'people would not want to marry them'	4.28 (1.25)	3.19 (1.39)	4.18 (1.54)	3.85 (1.65)	+++
Sec2qu6: 'are usually untidy'	5.25 (1.17)	4.98 (1.13)	4.94 (1.56)	5.15 (1.32)	
Sec2qu7: 'are usually sociable'	3.26 (1.24)	3.09 (1.25)	3.75 (1.40)	3.51 (1.42)	**
Sec2qu8: 'are not dissatisfied with themselves'	3.16 (1.04)	2.57 (1.02)	3.14 (1.42)	2.70 (1.21)	+++
Sec2qu9: 'are as self-confident'	3.49 (1.16)	2.64 (0.94)	3.30 (1.35)	2.80 (1.40)	+++
Sec2qu10: 'feel uncomfortable to associate with'	4.81 (0.97)	4.21 (1.28)	4.60 (1.31)	4.47 (1.27)	

** = significant respondent effect, $p < 0.01$, *** = $p < 0.001$.

++ = significant questionnaire weight level effect, $p < 0.01$, +++ = $p < 0.001$

Table 5.4 (cont.): Attitude ratings by respondent and overweight questionnaire type (means ± SDs)

RESPONDENTS	HEALTH PROFESSIONALS		DIETERS		
QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	
Sec2qu11: 'are often less aggressive'	4.62 (1.14)	4.19 (1.15)	4.03 (1.27)	4.21 (1.23)	
Sec2qu12: 'have different personalities'	4.81 (1.13)	4.19 (1.23)	4.62 (1.36)	4.56 (1.36)	
Sec2qu13: 'are ashamed'	2.72 (1.19)	2.34 (1.05)	3.01 (1.50)	2.91 (1.52)	**
Sec2qu14: 'resent others'	4.35 (1.22)	4.30 (1.21)	4.13 (1.40)	4.42 (1.31)	
Sec2qu15: 'are more emotional'	4.71 (1.03)	4.70 (1.06)	4.28 (1.41)	4.11 (1.39)	***
Sec2qu16: 'can't expect to lead normal lives'	5.17 (1.14)	4.53 (1.40)	5.15 (1.35)	5.11 (1.26)	
Sec2qu17: 'are just as healthy'	2.55 (1.24)	1.62 (0.92)	3.10 (1.50)	2.58 (1.53)	*** +++
Sec2qu18: 'are just as sexually attractive'	3.29 (1.36)	2.09 (0.86)	3.44 (1.51)	3.09 (1.55)	*** +++
Sec2qu19: 'tend to have family problems'	4.52 (1.16)	3.85 (1.40)	4.59 (1.49)	4.65 (1.34)	**
Sec2qu20: 'worst thing to happen to happen to a person'	4.94 (1.27)	4.04 (1.55)	4.13 (1.71)	3.61 (1.64)	*** +++
OVERALL ATTITUDE SCORE	80.7 (12.6)	68.2 (12.2)	77.6 (10.4)	74.3 (12.0)	+++ ###

** = significant respondent effect, $p < 0.01$, *** = $p < 0.001$.

+++ = significant questionnaire weight level effect, $p < 0.001$

= significant interaction effect, $p < 0.001$

A number of respondent effects were observed. In comparison to the health professionals, dieters rated overweight people more negatively on the following items: 'are more self-conscious' ($F [1, 310] = 16.0$, $p < 0.001$); 'are more emotional' ($F [1, 310] = 11.4$, $p = 0.001$); 'worst thing to happen to happen to a person' ($F [1, 310] = 11.0$, $p = 0.001$).

Conversely, health professionals rated overweight people more negatively on the following items: 'cannot be as successful workers' ($F [1, 310] = 7.34$, $p < 0.01$); 'are

usually sociable' ($F [1, 310] = 8.13$, $p < 0.01$); 'are ashamed' ($F [1, 310] = 6.86$, $p < 0.01$); 'are just as healthy' ($F [1, 310] = 21.5$, $p < 0.001$); 'are just as sexually attractive' ($F [1, 310] = 11.9$, $p = 0.001$); 'tend to have family problems' ($F [1, 310] = 7.18$, $p < 0.01$). Therefore, health professionals viewed overweight people as less likely to be as successful workers, less sociable, more ashamed, less healthy, less sexually attractive, and more likely to have family problems.

As noted earlier, in these comparisons level effects are of less interest, as these have already been described in Chapters 3 and 4. Nevertheless, the following questionnaire weight level effects were observed, where in all cases, extremely overweight people were rated more negatively than moderately overweight people: 'are as happy as' ($F [1, 310] = 12.6$, $p < 0.001$); 'feel not as good as' ($F [1, 310] = 7.74$, $p < 0.01$); 'cannot be as successful workers' ($F [1, 310] = 10.6$, $p = 0.001$); 'people would not want to marry them' ($F [1, 310] = 16.0$, $p < 0.001$); 'are not dissatisfied with themselves' ($F [1, 310] = 12.7$, $p < 0.001$); 'are as self-confident' ($F [1, 310] = 20.1$, $p < 0.001$); 'are just as healthy' ($F [1, 310] = 19.6$, $p < 0.001$); 'are just as sexually attractive' ($F [1, 310] = 21.9$, $p < 0.001$); 'worst thing to happen to happen to a person' ($F [1, 310] = 14.5$, $p < 0.001$); and the overall attitude score ($F [1, 310] = 32.6$, $p < 0.001$).

An interaction effect was found only for the overall attitude score ($F [1, 310] = 10.9$, $p = 0.001$): health professionals viewed the extremely overweight person most negatively overall and the moderately overweight person most positively. Dieters' scores fell in between. The possible range of scores for the attitude scale is 20 to 120, with a hypothetical mid-point of 70. Using this as a benchmark, health professionals' perceptions of extremely overweight people were negative to neutral, while their views of moderately overweight people, and dieters' views of overweight people in general were neutral to positive.

Taking into account the observed differences and the greater level effects among health professionals, the overall ratings of the attitudes of health professionals and dieters share a number of similarities. Both groups gave the most positive ratings to items that described the overweight person as similar to others (can expect to lead normal lives, are not untidy, other people are comfortable to associate with them, have the same personalities, are not less aggressive, etc.). Likewise, both groups gave the most negative ratings to those items that appeared to describe self-esteem

(not as happy, more self-conscious, less self-confident, ashamed of their weight, etc.). Both groups also rated sexual attractiveness and healthiness fairly low (although health professionals rated these significantly lower).

In Chapters 3 and 4, factor analyses for both groups have been summarised. These also indicate similarities between health professionals' and dieters' views. For both groups, factors relating to social difficulties/integration and self-esteem were extracted (supporting the pattern of attitudes described above). However, third factors extracted for both groups were not so easily explained: the health professionals' third factor included the items 'resent others', 'just as healthy' and 'just as sexually attractive'. For dieters, these latter two items loaded on the self-esteem factor, suggesting that they were more closely linked to feelings of self-worth for people attempting weight loss. The dieters' third factor included 'are more self-conscious', 'feel not as good as' (both of which might be expected to load on the self-esteem factor) and 'the worst thing to happen to someone'. It is not entirely clear why these third factors do not fit neatly in terms of the pattern of attitudes described above. However, a likely explanation is the factor analysis procedure itself. Factor analysis is an imprecise method, requiring judgement in working through a series of decision rules. Although the decisions have been carefully researched, they are nevertheless somewhat arbitrary: a different set of decisions may have resulted in slightly different findings. However, it is the case that the factors with the highest eigenvalues (i.e. the first two) were the most reliable.

5.4.3 Responsibility

Table 5.5 summarises respondent ratings for the responsibility items, by questionnaire type.

Table 5.5: Responsibility ratings by respondent and overweight questionnaire type (means ± SDs)

RESPONDENTS	HEALTH PROFESSIONALS		DIETERS		
QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	MODERATE OVERWEIGHT	EXTREME OVERWEIGHT	
Sec3qu21: 'try to understand causes'	4.38 (1.10)	4.81 (1.17)	4.86 (1.38)	4.99 (1.35)	
Sec3qu22: 'motivate themselves'	4.11 (1.05)	4.45 (1.21)	4.63 (1.45)	4.80 (1.23)	**
Sec3qu23: 'seek professional advice/help'	3.43 (1.28)	4.06 (1.34)	3.92 (1.61)	4.56 (1.39)	** +++
Sec3qu24: 'recognise a problem exists'	4.10 (1.32)	4.77 (1.25)	4.77 (1.35)	4.97 (1.31)	** ++
Sec3qu25: 'recognise risk to health'	4.48 (1.29)	5.40 (0.80)	4.99 (1.22)	5.37 (1.04)	+++
Sec3qu26: 'recognise impact on others'	3.43 (1.25)	3.55 (1.27)	3.07 (1.58)	3.47 (1.59)	
Sec3qu27: 'left to be happy'	3.46 (1.20)	4.02 (1.33)	3.47 (1.54)	3.57 (1.41)	
Sec3qu28: 'recognise negative effect on others'	2.86 (1.19)	3.19 (1.26)	2.89 (1.47)	3.04 (1.35)	
Sec3qu29: 'not be socially pressured'	3.12 (1.27)	3.38 (1.23)	2.62 (1.67)	2.79 (1.44)	**
Sec3qu30: 'be accepted whatever'	1.94 (1.21)	2.15 (1.39)	1.75 (1.35)	1.81 (1.07)	
Sec3qu31: 'not be held responsible'	3.45 (1.34)	3.73 (1.38)	2.97 (1.60)	3.05 (1.36)	***
OVERALL RESPONSIBILITY SCORE	38.8 (8.43)	43.5 (8.44)	39.9 (7.47)	42.4 (7.82)	+++

** = significant respondent effect, $p < 0.01$, *** = $p < 0.001$

++ = significant questionnaire weight level effect, $p < 0.01$, +++ = $p < 0.001$

Respondent effects were found for a number of items. For the following items, in comparison to the health professionals, dieters rated overweight people as more responsible for: 'motivating themselves' ($F [1, 309] = 8.47$, $p < 0.01$); 'seeking professional advice/help' ($F [1, 309] = 8.33$, $p < 0.01$); and 'recognising a problem exists' ($F [1, 309] = 7.82$, $p < 0.01$).

For the following items, health professionals rated overweight people as more legitimate targets for: 'being socially pressured' ($F [1, 309] = 10.0$, $p < 0.01$); and 'being held responsible' ($F [1, 309] = 11.6$, $p = 0.001$).

Questionnaire type effects were observed for a number of items. In each case, the extremely overweight person was rated as more responsible for doing something about their weight than the moderately overweight person: 'seek professional advice/help' ($F [1, 309] = 13.9$, $p < 0.001$); 'recognise a problem exists' ($F [1, 309] = 7.68$, $p < 0.01$); 'recognise risk to health' ($F [1, 309] = 23.9$, $p < 0.001$); overall responsibility score ($F [1, 309] = 14.8$, $p < 0.001$). No interaction effects were found.

Despite the observed differences, there were once again similarities between the two groups of respondents. Both groups scored the following items high in terms of the overweight person having a responsibility to: understand the causes, motivate themselves to lose weight, recognise a problem exists, recognise a risk to health. Low scores for other items suggested both groups did not necessarily believe that being overweight can have a negative effect on others, and thought that overweight people should not be socially pressured to change and should be accepted as they are.

The factor analyses for each group of respondents also supported this pattern of findings. Factors for perceived responsibility and acceptance were extracted for both groups. However, for the dieters, a third factor 'affecting others' indicated that the items 'should recognise the negative effect on others' and 'recognise they may influence close others' were perceived as distinct from responsibility in general.

5.5 Discussion

A number of statistically significant differences were observed between health professionals' and dieters' beliefs and attitudes towards overweight and obesity. Therefore, hypotheses 1, 2 and 3 can not be accepted. However, health professionals and dieters also showed a number of similarities in their cognitions. These differences and similarities are summarised below.

Dieters rated depression as the most important cause, and mood-related items figured quite highly in general (response to stressors, mood changes causing overeating) along with addiction and lack of willpower. While also seen as important by health professionals, they were seen as significantly more so by dieters. Health professionals viewed physical inactivity as the most important cause (also seen as important by dieters), and viewed personality and social factors as having a significantly greater role. Weight level effects were not apparent, with similar views of the causes of moderate and extreme overweight for both groups.

The responsibility scale was comprised of at least two concepts: 'responsibility to act' and 'acceptance'. These emerged from both the item scores of respondents and the factors extracted through factor analyses. For the 'responsibility' questions, both groups scored a number of items quite highly (should try to understand the causes, should motivate themselves, should recognise there is a problem and a risk to health) indicating quite a lot of perceived responsibility among both dieters and health professionals. However, three of these four items were scored significantly higher by dieters, indicating greater perceived responsibility. Likewise, both groups scored a number of 'acceptance' items quite low, indicating beliefs that overweight people should be accepted as they are. However, health professionals scored two of these significantly higher, indicating a little less acceptance. Level effects indicated that the extremely overweight were seen as more responsible for acting than moderately overweight people, by both groups of respondents.

From the attitude ratings, both groups seemed to have a fairly positive perception that overweight people are essentially the same as others: ordinary people with ordinary lives (e.g. represented by the statements: can expect to lead normal lives, are not untidy, other people are comfortable to associate with them, have the same personalities, are not less aggressive). Likewise, both groups gave the most negative ratings to those items that appeared to describe self-esteem (not as happy, more self-conscious, less self-confident, ashamed of their weight, etc.). (Although dieters also rated overweight people as significantly more self-conscious than health professionals.) These findings are supported by the factors extracted through factor analyses. Both groups also rated sexual attractiveness and healthiness fairly low (although health professionals rated these significantly lower).

In terms of obesity stereotypes, the beliefs of the dieters appeared to be more in line with the traditional stereotype of overweight people (emotional difficulties and lack of willpower) than those of health professionals. In particular, the perception of weak will has been associated in the literature with negative attitudes (DeJong and Kleck 1986). That being the case, one may expect here that perceived lack of willpower would be associated with more negative attitudes among dieters. It could be postulated that this would be especially so for self-esteem related items, in that it would be all too easy for overweight people to blame themselves for lack of willpower if they had low self-esteem. Likewise, better perceptions may be expected among the health professionals. However, this was not demonstrably the case here.

As noted in the previous two chapters, health professionals' attitudes appeared to be more dependent than dieters on the weight level of the target. This is apparent in a number of level effects whereby the extremely overweight person was rated more negatively. However, the lack of interactions on individual items also suggested a slight tendency (but not a significant one – see Chapter 4) for dieters to be more negative towards extremely overweight people. (That is, one would expect interaction effects if health professionals rated extremely overweight people *significantly more* negatively than dieters). The respondent by weight level effect emerged most notably in a significant interaction effect for the overall attitude score. This indicates that in comparison to dieters, health professionals viewed extremely overweight people most negatively overall. Yet, the total scores indicate that even at worst, these perceptions were tending towards neutral or mixed, rather than totally negative.

The comparisons between health professionals and dieters highlighted a number of additional issues for patient-professional relations. Firstly, there were a number of notable differences in terms of the characteristics of the two groups. Such differences are an indication of those likely to occur in the consultation room, and do not detract from the comparisons of attitudes and beliefs. Dieters and health professionals appeared to have different ideas of what it means to be moderately or extremely overweight, with dieters assuming a higher weight threshold for these two categories. The Metropolitan Life Insurance tables (Metropolitan Life Insurance Company 1959, 1983) define (moderate) overweight as >10% and obesity as >20% deviation from the midpoint (average weight). This suggests that both groups have substantially underestimated the degree of weight necessary to define overweight or obesity. However, a study by Little (1998) indicates that overweight people are good at

recognising overweight, at least in themselves. Also, Eck *et al.* (1994) found that although health professionals made some mistakes in recognising obesity in patients, the mistakes were generally in the minority. Conversely, McArtor *et al.* (1991) found doctors were not very good at identifying obesity, but doctors in their study were asked to identify health risk factors in general, rather than obesity specifically, and it seems likely that this was at least partially responsible for the comparatively low identification rate.

There are at least two other explanations for the apparent discrepancy between the current findings and previous ratings for obesity. The response options for defining overweight and obesity were weighted towards the higher end of the scale. A bias for central tendency would cause the respondents to over-estimate the degree of overweight for defining moderate and extreme overweight. In future it would seem advisable to offer a balance of options at the lower end of the scale to overcome any such bias. Another explanation for the apparent error in judgement here is that the concept of percentage overweight is an abstract one, which is difficult to apply in real terms. Furthermore, the definition itself is not universally recognised. A better definition of obesity may have been to use BMI, but it is likely that this would be even more abstract and unfamiliar to dieters, and possibly even to the health professionals studied here. Another alternative would have been to use figure drawings, but this would have added extra complexity to the questionnaire design and was not recognised to be important at the time it was constructed.

As described in previous chapters, there are a number of methodological limitations with the current approach. For example, the relatively low response rate among professionals limits generalisability. Also it could be argued that dieters who attend commercial slimming groups are not necessarily the same as those who would consult health professionals about weight loss. Yet, in Chapter 4, it has been proposed that those who currently do consult health professionals are likely to be in the minority. Also, reasonable numbers (about a third) of those surveyed here had previously seen a health professional, suggesting that the current sample is a reasonable mix of those who seek outside help to lose weight, including the minority who seek professional input. Taking these factors into account, as respondents were sampled from all GPs and clinical psychologists in two health areas, and all dieters attending well known slimming clubs in overlapping areas, it is reasonable to suggest that the participants are fairly representative of practicing clinicians and dieters who seek help to lose

weight. It is highly likely, for example, that in the real world setting, more health professionals are male, and more dieters seeking outside help are female, giving the results reasonable generalisability. Nevertheless, it is worth bearing in mind that in terms of any observed differences in beliefs and attitudes, it will not be possible to disentangle the group effects (health professional or consumer) from the gender effects (male or female).

Another limitation is the type of data collected in order to make a direct comparison between providers and consumers. Because of the aim to carry out this direct comparison, dieters were asked for their views of overweight people. This is not necessarily the same as asking them about their own views of themselves as overweight people and 'consumers' of health care. Nevertheless, views did not differ markedly across the sample in terms of dieters who had achieved normal weight levels and overweight and obese dieters, and it seems reasonable to suggest that when commenting on overweight people, most of the sample will have identified with the overweight role themselves. The direct comparison may also have precluded the use of items that may have been more directly salient to overweight people.

In previous chapters it has been argued that the perceptions of health professionals towards overweight and obese people may not be as negative as expected from previous commentaries in the literature. This reasoning is apparently supported by the current findings: in comparison to dieters' views, health professionals' views are not especially negative (although they are apparently more negative towards obese people). However, it can also been argued that the methods used are not sensitive enough to tap into the negative views of either dieters or health professionals, so that negativity may have been underestimated. Shortcomings in the instruments may explain, for example, the apparent discrepancy that health professionals rated personality as more important in causing overweight than dieters do, but then rated overweight people as having the 'same personalities as others' in the attitude scale. In determining the degree of prejudice among professionals, alternative methods may be more reliable. For example, in future studies it would be helpful to explore direct comparisons of attitudes towards normal weight and overweight people in simulated or real life settings. In attempting to explain variations in practice with overweight people, it would useful to assess the impact of reported attitudes on practice, by incorporating a measure of behaviour. This issue is addressed in more detail in Chapter 6.

Bearing in mind the methodological limitations, the current approach aims to describe the broad findings that may be useful in exploring how to improve cognitions and practice among health professionals, in line with Marteau's (1995) framework. For example, similarities and differences in the cognitions of health professionals and dieters could be used to inform the training of health professionals in their approach to overweight and obese patients. It is important that any training of professionals on obesity provides accurate information on the causes and effective treatments. In addition, addressing attitudes could helpfully be one part of a comprehensive, multi-component package to improve practice. One aim would be to elicit a more humanistic and compassionate approach to obesity practice, as opposed to an avoiding or victim-blaming approach that some commentators suggest is widespread (e.g. Frank 1993). To this end, the similarities in perceptions of both providers and consumers of health care may be used to engender feelings of commonality, rather than opposition, in the consultation room. It appears that both groups recognised the importance of physical inactivity in weight gain, and this recognition could be exploited to suggest acceptable methods of integrating increased activity into patients' lives. In addition, acknowledgement that mood, self-esteem and personal responsibility are important factors for overweight people may help professionals to be more understanding of patients. Following on from this, it would seem to be important to provide health professionals with guidance on how to approach esteem and mood matters with patients. The underlying rationale is that empathic communication to patients of issues important to them may cause them to feel understood and accepted, and more inclined to accept messages given out by health professionals.

Noticeably, health professionals appeared to view the level of severity more seriously than dieters and view extremely overweight (obese) people more negatively than moderately overweight people. This would be an important issue to tackle in attempting to improve perceptions and practice. One means of approaching this with providers would be to emphasise the perceptions of 'ordinary people' demonstrated more at the moderate level and suggest that overweight people themselves do not necessarily see such clear distinctions by level of severity, that the degree of overweight is somewhat arbitrary to them. Thus, health professionals may be encouraged to acknowledge and explore their own cognitions about overweight severity and its implications for the approach to treatment – to differentiate the valid (increased health risks), from the less valid (perceptions of personality or

psychological problems). Thus, firstly, appropriate weight-related treatments can be determined. Health professionals can be trained in appropriate approaches for overweight *and* obesity and tailor their approach accordingly. Secondly, although their existence can not be *assumed* from the current evidence, unhelpful attitudes may be explored and sensitively challenged. Health professionals may be encouraged to consider how their cognitions may influence their behaviour and relations with patients. One example may be that a negative approach may deter extremely overweight people (those at greatest risk) from coming forward or maintaining treatment. Furthermore, as outlined by Stunkard and Wadden (1992), due to the social pressures upon them, obese people may need to be treated with an extra degree of compassion if they are to be motivated to seek help.

6. Dietitians' views and reported weight management practices

6.1 Introduction

In the literature review in Chapter 2, it has been pointed out that most attitude theorists appear to agree that there is some relationship between attitudes and behaviour (e.g., Allport 1935; Rosenberg and Hovland 1960; Campbell 1963; Fishbein and Ajzen 1975). However, the role of beliefs is more debatable, with some theorists suggesting these should be viewed as distinct from the attitude concept (the unidimensional model – Petty and Cacioppo 1981) and others viewing them as an important constituent of the attitude concept (the three-component view – Rosenberg and Hovland 1960). Indeed, it can sometimes be difficult to distinguish between beliefs and attitudes, as beliefs often include an implicit or explicit evaluative component (Eagley and Chaiken 1993). Prejudice theorists tend to assume a close relationship between stereotypes (beliefs), prejudice (negative attitudes) and discrimination (behaviour), to the point that the three terms are often used interchangeably (Deaux *et al.* 1993). Likewise, within the general obesity attitudes literature, negative beliefs and attitudes have been assumed to increase the likelihood of discriminatory behaviours towards obese people, although cognitions have generally been studied separately from behaviour. With all three approaches, the degree of consistency or overlap between the concepts of beliefs, attitudes and behaviour is not clear.

In Chapters 3 and 4, the beliefs of health professionals and dieters were explored with a view to describing the key beliefs that may underpin the obesity stereotype and related attitudes for the two groups. The present study explores the beliefs, attitudes and behaviours of dietitians towards overweight and obese people, and then attempts to shed light on the relationship between the three concepts. Thus, in terms of Marteau's (1995) framework, health professionals' behaviours and the selection of medical treatments and procedures are considered, along with their relationship to health professionals' cognitions.

6.2 Objectives

The study addressed the questions: (i) what are the cognitions and reported practices of dietitians in relation to overweight and obesity? and (ii) what is the relationship

between dieters' cognitions and reported practices? Therefore, the main aims of the study were to (i) explore the beliefs, attitudes and practice of dietitians in relation to (moderately) overweight and extremely overweight (obese) people, and (ii) to examine whether there is any association between dietitians' beliefs, attitudes and reported practice in relation to overweight obesity. The study addressed the following hypotheses:

1. Dietitians' beliefs about the causes of overweight are not influenced by the level of severity of overweight (moderate or extreme).
2. Dietitians' beliefs about the responsibility of overweight people are not influenced by the level of severity of overweight (moderate or extreme).
3. Dietitians' attitudes are not explained in terms of their beliefs about overweight.
4. Dietitians report more negative attitudes towards obese people than moderately overweight people.
5. Dietitians report less favourable practices in relation to obese clients than moderately overweight clients.
6. Dietitians reporting more negative attitudes towards overweight people also report less favourable practices.

N.B., Less favourable dietitians' practices are described in terms of: acceptance of fewer clients; reduced times in consultation; fewer appointments per client; appointments more widely spaced; more likely to advise eating less in general; less likely to advise on physical activity; less likely to offer social and psychological advice; more likely to refer to self-help groups; less likely to record weight regularly; less likely to keep self informed about evidence; less likely to tailor approach to clients' needs; less likely to think dietitians should be involved in management; less likely to want to work within a multidisciplinary approach; more likely to think other professions should take responsibility for practice; less confident about treating.

6.3 Methods

6.3.1 Participants

Two hundred and ten NHS dietitians were randomly selected from NHS dietitians on the British Dietetic Association (BDA) mailing list. A further 68 questionnaires were handed out at a BDA conference, to dietitians who worked clinically (rather than, for example, research or management only). Questionnaires that were handed out were

given to dietitians to complete themselves, or to pass on to colleagues who also worked in a clinical setting.

6.3.2 Design

The survey employed an independent measures design, so that dietitians were allocated to receive one of two questionnaires, about either 'overweight' or 'obesity'. All questionnaires were distributed with a covering letter requesting their help, explaining the survey and assuring confidentiality. The covering letter for the overweight condition included a definition of overweight as BMI 25 to 30. The questionnaire for the obesity condition included a definition of obesity as BMI of 30 or more. In an attempt to promote response rates, several strategies were incorporated: the letter was written on University-headed paper, in the hope that it would give some authority to the source. Also, in addition to the lead investigator, the survey was endorsed by two State Registered Dietitians well known in the dietetics community (Dr. Sara Kirk and Dr. Carolyn Summerbell). Furthermore, each participant was provided with a pre-paid, addressed envelope in which to return his or her questionnaire. Two reminder letters were used, the second of which included a further copy of the relevant questionnaire and another pre-paid envelope.

Participation was entirely voluntary and therefore consent was implicit in the return of completed questionnaires.

6.3.3 Materials

The questionnaire was developed to explore dietitians' beliefs, attitudes and practice in relation to overweight or obese people. Unlike the surveys described in earlier chapters, the terms 'overweight' and 'obesity' were used in all correspondence in preference to 'moderately overweight' and 'extremely overweight', since advice received from dietetic colleagues suggested that dietitians would be more familiar and comfortable with these terms. (N.B. As in previous chapters, the term 'overweight' is also used generically in this chapter, when a distinction is not made for the level of severity.) Two corresponding versions of the questionnaire were developed in a parallel format, so that the items in each were the same apart for words defining the weight level. Each questionnaire incorporated the following sections: demographic and background characteristics of respondents; beliefs about the causes of overweight; attitudes towards overweight people; perceptions of responsibility of the

overweight person; and reported clinical management practices. The sections were developed according to the descriptions given below.

1. *Beliefs about the causes of overweight.* In the previous surveys of health professionals and consumers reported in Chapters 3 and 4, respectively, a section was included to explore participants' perceptions of the causes of moderate or extreme overweight. These questions were devised using Bray *et al.*'s (1992) survey of causative factors of obesity and Allison *et al.*'s (1991) Beliefs About Obese Persons (BAOP) scale. However, one of the specific purposes of the dietitians' survey was to ask questions on reported practice. Therefore, in the interest of brevity, the number of items in this section was reduced from the original 15, to nine. These items were selected on the basis of providing a fair representation of the full list, while also attempting to avoid repetition. For example, earlier items 'depression', 'mood' and the response to 'external stressors' were represented by a single item on mood. 'Gender', 'socio-economic' and 'age' items were removed since the existing questionnaire layout offered no opportunity to specify the direction of this effect (male or female, lower or higher, younger or older), and thus were perceived to be of more limited use than some of the other items. However, one item that did not appear in the previous version was added, since its omission in the original was perceived to be an oversight ('eating too much of the wrong foods'.) The final ten items were thought to offer a fair representation of the possible perceptions of the causes of obesity based on the literature review.

2. *Attitudes towards the overweight person.* This section used Allison *et al.*'s (1991) Attitudes Towards Obese Persons (ATOP) scale, as in previous chapters. Although a reduction in the length of the scale was considered for the same reasons as described above, the scale was eventually included in its entirety. Unlike the items within the causative factors section, the items in this section were to be combined as a scale, and the factor structure of the scale reported in previous chapters may have been compromised if individual items were removed.

3. Perceptions of responsibility of the overweight person. The original eleven-item scale was also included in its entirety for the reasons described above.

Sections 2 (attitudes) and 3 (responsibility) of the original questionnaire were combined for this survey for the purposes of shortening the overall length of the questionnaire. However, they were treated as separate scales for the data analysis.

As with the previous surveys, for each of the above three sections of the questionnaire, a six-point Likert scale was used for respondents to indicate their level of agreement with each statement. (For the beliefs about causes items, 1 = not important, 6 = extremely important. For the attitudes and responsibility scales, 1 = strongly disagree, 6 = strongly agree).

4. Reported overweight and obesity management practices. The final section of the questionnaire focused on dietitians' weight management practices. These questions were adapted from Cowburn and Summerbell's (1998) survey of Heads of Dietetics Services and of the BDA Freelance Register. Further ideas were taken from work by Hoppe and Ogden (1997) and Ogden and Hoppe (1997) on practice nurses' obesity management. Other items were added with a view to identifying a range of specific dietetic behaviours that may be more or less beneficial to overweight clients. This section, therefore, included specific questions on practice, as well as a number of statements with which dietitians were asked to agree or disagree, or indicate the frequency of particular practices, using a six-point Likert scale (1 = strongly disagree/never, 6 = strongly agree/always).

In order to accommodate the possibility that not all of those surveyed would treat overweight or obese people at that time, two sets of corresponding practice questions were developed – each dietitian responded to one set of questions only. For those currently involved in weight management, questions were asked about real practice (i.e., 'what *do* you do?'). These dietitians were also asked two extra questions: 'of the overweight/obese clients referred to you, how many do you accept for management?' and 'approximately how many different overweight/obese clients have you seen in the past year?'. For those not currently involved in weight management, the questions asked about hypothetical practice (i.e., 'what *would* you do?'). Dietitians completing these questions also responded to one additional point: 'please indicate why you do not treat overweight/obese clients'. The practice items of the questionnaire are given in **Appendix 6.1**.

Questionnaires distributed at the BDA conference included a covering letter (one A4 page), a questionnaire (nine A4 pages, of which each dietitian completed six pages only) and a pre-paid, addressed envelope. Posted questionnaires included the same information distributed in an A4, brown manila envelope.

6.3.4 Procedure

Questionnaires were handed or posted out by alternate allocation, so that half the dietitians received questionnaires about overweight people, and the other half about obesity. Questionnaires were distributed at the annual BDA conference in Harrogate, late June 1999. Postal questionnaires were also sent out at the end of June. Reminder letters were targeted at non-responders to the postal survey, only. The first reminder letter was sent at the beginning of July, the second in mid-July.

6.3.5 Data analysis

SPSS for Windows was used to create a database, and for statistical analysis. To test for differences in demographic and background characteristics of respondents to the two types of questionnaire, chi squared tests and independent t-tests were used for categorical and continuous data, respectively.

A similar approach was used to ascertain whether the mode of questionnaire delivery (handed out *vs.* posted) had any implications for the types of respondents and their answers to the various components of the questionnaire. Likewise, tests were undertaken to establish whether dietitians who were involved in weight management were different to dietitians who were not (i.e. real practice *vs.* hypothetical practice), both in terms of their background characteristics, and their responses to the different sections of the questionnaire. Few differences were found for these comparisons (these have been noted in the relevant sections). Therefore the data from these different types of respondents were combined to answer the main questions.

To test for level of severity effects (overweight *vs.* obesity) in the responses of dietitians to the various sections of the questionnaire, chi squared tests and independent t-tests were once again used for categorical and continuous data, respectively.

Principle components analyses with oblique (oblimin) rotation were undertaken separately on the attitude and responsibility scales, to once again determine the factor structure of the scales. The extracted factors were used as variables in the analyses of associations between beliefs, attitudes and practices, along with the total scores, since the total scale may be more than the sum of its parts (factors).

To test whether reported practice was influenced by beliefs and attitudes, stepwise linear multiple regression analyses were undertaken, with individual practice items (in turn) as the dependent variable, and the causative factor items, total attitude score, attitude factor scores, total responsibility scores, and responsibility factor scores as the independent variables. To test whether attitudes were influenced by beliefs, stepwise linear multiple regression analyses were undertaken with the total attitude score and attitude factor scores (in turn) as the dependent variable, and the causative factor items, total responsibility score and responsibility factor items as the independent variables. As in the preceding analyses, attitudes were found to be more negative towards obese people than overweight people, these analyses were undertaken separately for the two groups of respondents.

To take into account the number of statistical procedures undertaken, to avoid the possibility of Type I errors, the level of significance was again raised to 1%.

6.4 Results

6.4.1 Summary of the characteristics of respondents

Two hundred and seventy eight questionnaires were distributed in all. Of these, 210 were posted out, and 158 were returned from the postal survey, giving a response rate of 75.2%. Sixty-eight questionnaires were handed out at the conference, and 29 were returned by this group, giving a response rate of 42.6%. It is not possible to know how many of the questionnaires handed out at the conference were actually passed on to colleagues as intended, and therefore how many dietitians actually received a questionnaire. However, if it is assumed that all distributed questionnaires were received by a dietitian, the overall response rate (handed out and posted combined) was 67.3%.

Table 6.1 summarises the characteristics of the respondents according to questionnaire type.

Table 6.1: Demographic and background details of dietitians by questionnaire type

	QUESTIONNAIRE TYPE	
RESPONDENTS	OVERWEIGHT	OBESITY
N (%)	95 (50.8)	92 (49.2)
Gender:	(1 missing)	(1 missing)
F:N (%)	92 (96.8)	87 (94.6)
M:N (%)	2 (2.1)	4 (4.3)
Age: mean (SD)	36.9 (7.76)	38.0 (7.79)
Ethnic origin:	(4 missing)	(5 missing)
White, British, Caucasian or European: N (%)	90 (94.7)	86 (93.5)
Asian: N (%)	0 (0)	0 (0)
Chinese or oriental: N (%)	1 (1.1)	1 (1.1)
Black: N (%)	0 (0)	0 (0)
Other: N (%)	0 (0)	0 (0)
Height/m: mean (SD)	1.64 (0.06)	1.66 (0.08)
Weight/kg: mean (SD)	60.2 (7.18)	62.7 (8.42)
BMI: mean (SD)	22.3 (2.27)	22.8 (2.71)
Responses from postal survey: N (%)	79 (83.2)	79 (85.9)
Responses from questionnaires handed out at conference: N (%)	16 (16.8)	13 (14.1)
Practice:		
Actual: N (%)	72 (75.8)	72 (78.3)
Hypothetical: N (%)	23 (24.2)	20 (21.7)
Years in profession: mean (SD)	12.4 (6.81)	13.0 (8.09)
Job title:	(4 missing)	(2 missing)
Basic grade dietitian: N (%)	4 (4.2)	4 (4.3)
Senior dietitian: N (%)	59 (62.1)	61 (66.3)
Manager or head of department or service: N (%)	6 (6.3)	4 (4.3)
Chief dietitian: N (%)	20 (21.1)	18 (19.6)
Other: N (%)	2 (2.1)	3 (3.3)
Setting:	(3 missing)	
Hospital/acute: N (%)	38 (40.0)	41 (44.6)
Community: N (%)	19 (20.0)	18 (19.6)
Primary care: N (%)	6 (6.3)	7 (7.6)
More than one setting: N (%)	21 (22.1)	19 (20.7)
Other: N (%)	8 (8.4)	7 (7.6)

It can be seen from **Table 6.1** that the characteristics of dietitians responding to the two types of questionnaires were very similar. No statistically significant differences were found.

Tests for differences undertaken for the characteristics and responses of those handed out questionnaires *vs.* those responding to the postal survey indicated no differences in demographic or background characteristics. Only one difference was found in responses across the whole questionnaire (beliefs about causes, attitudes, perceptions of responsibility and reported practice), for 'lack of willpower'. This difference is reported in the causative factors section below.

Tests for differences undertaken for those reporting real *vs.* hypothetical practice indicated no significant differences in background characteristics, beliefs about causes, attitudes or perceptions of responsibility. There were a few differences in reported practice, which are given in the practice section below.

6.4.2 Causative factors

Table 6.2 gives the responses of participants to the causative factor items, according to questionnaire type. A higher score indicates more agreement with the statement that each factor contributes to a person being overweight or obese. There were no significant differences between the beliefs about the causes of overweight and those for obesity.

Physical inactivity was rated as the most important causative factor by both groups, with eating too much of the wrong foods, mood changes, repeated dieting and interpersonal factors also rated highly. Lack of willpower, food addiction, personality and genetic factors were all rated as somewhat important. Metabolic defects were viewed as least important of all. This pattern of beliefs is similar to those reported for health professionals in Chapter 3, with the exception that dietitians' appeared to place more emphasis on repeated dieting.

Table 6.2: Causative factor ratings by questionnaire type (means ± SDs)

QUESTIONNAIRE TYPE	OVERWEIGHT	OBESITY
Lack of willpower	4.22 (1.12)	3.88 (1.29)
Food addiction	3.64 (1.21)	3.77 (1.27)
Physical inactivity	5.41 (0.78)	5.32 (0.88)
Mood changes, leading to overeating	4.61 (0.94)	4.68 (1.03)
Genetic	3.37 (1.24)	3.77 (1.12)
Metabolic defects	2.64 (1.21)	2.87 (1.43)
Repeated dieting (weight cycling)	4.53 (1.02)	4.64 (0.82)
Personality	3.77 (1.20)	3.67 (1.22)
Interpersonal factors (e.g. familial/peer influence)	4.32 (0.98)	4.58 (0.97)
Eating too much of the wrong foods	5.01 (0.91)	4.92 (0.92)

6.4.2.1 Posted *vs.* handed out questionnaires

The only significant difference for the whole questionnaire, between handed out questionnaires and. those posted, was for 'lack of willpower', mean posted = 4.17± 1.21, mean handed out = 3.43 ± 1.07 (t [182] = 3.03, $p < 0.01$). Thus, those responding to the postal questionnaire thought willpower was more important in causing overweight or obesity than those who were handed out questionnaires at the conference. It is conceivable that this difference is due to the specialist nature of dietitians attending the conference.

6.4.3 Attitudes

Table 6.3: Attitude ratings (means ± SDs)

	QUESTIONNAIRE TYPE	
QUESTIONNAIRE ITEM	OVERWEIGHT	OBESITY
Sec2qu1: 'are as happy as'	3.28 (1.07)	3.38 (1.36)
Sec2qu2: 'feel not as good as'	3.65 (1.05)	3.35 (1.12)

Table 6.3 (cont.): Attitude ratings (means ± SDs)

	QUESTIONNAIRE TYPE		
QUESTIONNAIRE ITEM	OVERWEIGHT	OBESITY	
Sec2qu3: 'are more self-conscious'	2.98 (1.01)	2.75 (1.03)	
Sec2qu4: 'cannot be as successful workers'	5.01 (1.11)	4.48 (1.39)	**
Sec2qu5: 'people would not want to marry them'	4.69 (1.22)	4.18 (1.25)	**
Sec2qu6: 'are usually untidy'	5.32 (1.11)	5.38 (0.93)	
Sec2qu7: 'are usually sociable'	3.46 (0.90)	3.34 (1.00)	
Sec2qu8: 'are not dissatisfied with themselves'	3.14 (0.96)	2.88 (0.95)	
Sec2qu9: 'are as self-confident'	3.27 (0.94)	3.00 (0.97)	
Sec2qu10: 'feel uncomfortable to associate with'	5.06 (1.03)	4.58 (1.19)	**
Sec2qu11: 'are often less aggressive'	4.62 (0.88)	4.51 (1.06)	
Sec2qu12: 'have different personalities'	4.86 (1.04)	4.66 (1.08)	
Sec2qu13: 'are ashamed'	3.12 (1.11)	2.60 (1.03)	***
Sec2qu14: 'resent others'	3.91 (1.15)	4.05 (1.02)	
Sec2qu15: 'are more emotional'	4.51 (1.02)	4.36 (1.07)	
Sec2qu16: 'can't expect to lead normal lives'	5.54 (0.83)	5.12 (1.19)	**
Sec2qu17: 'are just as healthy'	2.42 (1.04)	1.96 (0.98)	**
Sec2qu18: 'are just as sexually attractive'	3.49 (1.11)	3.10 (1.24)	
Sec2qu19: 'tend to have family problems'	4.57 (0.97)	4.44 (1.13)	
Sec2qu20: 'worst thing to happen to happen to a person'	5.14 (1.02)	4.73 (1.27)	
OVERALL ATTITUDE SCORE	82.0 (9.48)	76.8 (10.9)	***

** = significant questionnaire type effect, $p < 0.01$, *** = $p <$ or $= 0.001$.

Attitude item mean scores and total attitude score mean, for each questionnaire type are given in **Table 6.3.** In comparison to overweight people, obese people were thought to be less likely to be as successful workers ($t\ [172] = 2.84$, $p < 0.01$, unequal variances); that other people were less likely to want to marry them ($t\ [183] = 2.84$, $p <$

0.01); that people would be more likely to feel uncomfortable to associate with them (t [183] = 2.95, p < 0.01); that they were more likely to be ashamed of their weight (t [183] = 3.25, p = 0.001); that they can not expect to lead normal lives (t [160] = 2.79, p < 0.01, unequal variances); and that they are less healthy (t [183] = 3.14, p < 0.01). Thus, the total attitude score showed that attitudes towards obese people were significantly more negative (t [183] = 3.46, p = 0.001). Once again, like the health professionals surveyed in Chapter 3, obese people were viewed more negatively than overweight people.

It is worth noting however, that with the exception of 'ashamed' and 'healthy', these items for which significant differences were found were among the most highly rated ones, indicating the most positive attitudes. In fact, in line with the findings of the previous studies reported in Chapters 3 and 4, the items that were rated most highly were generally all those describing overweight or obese people without social difficulties, as ordinary people with ordinary lives. Therefore, while obese people were viewed as having slightly more social difficulties, both groups were seen relatively favourably. Also like the previous studies, the items rated most negatively were those that appeared to summarise perceptions of reduced self-esteem. Likewise, sexual attractiveness was not rated very highly, and 'healthiness' was rated lowest of all. Once again, results of the factor analysis supported these apparent groupings. The analysis of the attitude scale extracted three factors, accounting for 43.0% of the variance: 'Self-esteem', 'Social difficulties/integration' and 'Attractiveness/Personal appeal' (see **Appendix 6.1.1**).

6.4.4 Responsibility

Responsibility item mean scores and total responsibility score mean for each questionnaire type are given in **Table 6.4.** In the studies reported in Chapters 3 and 4, factor analyses extracted at least two factors for this scale: responsibility to act and acceptance. With the ratings in **Table 6.4**, a higher score indicates more agreement with the statement, thus this can be seen as higher perceived responsibility or lower acceptance.

Table 6.4: Responsibility ratings (means ± SDs)

	QUESTIONNAIRE TYPE		
QUESTIONNAIRE ITEM	OVERWEIGHT	OBESITY	
Sec2qu21: 'try to understand causes'	4.57 (1.26)	4.92 (0.97)	
Sec2qu22: 'motivate themselves'	4.22 (1.15)	4.45 (1.15)	
Sec2qu23: 'seek professional advice/help'	3.78 (1.27)	4.58 (1.09)	***
Sec2qu24: 'recognise a problem exists'	4.51 (1.28)	4.95 (1.01)	
Sec2qu25: 'recognise risk to health'	4.82 (1.19)	5.45 (0.67)	***
Sec2qu26: 'recognise impact on others' behaviour'	3.54 (1.40)	4.13 (1.27)	**
Sec2qu27: 'left to be happy'	3.77 (1.10)	3.74 (1.10)	
Sec2qu28: 'recognise negative effect on others'	2.61 (1.17)	3.10 (1.10)	**
Sec2qu29: 'not be socially pressured'	2.91 (1.16)	2.98 (1.34)	
Sec2qu30: 'be accepted whatever'	1.85 (0.92)	1.82 (1.06)	
Sec2qu31: 'not be held responsible'	3.74 (1.13)	3.24 (1.40)	**
OVERALL RESPONSIBILITY SCORE	40.3 (7.81)	43.3 (6.57)	**

** = significant questionnaire type effect, $p < 0.01$, *** = $p < 0.001$.

In comparison to overweight people, obese people were rated as more responsible for: seeking professional advice and help ($t [184] = -4.60$, $p < 0.001$); recognising a risk to their health ($t [147] = -4.42$, $p < 0.001$, unequal variances); recognising that being obese may influence close others' behaviour ($t [184] = -2.99$, $p < 0.01$); recognising a negative effect on others ($t [184] = -2.90$, $p < 0.01$). Thus, obese people were rated as more responsible overall ($t [184] = -2.83$, $p < 0.01$). However, in contrast, obese people were rated significantly lower for the more global responsibility item 'should not be held responsible' ($t [174] = 2.71$, $p < 0.01$, unequal variances).

The items rated most highly in this section were those that indicated the overweight or obese person was seen as responsible for acting on his or her situation. There was

some inconsistency amongst the 'acceptance' items, so that the item 'should be left to be happy as they are' was rated quite highly (indicating less acceptance), while the item 'be accepted whatever' was rated lowest of all (indicating high acceptance). Dietitians also rated quite highly the possibility that being overweight or obese might have a negative influence on close others and cause them to become overweight also, but did not necessarily consider that being overweight could have a generalised negative effect on others. As in the previous study of health professionals in Chapter 3, factor analysis extracted two factors for the responsibility scale: 'Responsibility to act' and 'Acceptance'. These accounted for 51.0% of the variance (see **Appendix 6.1.2**). These factors indicated that the responsibility items grouped well together, although there was a little more ambiguity for the 'Acceptance' factor.

6.4.5 Reported practice

Table 6.5 gives the means and standard deviations for the scale practice items according to questionnaire type. Only two significant differences were found. Respondents were more likely to think dietitians should be involved in obesity management than overweight management ($t\ [185] = -3.92$, $p < 0.001$), and were more likely to prefer it if other health professionals were responsible for the treatment of overweight in comparison to obesity ($t\ [184] = 2.69$, $p < 0.01$). This indicates that dietitians saw the merit in obesity treatment more than in overweight treatment.

Dietitians in the two groups saw similar amounts of people, scheduled on average about half an hour for a new client appointment, scheduled about four additional appointments of around 15-20 minutes each, and had a preference for particular types of advice on: physical activity, general social and psychological issues and the proportion of fat in the diet. Advice on eating or avoiding specific foods and eating less in general were also popular management options. Advice on calorie controlled food intake was less likely, although still reportedly used some of the time. The provision of diet sheets was rated as a frequent choice, but recipes were viewed somewhat less favourably. Referral on to a self-help group was sometimes used, but referral on to other health professionals was reported as more likely.

Table 6.5: Practice items – scale data (means ± SDs)

	QUESTIONNAIRE TYPE		
QUESTIONNAIRE ITEM	OVERWEIGHT	OBESITY	
How many different new clients have you seen in the past year? (real practice only)	117 (146)	130 (157)	
How much time do/would you allocate for a new appointment?/mins.	33.7 (10.77)	34.1 (11.85)	
After the first appointment, how many additional appointments do/would you offer?	3.59 (1.69)	4.31 (3.10)	
How much time do/would you routinely offer for additional appointments?/mins.	17.3 (7.50)	17.1 (7.33)	
Advice or guidance on:			
Calorie controlled food intake	3.14 (1.55)	2.98 (1.57)	
Proportion of fat in the diet	4.98 (1.19)	4.80 (1.32)	
Eating/avoiding specific foods	4.57 (1.32)	4.21 (1.49)	
Eating less in general	4.24 (1.23)	4.40 (1.32)	
Physical activity	5.43 (0.77)	5.31 (0.77)	
General social and psychological issues	5.14 (1.01)	5.09 (1.00)	
Provision of diet sheets	4.85 (1.24)	5.01 (1.16)	
Provision of recipes	3.10 (1.18)	2.76 (1.40)	
Referral on to self-help group	2.56 (1.19)	2.53 (1.32)	
Referral on to other health professional/s	3.01 (1.08)	3.08 (1.15)	
I (would) regularly record the weight of each person	5.43 (0.90)	5.32 (1.15)	
I (would) keep myself informed about research on treatments	4.84 (0.96)	5.12 (1.07)	
I (would) tailor my approach to what the client wants	5.08 (0.92)	5.18 (0.85)	
I would be/am confident in counselling obese people about weight loss	4.80 (0.93)	4.52 (1.33)	
I (would) make sure I spend time developing a good relationship with clients	5.09 (0.93)	4.95 (1.21)	
I believe dietitians should be involved in obesity management	4.65 (1.19)	5.27 (0.95)	***
The best way for me to treat would be/is as part of a multi-disciplinary team	4.73 (1.17)	5.07 (1.13)	
I would prefer it if other health professionals were responsible for treating	2.46 (1.16)	1.98 (1.29)	**

** = significant questionnaire type effect, $p < 0.01$, *** = $p <$ or $= 0.001$.

In general, dietitians reported high agreement with the statements: 'I do/would record weight regularly'; 'I do/would keep myself informed about research'; I do/would tailor treatments to fit in with what the client wants'; 'I am/would be confident in counselling clients on weight loss'; 'I do/would make sure I spend time developing a good relationship with my clients'; 'I believe dietitians should be involved in obesity management'; and 'the best way for me to treat is as part of a multidisciplinary team'. There was general disagreement for the statement: 'I would prefer it if other health professionals were responsible for treating instead of dietitians'.

Table 6.6 gives the proportions of respondents for each questionnaire type providing responses to various treatment options. It can be seen from that responses were very similar for both groups, and accordingly there were no significant differences for the two types of questionnaire.

Dietitians in both groups reported treating similar numbers of clients referred to them. Those responding to the hypothetical questions reported not treating for the same reasons (they worked in a different area or were not referred overweight or obese clients). About half scheduled appointments monthly or at intervals of between one and two months, although a fair proportion also said it depended on the client (approximately 17%). Most (between 60% and 70%) reported seeing clients only on an individual basis, although between 20% and 30% saw clients both individually or as part of a group. About 30% did not have a management protocol, with the rest having a protocol or one was being developed.

Table 6.6: Practice items – categorical data: N (%)

	QUESTIONNAIRE TYPE	
QUESTIONNAIRE TYPE	MODERATE OVERWEIGHT	OBESITY
How many overweight/obese clients do you accept for management? (real practice only)		(1 missing)
Some	13 (13.7)	13 (14.1)
All	59 (62.1)	59 (64.1)
N/A	23 (24.2)	19 (20.7)
Why do you not treat? (hypothetical practice only) [1]		(1 missing)
Work in a different area	16 (16.8)	16 (17.4)
Not referred any	3 (3.2)	1 (1.1)
Other	4 (4.2)	1 (1.1)
N/A	72 (75.8)	73 (79.3)
How often do/would you offer additional appointments?	(3 missing)	(4 missing)
More than once a week	0 (0)	0 (0)
Every week/once a week	2 (2.1)	1 (1.1)
Between once a week and once a month	8 (8.4)	8 (8.7)
Every month/once a month	27 (28.4)	26 (28.3)
Between once a month and once every two months	26 (27.4)	20 (21.7)
Every two months	6 (6.3)	7 (7.6)
Less than every two months	4 (4.2)	7 (7.6)
'It varies'	17 (17.9)	16 (17.4)
N/A (i.e. do/would not offer additional appointments)	2 (2.1)	3 (3.3)
On what basis do/would you see clients? [1]	(1 missing)	(2 missing)
Always on an individual basis	59 (62.1)	64 (69.6)
Once individually and then with a group	1 (1.1)	3 (3.3)
Always as part of a group	1 (1.1)	0 (0)
Both on an individual and group basis	29 (30.5)	22 (23.9)
Other	4 (4.2)	1 (1.1)
Do/would you have a protocol for management?	(3 missing)	(1 missing)
No	32 (33.7)	27 (29.3)
Yes	42 (44.2)	39 (42.4)
Currently being developed (real practice only)	18 (18.9)	25 (27.2)

[1] = Too few numbers in categories for meaningful statistical comparisons

6.4.5.1 Real *vs.* hypothetical practice

Tests for differences were also undertaken for the responses of those describing their real practice *vs.* those describing hypothetical practice. It is reasonable to expect differences in real and imagined practice, and yet such differences were few. They

are listed in **Table 6.7** below. These differences indicated that the hypothetical group were more likely to: refer on to a self help group (t [183] = -5.90, p < 0.001); refer on to other health professionals (t [183] = -2.90, p < 0.01); suggest that they would keep themselves informed about research on treatments (t [184] = -2.96, p < 0.01); and prefer it if other health professionals would treat' (t [183] = -3.32, p = 0.001).

Table 6.7: Differences in reported real *vs.* hypothetical practice (means ± SDs)

	REAL PRACTICE	HYPOTHETICAL PRACTICE	
Referral on to self help group	2.26 (1.09)	3.43 (1.27)	***
Referral on to other health professional/s	2.92 (1.13)	3.48 (0.94)	**
I (would) keep myself informed about research on the effectiveness of different treatments for ...people	4.86 (1.06)	5.38 (0.79)	**
I would prefer it if other health professionals were responsible for treating ...clients instead of dietitians	2.05 (1.13)	2.75 (1.44)	***

** = significant practice effect, p < 0.01, *** = p < or = 0.001.

For the categorical data, there were insufficient numbers to perform meaningful analysis on a couple of practice items. There were some apparent differences for these items: (i) the basis upon which clients were/would be seen – 74.3% in the real practice group responded 'only on an individual basis' and 20.8% said 'both in a group and individually', while the corresponding figures for the hypothetical group were 37.2% and 48.8%; and (ii) 'do/would you have a protocol?' – 61.2% in the real practice group said they had a protocol or one was being developed, while in the hypothetical group, 83.7% said they would have a protocol.

It could be argued that these differences indicate a mixed pattern of practice, not necessarily those which are universally more favourable in the hypothetical group. For example, being more likely to refer on to a self-help group and preferring other health professionals would treat might seem comparatively negative responses, while keeping oneself informed on research and having a protocol are comparatively favourable practices.

6.4.6 The associations between beliefs, attitudes and practice

6.4.6.1 Is practice influenced by beliefs and attitudes?

Stepwise linear multiple regression analyses were undertaken with individual practice items (in turn) as the dependent variable, and the causative factor items, total attitude score, attitude factor scores, total responsibility scores, and responsibility factor scores as the independent variables. The significant associations are reported in **Tables 6.8** and **6.9**, for overweight and obesity, respectively. Full details of the results of each analysis, including R^2, adjusted R^2, the overall F value, beta coefficients and their associated p values, are given in **Appendix 6.2.**

Table 6.8: Significant associations between practice items and beliefs or attitudes, overweight questionnaires

PRACTICE VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
Number of additional appointments after first	Total attitude score, -ve	More positive attitudes associated with fewer appointments	**
Advice or guidance on proportion of fat in diet	Genetic factors, +ve	Increasing importance of genetic factors associated with increased advice on fat in diet	**
Advice or guidance on eating less in general	Metabolic defects, +ve	Increasing importance of metabolic defects associated with increased advice on eating less in general	**
Advice or guidance on physical activity	Repeated dieting, +ve	Increasing importance of repeated dieting associated with increased advice on physical activity	**
Advice or guidance on social and psychological issues	Repeated dieting, +ve	Increasing importance of repeated dieting associated with increased advice on social and psychological issues	***

** = significant association, p < or = 0.01, *** = p < or = 0.001.

Table 6.8 (cont.): Significant associations between practice items and beliefs or attitudes, overweight questionnaires

PRACTICE VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
Provision of diet sheets	Lack of willpower, +ve	Increasing importance of willpower associated with increased provision of diet sheets	***
	Repeated dieting, -ve	Increasing importance of repeated dieting associated with decreased provision of diet sheets	**
Referral to other health professionals	Metabolic defects, +ve	Increasing importance of metabolic defects associated with increased referrals to other health professionals	**
I (would) regularly record weight	Lack of willpower, +ve	Increasing importance of willpower associated with increased agreement with weighing regularly	***
I (would) keep myself informed about research on treatments	Repeated dieting, +ve	Increasing importance of repeated dieting associated with increased agreement with keeping self informed	**
I (would) tailor my approach to fit the client	Physical inactivity, +ve	Increasing importance of physical inactivity associated with increased agreement with tailoring approach to the client	**
I would be/am confident in counselling about weight loss	Repeated dieting, +ve	Increasing importance of repeated dieting associated with increased agreement with feeling confident about treating	**

** = significant association, $p < or = 0.01$, *** = $p < or = 0.001$.

The results presented in **Tables 6.8** suggest that beliefs about the causes of overweight appear to explain more of the variance in reported practices than perceptions of responsibility or attitudes. Beliefs about the importance of repeated dieting were associated with a number of dietitians' reported practices. Higher scores for repeated dieting were related to increased reports of advice on physical activity and social and psychological issues, decreased reported use of diet sheets and increased agreement about keeping informed about research and feeling confident about treating overweight clients.

An increased belief in the importance of metabolic defects was found to be associated with two practice items: increased advice on eating less and increased reports of referrals on to health professionals. Other single associations were observed for belief statements. Higher scores for the perceived importance of genetic factors were related to increased reports of using advice on the proportion of fat in the diet, and the more physical inactivity was seen as important in causing overweight, the more likely dietitians were to report that they would tailor their approach to the client.

One association was found for attitudes and practice: a higher attitude score, indicating more positive attitudes, was related to reports of fewer appointments with clients.

An important finding was that a belief that a lack of willpower is important was associated with a number of management issues, for both overweight and obesity. For overweight people, as ratings for the importance of willpower increased so did reports of using diet sheets and recording weight regularly.

In fact, from **Table 6.9**, it can be seen that for obese clients, lack of willpower was the belief statement that was found to be most often associated with practice. As the importance of willpower increased, so did numbers of appointments, advice on calorie controlled food intake, advice on eating or avoiding specific foods, and agreement with wanting other health professionals to treat obesity.

Mood was found to be associated with practice for two practice items. Increased beliefs about the importance of mood in causing someone to be obese were associated with increased reports of recording weight regularly and wanting other health professionals to treat obese people instead of dietitians.

Other relationships were observed between beliefs about the causes and practice items. Increased importance for personality was associated with increased advice on eating less in general, while increased importance of interpersonal factors was associated with *decreased* advice on eating less in general. An increasing emphasis on the importance of eating too much of the wrong foods was associated with increased agreement with weighing regularly.

Table 6.9: Significant associations between practice items and beliefs or attitudes, obesity questionnaires

PRACTICE VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
Number of additional appointments after first	Lack of willpower, -ve	Increasing importance of willpower is associated with fewer appointments	**
Advice or guidance on calories	Lack of willpower, +ve	Increasing importance of willpower associated with increased advice on calories	**
Advice or guidance on eating or avoiding specific foods	Lack of willpower, +ve	Increasing importance of willpower associated with increased advice on eating or avoiding specific foods	**
Advice or guidance on eating less in general	Personality, +ve	Increasing importance of personality associated with increased advice on eating less in general	***
	Interpersonal factors, -ve	Increasing importance of interpersonal factors associated with decreased advice on eating less in general	**
Advice or guidance on social and psychological issues	Acceptance (responsibility scale), -ve	Less acceptance (higher acceptance score) associated with decreased advice on social and psychological issues	**
I (would) regularly record weight	Eating too much of the wrong foods, +ve	Increasing importance of eating too much of the wrong foods associated with increased agreement with weighing regularly	**
	Mood changes -ve	Increasing importance of mood changes associated with decreased agreement with weighing regularly	**
	Social difficulties -ve	Perception of less social difficulties (higher score) associated with decreased agreement with weighing regularly	***

** = significant association, $p < 0.01$, *** = $p < 0.001$.

Table 6.9: Significant associations between practice items and beliefs or attitudes, obesity questionnaires

PRACTICE VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
I (would) make sure I spend time developing a good relationship with clients	Acceptance, -ve	Less acceptance (higher acceptance score) associated with decreased agreement with spending time developing good relationships	**
I would prefer it if other health professionals would treat	Mood changes -ve	Increasing importance of mood associated with a decrease in wanting other professionals to treat	**
	Lack of willpower, +ve	Increasing importance of willpower associated with an increase in wanting other professionals to treat	**

** = significant association, $p < 0.01$, *** = $p < 0.001$.

Acceptance (from the responsibility scale) predicted two practice items. Reduced acceptance of obese people was associated with a reduction in reported social and psychological advice and time spent developing a good relationship with clients.

Attitude related scores influenced reported practice on only one occasion: a perception of less social difficulties (higher score) was associated with decreasing agreement with weighing regularly.

6.4.6.2 Are attitudes influenced by beliefs?

Stepwise linear multiple regression analyses were undertaken with the total attitude score and each of the attitude factors (in turn) as the dependent variable, and the causative factor items, total responsibility scores, and responsibility factors as the independent variables. The statistically significant associations are reported in **Tables 6.10** and **6.11**, for overweight and obesity, respectively. Full data for the results of each analysis, including R^2, adjusted R^2, the overall F value, beta coefficients and their associated p values, are given in **Appendix 6.3**.

Table 6.10: Significant associations between attitudes and beliefs, overweight questionnaires

ATTITUDES VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
Total attitude score	Total responsibility score, -ve	Increasing responsibility scores (more perceived responsibility) associated with decreased attitude scores (more negative)	***
Social difficulties factor	Total responsibility score, -ve	Increasing responsibility scores associated with decreased social difficulties scores (more perceived social difficulties)	***
Attractiveness factor	Total responsibility score, -ve	Increasing responsibility scores associated with decreased attractiveness scores (less perceived attractiveness)	***

*** = significant association, $p < 0.001$.

Table 6.11: Significant associations between attitudes and beliefs, obesity questionnaires

ATTITUDES VARIABLE	INDEPENDENT VARIABLE, DIRECTION OF RELATIONSHIP	COMMENT	
Total attitude score	Total responsibility score, -ve	Increasing responsibility scores (more perceived responsibility) associated with decreased attitude scores (more negative)	***
Social difficulties factor	Total responsibility score, -ve	Increasing responsibility scores associated with decreased social difficulties scores (more perceived social difficulties)	**
Attractiveness factor	Total responsibility score, -ve	Increasing responsibility scores associated with decreased attractiveness scores (less perceived attractiveness)	***

** = significant association, $p < 0.01$, *** = $p < 0.001$.

It can be seen from **Tables 6.10** and **6.11** that the associations between attitudes and beliefs were the same for both overweight and obesity. In all cases, it was the total responsibility score that explained most of the variance in attitudes (as opposed to responsibility factors or beliefs about the causes). Increasing responsibility scores, indicating more perceived responsibility, were associated with increasingly negative attitudes, increased perceived social difficulties, and decreased attractiveness scores. No associations were found for the 'self-esteem' factor.

6.4.7 Summary of results

Dietitians had very similar beliefs about the causes of both overweight and obesity. Physical inactivity was viewed as the most important causative factor, but mood, eating too much of the wrong foods, repeated dieting and interpersonal factors were also seen as important. In terms of attitudes, like the health professionals surveyed in Chapter 3, dietitians rated overweight people (both levels) most positively in terms of social integration, but most negatively in terms of perceived low self-esteem, sexual attractiveness and health. Also, a number of level effects indicated that dietitians were more negative in their rating of obese people than of overweight people. Overweight people were seen as quite responsible, but their were mixed perceptions about the influence on others and acceptance. Several level effects indicated that dietitians viewed obese people as generally more responsible than overweight people.

Dietitians reported very similar management strategies for both overweight and obese clients, although they apparently perceived more merit in dietitians treating obese people than overweight people. New appointments generally lasted for about half an hour, subsequent sessions about 20 minutes, and clients would be seen on four or five occasions, on a monthly or bi-monthly basis. Most reported seeing clients only on an individual basis, and most reported having a management protocol or having one developed. The strategies used most frequently were advice and guidance on a number of dimensions (but not calorie intake); provision of diet sheets; and regular recording of weight. Dietitians also reported keeping abreast of current research; spending time developing good relationships with clients.

Interestingly, beliefs about the causes of overweight and obesity explained more of the variance in practice than beliefs about responsibility, or attitudes. For overweight people, the key belief appeared to be repeated dieting. Lack of willpower was an important belief statement in relation to both overweight and obesity, but especially for obesity. Mood and the acceptance factor from the responsibility scale each explained variance for two obesity management practices.

The associations between beliefs and attitudes came out consistently for both overweight and obesity: in all cases, the total responsibility score explained most of the variance in attitudes, in terms of the total attitude score, and the social difficulties and attractiveness factors (but not the self-esteem factor).

6.5 Discussion

In terms of the stated hypotheses, the following conclusions can be drawn. There were no statistically significant level effects (overweight *vs.* obesity) for beliefs about causes, therefore hypothesis 1 can be accepted. Significant level effects were, however, found for a number of responsibility items as well as the overall responsibility score, so that obese people were generally viewed as more responsible than overweight people. Therefore, hypothesis 2 can be rejected. A number of statistically significant associations were observed between attitudes and beliefs about responsibility, but not between attitudes and beliefs about causes. It can be said, therefore, that perceptions of increased responsibility of overweight and obese people were associated with more negative attitudes, so that hypothesis 3 can not be accepted. A number of significant level effects were found for attitude items, and the total attitude score was lower for obese people, indicating more negative attitudes towards obese people than towards overweight people. Therefore, the hypothesis 4 can be accepted. There were only two statistically significant differences for weight level in terms of reported practices. These indicated that dietitians were more likely to agree that they should be involved in obesity, rather than overweight management, and were more likely to think other health professionals should treat overweight than obesity. Both of these findings indicate that dietitians were more favourably predisposed to treating obesity than to treating overweight. Thus, hypothesis 5 must be rejected.

Considering all the possibilities, significant associations between attitudes and practice were few and far between. For overweight people, more negative attitudes were associated with more appointments being scheduled. For obese people, more perceived social difficulties were associated with reports of weight being recorded more frequently. Both these findings are in the opposite direction to what might be expected, if it is assumed that recording weight regularly is a favourable practice. Beliefs about the causes of obesity were much more likely to be associated with practice. Therefore hypothesis 6 can be rejected.

In considering the relationship between beliefs, attitudes and practice, it is useful to look at the study findings in more detail. For overweight, repeated dieting was a key belief in explaining variation for a number of practice items. Higher scores for repeated dieting were related to increased reports of advice on physical activity and social and psychological issues, decreased reported use of diet sheets and increased agreement about keeping informed about research and feeling confident about treating overweight clients. This generally appears to describe more favourable activities, as defined under the objectives for this chapter. Also, advice on physical activity and social and psychological issues may be useful treatment options for someone who is believed to be too focussed on diet, and an interest in research and reported confidence in treating is consistent with the high level of interest in this topic in the research and clinical community.

However it is important to remember that such observed associations within the data set do not necessarily imply causal relationships. Thus, a belief that repeated dieting is an important contributor to overweight does not necessarily mean that a dietitian would chose the treatment options described because of that belief. For this reason, it is difficult to explain some of the observed associations. For overweight, an increased belief in the importance of metabolic defects was found to be associated with increased advice on eating less in general (thought by previous investigators to be poor advice – Cade and O'Connell 1991) and increased reports of referrals on to health professionals. It is easier to see how the latter of these two practices relates to the belief than the former, since someone with a metabolic defect may have a problem that needs medical attention – although a reliance on other health professionals may sometimes indicate a lack of confidence or willingness to treat, here it may be an appropriate choice. Also for overweight, higher scores for the perceived importance of genetic factors were related to increased reports of using

advice on the proportion of fat in the diet. This finding is consistent with a view that people who have a genetic predisposition to weight gain may be advised to avoid excess fat in the diet. However, one might also expect that advice to take regular physical activity would be reported, but no such association was found. Another relationship in the data is also not easy to explain: the more physical inactivity was seen to be important in causing overweight, the more likely dietitians were to report that they would tailor their approach to the client. The practice may directly contradict the belief if a client chose not to undertake physical activity to help weight loss or maintenance.

One association was found for attitudes and practice for overweight people: more positive attitudes were related to reports of fewer appointments being scheduled. One explanation for this is that dietitians who viewed overweight people favourably, were less likely to see the need for prolonged dietetic intervention. Indeed, a number of comments on questionnaires indicated that some respondents could not see the merit in treating overweight, and that obesity treatment was the priority.

For obese clients, lack of willpower was the belief statement that was found to be most often associated with the practice items. As the perceived importance of willpower increased, so did numbers of appointments, advice on calorie controlled food intake, advice on eating or avoiding specific foods, and agreement with wanting other health professionals to treat obesity. Given that a belief that a lack of willpower is important in causing obesity is often assumed to carry negative connotations (e.g. DeJong and Kleck, 1986), it is surprising that many of these practices may be favourable and appropriate in the circumstances (apart from wishing other health professionals would treat). For example, increased numbers of appointments may mean the dietitian has the option for maintaining greater surveillance of the obese person.

The perception of a greater importance of mood in causing someone to be obese was associated with increased reports of recording weight regularly and wanting other health professionals to treat obese people instead of dietitians, the latter of which may be explained by dietitians wanting to refer to health professionals with more experience of emotional problems (e.g. psychologists). Regular recording of weight is a difficult practice to evaluate, since it may be used either positively or negatively with clients. Although good record keeping may often be viewed as a favourable practice,

taking regular weights of a client may be viewed more negatively by some dietitians who would prefer to work to the client's preferences, or to place more emphasis on things other than body weight, such as social and psychological support, or the uptake of healthier food choices.

Acceptance (from the responsibility scale) predicted two practice items for obesity. Reduced acceptance of obese people was associated with a reduction in reported social and psychological advice and time spent developing a good relationship with clients. Both these items appear to indicate negative practices associated with reduced acceptance. Attitude related scores influenced reported practice on only one occasion: a perception of less social difficulties (higher score) was associated with decreasing agreement with weighing regularly.

In summary of the relationship between beliefs, attitudes and practice, therefore, it can be said that reported practices were more likely to be explained by beliefs about the causes, than attitudes or perceptions of responsibility. However, the directions of the relationships were not consistent with each other, or with what may be expected from the obesity attitudes literature. For example, a perception of lack of willpower was generally associated with more favourable practices, while it is not clear how a perception that repeated dieting is important would fit into the traditional view of obesity attitudes. Admittedly, one limitation with the practice data is that it is difficult to make firm conclusions about the expected direction of the effect, as clear evidence for the effectiveness of different specific strategies is not available, and some practices may be more or less appropriate depending on the specific clinical circumstances (e.g., referral on to other health professionals).

It is not clear why dietitians' perceptions of causes were a more important factor in treatment choices than their attitudes. It could be that the ATOP fails to adequately measure the key 'attitude' (affective) components that are important in explaining behaviour. Instead, it describes a set of cognitions that in themselves may not be related to practice choices. Perhaps perceptions of low self-esteem and adequate social integration are not the 'attitudes' that would best predict dietitians' obesity management strategies. The ATOP may even be more appropriately described as a set of belief statements, rather than an evaluative, attitude measure. From this it would follow that there are other untested attitude measures that may be more appropriate in terms of determining how dietetic practice decisions are made. Such

measures might naturally focus on dietitians' attitudes towards treating obese people, rather than towards obese people in general. In fact, one criticism put forward by attitude theorists for failures to find strong relationships between attitudes and behaviour is that specific behaviours have been measured alongside more general attitude measures (e.g., Ajzen and Fishbein 1977; Eagley and Chaiken 1993). This is consistent with the view that a stronger relationship may have been observed here if the measures were more closely aligned in terms of the specificity of the subject (i.e., the relationship between attitudes towards treating obese people and reported treatment choices). On the other hand, another criticism of studies failing to find relationships between attitudes and practice is that global measures of attitudes are taken alongside single measures of behaviour (Ajzen 1988; Eagley and Chaiken 1993). The fact that a series of dietitians' behaviours were measured, as opposed to a single, specific measure, should have improved the strength of the relationship between the attitude and practice measures. Likewise, direct experience of the attitude object is reported to increase the strength of the relationship between attitudes and behaviour (Fazio and Zanna 1981), and so dietitians' experience of working with obese people should have resulted in some associations between attitudes and practice.

The observed relationships between beliefs about causes and reported practices were not consistent and strong. Also, beliefs generally accounted for only a small amount of the variance in reported practices, making in difficult to come to firm conclusions about the nature and impact of any such relationships. There are obviously other, unaccounted for influences on dietitians' behaviour that have not been explained here. Certainly, Eagley and Chaiken (1993) have argued that situational variables are likely to account for some of the failure to explain behaviour in terms of attitudes. It seems likely that dietetics training, and resource constraints would be likely alternative influences on practice. In particular, from the comments on the returned questionnaires, resource constraints would be likely to exert a great influence over what dietitians can be expected to undertake with overweight clients. A number of respondents indicated, for example, that the amount of time they could allocate to obese clients was largely determined by the organisation for which they worked and the volume of clients who needed to be seen.

In addition, it seems likely that the methods of data collection would influence the practice data collected, as self-report data is much more likely to be subject to social

desirability than objective measures of behaviour (Lomas *et al.* 1989). Therefore, dietitians may have been influenced in their responses more by what they thought was acceptable than how they really behaved in relation to obese clients. The strength of the relationship may have improved if dietitians' behaviour was observed directly.

Although the relationships between beliefs and practice were not especially strong, in contrast, the associations between attitudes and beliefs were clear and consistent. Increases in perceived responsibility were consistently related to increases in negative attitudes. On the other hand, beliefs about the causes of overweight and obesity did not appear to explain any of the variance in attitudes. Therefore, as the importance of perceived personal responsibility increased, so too did negative attitudes, and the perception that overweight people are less attractive and experience more social difficulties. This finding is consistent with commentaries in the literature that suggest beliefs about the responsibility of overweight people are related to prejudice (DeJong and Kleck 1986).

It is interesting that attitudes were explained by perceptions of responsibility, and various practices were explained in terms of beliefs about causes. This suggests that although there are clues about the relationships between beliefs about causes and practices, and beliefs about responsibility and attitudes, there are still missing links in terms of explaining the associations between (i) beliefs about causes and attitudes, (ii) perceptions of responsibility and practices, and (iii) attitudes and practices. This is a notorious problem in attitude measurement, and given work to date, one that is not likely to be readily solved (Eagley and Chaiken 1993; Stahlberg and Frey 1996). It is likely that researchers in this area may never fully understand all the key cognitions that explain health professionals' management of obesity. However, this study, in exploring the *relationships* between some of the issues outlined in the obesity attitudes literature, has provided some useful insights into this complex area.

7. A systematic review of interventions to improve health professionals' management of obesity

7.1 Introduction

In previous chapters it has been argued that there are several reasons why health professionals may be limited in their ability to treat obesity effectively. One barrier to good practice may be a lack of knowledge about successful treatment strategies. Evidence from other clinical areas suggests that even when clearly effective clinical interventions are available, health professionals do not necessarily use them. For example, good evidence for the effectiveness of thrombolytic therapy in reducing mortality for acute myocardial infarction became available in 1986-88, when the results of large trials were published. However, in a study of the Trent region of the UK, Ketley and Woods (1993) found that although use of thrombolytics rose steadily in years subsequent to the publications, it reached a plateau in 1991-92. Even at this time, they estimated that only 35-50% of suitable patients were treated with a thrombolytic. The evidence for treating obesity is much less clear cut and arguably more difficult to implement. Until recent systematic reviews of obesity interventions for patients (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998), a plethora of studies of various interventions of variable quality made the treatment options appear confusing and often seemingly ineffective. The results of this review do not provide easy solutions to obesity treatment, but have identified a number of potentially effective weight loss interventions: those to reduce sedentary behaviour in obese children; diet, exercise and behavioural strategies for adults, in combination where possible; the use of maintenance strategies such as continued therapist contact; limited use of pharmaceutical interventions in conjunction with strategies to change lifestyle; and surgery for selected morbidly obese patients. The NHLBI (1998) guidelines have suggested that weight loss programs should aim initially to reduce body weight by ten per cent from baseline, at a rate of one or two pounds (approximately 0.5 - 1 kg) a week, for six months, with subsequent strategies based on how much weight had been lost initially.

These findings will no doubt take time to filter through to the health care community in general, and coupled with limited resources and limited access to appropriate support services, health professionals are still likely to be hampered in their ability to treat

obesity effectively. In addition to information access problems, negative perceptions towards overweight and obese people may also influence health professionals' practice choices. In Chapter 6 it has been shown that some beliefs do in fact appear to be related to practice choices. Also, in Chapter 2 it has been argued that, despite a lack of good empirical evidence, the existence of negative attitudes among some providers could adversely affect their behaviour. For example, it may decrease the professionals' motivation to work with obese people or affect the way in which they deliver care. In summary, there is every reason to believe that health professionals' practice in relation to overweight and obese people may be less than optimal.

Health professionals' involvement in the response to the escalating levels of obesity is vital – the problem is huge and health professionals have the potential to reach large numbers of obese people. At face value, it seems very little is known about how obesity management practice may be improved. The next, seemingly logical step to improving health professionals' management of obesity would be to implement the existing evidence-based guidelines. However, before undertaking new initiatives with health professionals it is important to know what strategies have already been undertaken to try to improve practice in this area, and with what degree of success. To do this, it is now considered good practice to undertake a systematic review of the literature. Systematic reviews are undertaken for a number of reasons: to efficiently assimilate existing information; to differentiate between good quality and less reliable findings; to establish whether findings are consistent and generalisable across populations, settings and treatment variations; to limit random and systematic bias in summarising the evidence (a major problem with traditional narrative reviews); to formulate guidelines for treatment options; to refine hypotheses for future work; and to prevent unnecessary replication of existing work (Mulrow 1994, 1995). In short, it is not possible to get an accurate and reliable picture of the current state of the evidence until systematic review methodology is employed. Unlike traditional narrative reviews, a systematic review of a particular topic will include exhaustive searches for published and unpublished studies and employ clear research methods, stating the decision rules for inclusion and quality assessment of studies *a priori*, in order to eliminate as many biases from the review process as possible. The findings of a systematic review are the first step in identifying what knowledge is already available on a topic, and what remains to be made available.

The purpose of this review was to determine the current state of the evidence on interventions to improve health professionals' management of obesity or the delivery of care for overweight and obese people. The intention was that this would provide information about the design of future implementation studies. An underlying assumption of the review is that interventions that improve health professionals' practice and health care provision should have a beneficial effect on patient outcomes. Thus, in terms of Marteau's (1995) framework, the effect of improving provider practice on patient behaviours and outcomes was addressed.

This review is different from the recent obesity systematic reviews mentioned above (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998) because it focuses specifically on interventions that are targeted at health professionals, rather than at the obese patient. A good analogy is, perhaps, the smoking cessation model, where doctors are trained to advise patients to quit smoking. In this model, outcomes are assessed in terms of doctor behaviour as well as patient outcomes. More inclusively than this model, in this review, all health professionals and any strategy designed to *improve health professionals' management* of obesity *or the delivery of health care services* for overweight and obese people were included.

The review was undertaken in association with the Cochrane Effective Practice and Organisation of Care (EPOC) Group, a Cochrane Collaboration review group. EPOC's scope is to undertake systematic reviews of interventions to improve health professional practice and the delivery of health services, across all clinical areas. The group has an international editorial board of experts in systematic reviews of effective professional practice. It is responsible for developing standardised review methods, ensuring the quality of reviews and providing support to reviewers. In this way, existing expertise in systematic reviews of professional practice was utilised. According to EPOC methods, in order to reduce bias, systematic reviews need to be undertaken by at least two reviewers. As such, this review was undertaken with three colleagues with obesity and systematic review expertise (AMG, SK, CS).

The review is reported according to the standard Cochrane format. Systematic review principles dictate that the methods for a review are stated in advance of undertaking the review, in the form of a structured protocol. The protocol for this review was published in two places (Harvey, Glenny, Kirk and Summerbell 1998; Harvey *et al.* 1998) before the final review was submitted for publication (Harvey *et al.* 1999). An

additional comparison appears in the review that did not appear in the original protocol, to allow the inclusion of potentially meaningful studies that were identified through the review process but which did not fulfil any of the original comparisons. The implications of this modification are stated clearly below.

7.2 Objectives

All existing studies of interventions to improve professional practice or the organisation of health care services for overweight and obese people (termed 'the management of obesity') were sought. The types of interventions employed are described, along with an evaluation of their effectiveness in improving practice or patient outcomes. The main objective of the review was to determine whether the management of obesity or patient outcomes could be improved. The review addressed the question: can the management of obesity be improved? The following comparisons were addressed:

i) Interventions aimed at improving health professionals' management or the organisation of health care for overweight and obesity are more effective than usual care.
ii) Interventions aimed at redressing negative attitudes and related practices towards overweight and obese patients are more effective than usual care.
iii) Organisational interventions designed to change the structure of services for overweight and obese people are more effective than educational or behavioural interventions for health professionals.

The following comparison was added on a *post hoc* basis, to answer the question: what is the effectiveness of different organisational interventions?

iv) Organisational interventions: comparisons of different approaches

7.3 Selection criteria

7.3.1 Types of studies

For a study to be included, it had to be a randomised or quasi-randomised controlled trial (RCT), a controlled before and after (CBA) study or and interrupted time series (ITS) design.

7.3.2 Types of participants

Studies of all qualified health professionals were included. Because of variability in the classification of overweight and obesity in primary studies, all overweight and obese patients were included. However, as overweight and obesity may hold different implications for health and treatment, the intention was to draw distinctions between the two whenever possible, using definitions based on body mass index (BMI – in kg/m^2), currently the most widely accepted for the classification of obesity (Garrow 1988). Overweight was defined as BMI 25-30 and obesity as a BMI of 30 or more (EHCB:3:2 1997; NHLBI 1998).

Studies of interventions relating to specific patient groups (e.g., hypertension or diabetes management, general lifestyle counselling) were included if a reduction in overweight or obesity was mentioned at the outset as an explicit objective of the intervention and weight data were provided.

7.3.3 Types of interventions

Any intervention that targeted providers' management of obesity or the organisation of care and aimed to improve provider practice or patient outcomes was included. Interventions were categorised according to the EPOC taxonomy (EPOC 1998). Based on these categories, a distinction was drawn between health professional and organisational interventions. These can be summarised as follows:

i. Professional interventions:

This category includes strategies to provide professionals with information or training on appropriate practice. For example, Rogers, Haring, Wortman, Watson *et al.* (1982) used a computerised medical record summary to provide doctors with concise summaries on obese patients (as well as those with hypertension or renal disease) in order to identify gaps in screening and provide treatment recommendations.

ii. Organisational interventions:

This category includes interventions that are predominantly about changes in organisational systems, such as the introduction of multi-disciplinary teams, changes in skill mix, or in the setting or site of service delivery. For example, Richman, Webster, Salgo, Mira *et al.* (1996) compared an existing hospital-based service with a new 'shared care' approach, in which general practitioners were encouraged to treat obesity and work in collaboration with the hospital service.

Interventions that were targeted at patients were excluded. A number of studies were reviewed that were potentially useful, but were borderline patient or organisational interventions. In order to be clear about the distinction between patient-oriented interventions (excluded) and organisational ones (included), a drug intervention analogy was employed, whereby the professional-patient contact in obesity treatment was equated to the provision of a drug. Studies that essentially focused on the 'drug' effect of obesity treatment were excluded. Studies that compared length of follow-up, length of consultation, or frequency of consultation were excluded on the basis that they are comparable to changes in drug dosage. Studies of the use of different combinations of interventions were excluded on the basis that these are comparable to the use of adjuvant therapies. Patient financial incentives were also excluded as these are clearly targeted at patients. Studies delivered to patients that compared changes in setting (e.g., telephone versus face to face delivery) or different deliverers of the interventions (e.g., doctor versus dietitian, therapist-led groups versus peer-led groups), were included, as these are about the organisation of care.

7.3.4 Types of outcome measures

Any objective measure of provider performance (according to the EPOC categories for behaviours – EPOC 1998) or patient outcomes was included. For example, provider behaviours could have included diagnosing, record keeping, test ordering

and prescribing behaviours; referral practice; clinical procedures or the general management of a problem; patient education, professional-patient communication or advice-giving behaviour.

Patient outcomes were defined as any of the following: satisfaction with provider practice or health care provision; psychological outcomes (self-esteem, stress, depression, dietary restraint); morbidity (measures of disease status and sick leave); body weight, fat or BMI measures; risk factor effects (differences in cholesterol levels, blood pressure); patient behaviour (attendance levels at weight management or physical exercise programs); and number of drop outs. Studies reporting the effects of interventions on professionals' attitudes would have been included if they also provided an objective measure of provider behaviour or patient outcomes (in the event, no such study was identified).

7.4 Search strategy

Studies were located from a wide variety of sources. Expertise used to develop search strategies for EPOC (EPOC 1998) and the Effective Health Care Bulletin on obesity (EHCB:3:2 1997; Glenny *et al.* 1997) were utilised to develop a search strategy for this review.

The following databases were searched: MEDLINE Ovid CD-ROM (1966 - 1/1998), PsycLit Silverplatter CD-ROM (1974 - 12/1997), Embase [Ovid via Bids] (1979 - 12/1997), Cinahl ARC Service (WinSPIRS online) (1982 - 11/1997), SIGLE Blaiseline (1980 - 11/1997), Sociofile ARC service (WinSPIRS online) (1974 - 10/1997), Dissertation Abstracts Dialog Corporation Dialog service (1861 - 1/1998), Conference Papers Index Dialog Corporation Dialog service (1973 - 1/1998), Resource Database in Continuing Medical Education (searched 6/1997).

The following Cochrane Review Group Registers were also searched using 'overweight' and 'obesity' as the basis for key terms: EPOC (5/1997), Cochrane Depression, Anxiety and Neurosis Group (8/1997), Cochrane Diabetes Group Register (8/1997); the Cochrane Controlled Trials Register (CCTR) was also searched (9/1997) (all in the Cochrane Library).

In addition to full text searches of potentially relevant journals being undertaken by Cochrane hand searchers in general, the following searches of key journals were undertaken by the authors according to Cochrane criteria: International Journal of Obesity (1977 - 12/1997, CS and EH), European Journal of Clinical Nutrition (1988 - 12/1997, CS), Journal of Human Nutrition and Dietetics (1988 - 12/1991, SK), Human Nutrition: Clinical Nutrition (1982 - 12/1987, CS), Human Nutrition: Applied Nutrition (1982 - 12/1987, SK), Health Psychology (1993 - 12/1997, EH), Obesity Research 1993 - 1994, AMG).

Experts in this field were contacted through the Association for the Study of Obesity (ASO), the British Dietetic Association (BDA) and the Journal of the American Dietetic Association (JADA) and asked to identify potentially relevant papers. Further potentially relevant studies were identified by EPOC colleagues undertaking a review of preventive care and from the reference lists of included studies.

From initial searches of electronic databases and requests for help, 7193 abstracts were screened (EH). Any studies that appeared even vaguely relevant (244) were assessed independently and cross-checked (EH and AMG). One hundred and seven full-text copies of papers were reviewed (EH and CS/SK). These were either ordered following the screen of abstracts or sent directly to reviewers following requests for help.

7.5 Methods

Assessment of studies for inclusion was undertaken independently by two reviewers (EH and CS/SK/AMG). Assessment of quality and results data was also undertaken independently by two reviewers (EH and AMG/SK). Additional data were extracted by one reviewer (EH) and checked by another (AMG/SK). All discrepancies were resolved easily by discussion between reviewers.

Full data extraction was undertaken using the EPOC Data Extraction Checklist (EPOC 1998). The quality of RCTs, CBAs and ITSs was assessed using EPOC's quality assessment criteria (EPOC 1998). (For example: concealment of allocation to study groups; adequate (80%) follow-up of providers and patients; blinded outcome assessment; a lack of baseline differences across groups; reliability of outcome

measurement; and protection of contamination across groups.) All quality criteria were scored as 'DONE', 'NOT CLEAR' or 'NOT DONE'. In addition, another non-EPOC quality criterion was added because of the nature of this particular topic area: the length of follow-up for outcome measurement. It is a recognised problem in obesity research that short-term studies are misleading as there is a high long-term attrition rate (EHCB:3:2 1997). Therefore, a study with follow-up of at least 12 months was scored as 'DONE', but where the outcome measurement was less than 12 months a study was scored as 'NOT DONE'.

All studies for which hard copies were obtained (either ordered by the authors or sent by other obesity researchers), but which failed to meet the review's inclusion criteria were reported in an excluded studies table (see **Appendix 7.1**).

For each study, the main results were reported in natural units. For example, where the main outcome was BMI, differences were reported in BMI units. For the main (*a priori*) comparison, for each outcome, post intervention differences across groups were reported and confidence intervals calculated where there were enough data to do so. For the *post hoc* comparison of organisational interventions, as the direction of the comparisons had not been stated in advance, post intervention outcomes are given for all study groups. In addition, differences are given across groups for what the reviewers believed were the most meaningful comparisons for each study. However, as these decisions were made on a post hoc basis, it is necessary to be tentative with interpretation of any differences. For all studies, any available cost data would have been provided, but in the event, no identified studies included such data.

As the heterogeneity of study design, comparison groups, intervention types, settings, participant health professionals and patients was substantial, an overall (quantitative) estimate of effect would have little practical meaning. Therefore, a qualitative summary of the findings is presented.

7.6 Description of studies

A summary description of the included studies is presented in **Table 7.1.** Four studies were identified that met all the inclusion criteria for Comparison 1 (interventions aimed at improving health professionals' management of the delivery of health care for

overweight and obesity versus usual care). Of these, three were randomised controlled trials (RCTs) of professional-oriented interventions: two were about the use of reminders with doctors (McDonald, Hui, Smith, Tierney *et al.* 1984; Rogers *et al.* 1982), and another was about training nurses to give advice (Ogden and Hoppe 1997). The fourth study was a controlled before and after (CBA) study of professional and organisational interventions of shared care to improve collaboration between a hospital based obesity clinic and GPs (Richman *et al.* 1996).

No studies were found for Comparison 2 (interventions aimed at redressing negative attitudes and related practices towards overweight and obese patients versus usual care), or Comparison 3 (organisational interventions designed to change the structure of services for overweight and obese people versus educational or behavioural interventions for health professionals).

Another eight studies were found that were included in the *post hoc* comparison of organisational studies. All eight were RCTs. Of the wide range of organisational interventions that could have been included, these studies addressed only two: comparisons of the deliverer of weight loss interventions (i.e. EPOC – revisions of professional roles) (Balch and Balch 1976; Perri, McAdoo, McAllister, Lauer *et al.* 1987), or the setting of interventions (i.e. EPOC – differences in the setting or site of service delivery) (Hagen 1974; Hakala 1994; Jeffery and Wing 1979; Jeffery, Danaher, Killen, Farquhar *et al.* 1982; Meyers, Graves, Whelan and Barclay 1996). One study (Lindstrom, Balch and Reese 1976) had both deliverer and setting comparisons. These studies do not fulfil Comparison 1 because they do not include a usual care comparison, but rather they compare two or more 'experimental' approaches.

Studies differed markedly in the types of interventions evaluated, the degree of overweight in the patient groups and the types of outcome measures reported, although most had some measure of weight change. Only one study defined differences in terms of BMI (Richman *et al.* 1996). Many studies referred to a minimum percentage overweight or percentage of body weight for participants to be included, but often it was not clear how these percentages were determined.

Most studies were undertaken in the US, although one was undertaken in the UK (Ogden and Hoppe 1997), one in Australia (Richman *et al.* 1996), and one in Finland

(Hakala 1994). Most of the included studies focused on overweight and obesity in general, rather than specific clinical subgroups of overweight patients. However, one study was undertaken within specialist Cardiac, Pulmonary and Renal Clinics (Rogers *et al.* 1982). Other studies were undertaken in a range of settings: a US general medical clinic (McDonald *et al.* 1984), UK primary care (Ogden and Hoppe 1997), both general practice and hospital outpatients (Richman *et al.* 1996), inpatient and outpatient services (Hakala 1994), university campuses (Balch and Balch 1976; Lindstrom *et al.* 1976; Hagen 1974), and other settings that were not clear but participants had been recruited through general newspaper advertising rather than from health care settings (Perri *et al.* 1987; Jeffery and Wing 1979; Jeffery *et al.* 1982; Meyers *et al.* 1996).

7.7 Methodological quality

The methodological quality of included studies is described in the included studies table (**Table 7.1**). The seven quality criteria applied to RCTs and CBAs are described in detail in the EPOC methods section of the Cochrane Library (EPOC 1998). All 12 of the reported studies had methodological weaknesses according to the EPOC criteria. None of the studies fulfilled all the quality criteria. All of the RCTs failed to report the method of randomisation, so that is not possible to tell whether allocation to groups was concealed. Only three of the eleven studies that reported patient outcomes had sufficient patient follow-up (of at least 80%) (Lindstrom *et al.* 1976; Hagen 1974; Hakala 1994). Blind outcome assessment was carried out in three of the studies (McDonald *et al.* 1984; Rogers *et al.* 1982; Hakala 1994), the others were either not clear (six studies) or not done (three) (Richman *et al.* 1996; Balch and Balch 1976; Perri *et al.* 1987). It was clear that there were no substantial baseline differences in only five studies (Perri *et al.* 1987; Hagen 1974; Hakala 1994; Jeffery and Wing 1979; Jeffery *et al.* 1982). In a further two there were no baseline differences for some of the reported outcome measures (Rogers *et al.* 1982; Richman *et al.* 1996). In the other five studies it was not possible to tell. In only two studies were reported outcomes clearly reliable (McDonald *et al.* 1984; Hakala 1994), whilst in the others it was not clear. Only five studies had adequate duration of follow-up (McDonald *et al.* 1984; Rogers *et al.* 1982; Perri *et al.* 1987; Hakala 1994; Meyers *et al.* 1996).

Four of the twelve studies reported interventions targeted at health professionals. One of these was essentially an organisational intervention encouraging shared care among health professionals (Richman *et al.* 1996). Of the other three, one was randomised by teams of providers (McDonald *et al.* 1984), one by individual health professionals (Ogden and Hoppe 1997) and the other by patients (and professionals) (Rogers *et al.* 1982). Ogden and Hoppe (1997) and McDonald *et al.* (1984) both had adequate protection against contamination, but only McDonald *et al.* (1984) had adequate follow-up of providers. Rogers *et al.* (1982) main units for allocation and analysis were patients, and it is not clear whether some contamination occurred between study groups.

Two studies had potential unit of analysis errors, therefore increasing the apparent precision of the estimates of effect (i.e. creating the potential for confidence intervals to be misleadingly narrow). McDonald *et al.* (1984) randomised by provider teams, but analysed at the patient level. Ogden and Hoppe (1997) randomised by nurses, but analysed by patients. The remaining studies randomised and analysed at the patient level.

None of the studies reported power calculations and many had small sample sizes, meaning that it would have been difficult to detect small but potentially worthwhile differences across groups. No studies provided cost data. Notably, none of the studies undertook intention to treat analysis, despite the tendency for high rates of drop-out in weight loss programmes.

7.8 Results

The results of the review are summarised in **Table 7.2.** The studies included in this review evaluate a limited number of interventions to improve provider practice or the organisation of care for overweight and obese people.

Comparison 1: Interventions to improve care versus usual care

Four studies were included in Comparison 1. Three studies were of professional-oriented interventions, and evaluated the effects of reminders to doctors to perform specific actions, such as recommending diets (McDonald 1984; Rogers *et al.* 1982),

and the effects of training nurses or giving them educational materials on advice-giving to obese patients (Ogden and Hoppe 1997). One study had provider-oriented elements, but was essentially organisational in nature (Richman *et al.* 1996). Richman *et al.* evaluated the effects of an intervention to improve shared care between a hospital-run obesity service and GPs, by training health professionals and improving the integration of services and continuity of care through use of patient held records.

The two reminder studies (McDonald *et al.* 1984; Rogers *et al.* 1982) both reported changes in practice as a result of the intervention. McDonald *et al.* (1984) used reminders to perform a number of different preventive care actions, one of which was recommending diets for 2,368 patient encounters for patients 130% above ideal weight. For overweight patients, they found a 29% difference in response rate to suggested actions amongst reminder doctors, over two years. However, the units of allocation and analysis were different and therefore confidence intervals have not been calculated as these could be misleading. Patient outcomes were not reported, so it is not possible to determine if these changes led to weight loss amongst patients. Rogers *et al.* (1982) evaluated the effectiveness of reminders on hypertension, renal disease and obesity management. For 147 overweight patients, they found that reminders led to significantly more diets (13.5%) being given or reviewed over two years ($p = 0.007$, but not clear from the paper if this is for both years combined). At 10-15 months, a mean of 3 lbs more weight (adjusted for pounds overweight at baseline and other variables) was lost in male and female reminders patients, and at 22-24 months, an adjusted mean of 4.3 lbs more weight in females and 12.9 lbs in males was lost ($p = 0.023$ for main effect of treatment at 22-24 months, but not clear from the paper if this for adjusted or unadjusted means).

Ogden and Hoppe (1997) evaluated the effect of a seminar and educational materials, educational materials only, and no intervention on nurse advice to obese patients. Unfortunately, no objective measures of provider performance were provided. In addition, there were very low follow-up rates amongst nurses (only 27.5% returned their one and six month questionnaires) and patients. Participating nurses were asked to give questionnaires to their next five consecutive obese patients. Of a possible 950 patient questionnaires, only 179 (18.8%) were returned initially and only 35 (3.7%) at six months. Combined with overall limited methodological quality, a potential unit of analysis error and the fact that non-objective

measures of nurse practice and patient behaviour were reported, the results of this study must be interpreted with some caution. In the event, only small differences were reported between groups.

Richman *et al.* (1996) did not report any measures of provider practice. However they did find significantly better weight loss in shared care patients than in usual hospital care patients at 10 weeks: 2.2 kg more weight lost (p = 0.0016) (95% CIs 1.99 to 2.41, N.B. unequal variances), 8.5% more excess weight lost (p = 0.0073) (95% CIs 7.34 to 9.06), and a greater reduction in BMI of 0.9 (p = 0.0021) (95% CIs 0.81 to 0.99). Unfortunately, this difference was not maintained and at 26 weeks the two groups were comparable on these three measures at follow-up.

Post hoc comparison: Comparisons of different organisational interventions

These studies can be divided into two meaningful subgroups, based on the EPOC taxonomy of interventions (EPOC 1998).

a) Comparisons between deliverers of interventions (the EPOC category of organisational intervention, provider-oriented, revision of professional roles)

b) Comparisons of different settings of interventions (the EPOC category of organisational intervention, structural, changes to the setting or site of service delivery)

Eight studies were identified for these comparisons. One study (Lindstrom *et al.* 1976) provided data for both comparisons.

a) Comparisons between deliverers of interventions

Three studies were identified for this comparison (Balch and Balch 1976; Lindstrom *et al.* 1976; Perri *et al.* 1987). Balch and Balch (1976) compared a behavioural intervention delivered to overweight patients by either a psychologist, a social worker or a nurse. The study was small (only 12 or 13 patients randomised per group), of short duration and follow-up (nine week intervention with an additional four weeks follow-up) and of questionable quality (meeting none of the EPOC criteria, i.e. quality

measures scored as 'DONE'). There were very small, non-significant differences across the groups.

Lindstrom *et al.* (1976) compared a behavioural intervention delivered by either a doctoral psychology trainee, or trained or untrained undergraduate students. Again the study was small (14 patients per group), of questionable quality and of short duration and follow-up (nine week intervention and six week follow-up). A tiny, non-significant difference was found between the psychologist and undergraduate delivered groups.

Perri *et al.* (1987) compared the additional effect of 15 biweekly peer support or therapist-led follow-up groups, running after a 20 week behavioural program. This study was larger (40+ patients in each group), longer term and of better, though still limited quality, compared to the other two in this comparison. Immediately following treatment, weight loss and self-reported adherence to treatment (on a seven point Likert scale) both appeared to favour the therapist contact group (differences of 4.21 kg and 2.6 points respectively), although these differences were non-significant. At seven months, weight loss (6.64 kg, non-significant) and adherence (8.82 points, $p<0.05$) favoured the therapist group. At 18 months, weight loss and self-reported adherence (4.33 kg and 2.99 points respectively), still favoured the therapist group, but the differences were non-significant. However, it is important to note that for this study, the observed weight differences between groups at each time point were of a similar magnitude to observed baseline differences between groups.

b) Comparisons of different settings

Six studies were available for this comparison (Hagen 1974; Hakala 1994; Jeffery and Wing 1979; Jeffery *et al.* 1982; Lindstrom *et al.* 1976; Meyers *et al.* 1996).

Hagen (1974) compared a ten week home correspondent programme delivered by mail to two face to face groups (one of which also included a relaxation component and therefore was not included in the comparison as the content of the intervention was different to the mailed group) (N = 18 per group). Although this study had adequate follow-up, it was still of short duration (11 weeks intervention and four weeks follow-up) and of generally unclear quality. Small, non-significant differences were found favouring the face to face group at post-treatment and follow-up. For this

study, post intervention weights were given rather than changes in weight following the intervention. However, if baseline values are taken into account, the direction and approximate magnitude of the effect is the same.

Hakala (1994) compared a three week in-patient weight loss intervention with a ten week out-patient intervention, with follow-ups over five years. This study was of reasonable quality although small (N = 60), and limited by the proportion of objective follow-up at each time point (65-72%). In addition, it is not possible to disentangle dosage and content effects from the setting effect, but with a setting comparison such as this one, it would be impossible to ensure exactly the same intervention was delivered in both groups. At six months, the in-patient group had lost 6.3 kg (5.7%) more weight ($p < 0.05$, 95% CIs 0.57 to 12.03), at 12 months, the in-patient group was still doing better (6.5 kg, 5.9%). The authors report this as a non-significant difference, but re-calculation shows it to be significant $p = 0.034$, (95% CIs 0.52 to 12.48). At 24 months a difference was still maintained (4.4 kg, 4%), but this was non-significant. At five years the data are a mixture of self-report and objective weights, and presented for men and women separately. The (non-significant) differences were that in-patient men were 7.0 kg lighter than the outpatient group, while the in-patient women had regained weight relative to baseline, but were still 0.2 kg lighter than the outpatient group. Overall, taking into account drop-out rates, this study indicates in-patient treatment may be effective in changing health outcomes for the majority of patients. Despite some weight re-gain, these changes may possibly endure over the longer-term.

Jeffery and Wing (1979) undertook a small (N = 11 or 12 per group) study of the effects of additional face to face or telephone contacts during a six week intervention, with no additional follow-up. Again the quality of the study is questionable. The face to face group did marginally better (1.8 lbs, p = ns) at six weeks. For this study, as post intervention weights were given rather than changes in weights, it is worth noting that the direction of the difference is reversed if a small baseline difference is taken into account.

In another small study of limited quality, Jeffery *et al.* (1982) compared interventions delivered by mail to the home, with and without contracts and telephone contact, to a face to face delivered intervention. The differences across groups were small and non-significant (1.15-3.83 lbs) in favour of the mail-delivered interventions.

In addition to the deliverer comparison described above, Lindstrom *et al.* (1976) also compared the clinical psychology doctoral student intervention delivered either face to face or by telephone with patient materials. The difference was tiny and non-significant (0.58 lbs, 95% CIs -8.34 to 9.50).

Meyers *et al.* (1996) compared two face to face intervention groups, one of them videoed to deliver the intervention to another group by television (TV) (N = 56). Once again, the quality rating for this study was low, and follow-up was less than would be desirable (73%). However, it did include a 15 month follow-up period. The face to face group who were not videoed appeared to do slightly better than the face to face who were videoed and the TV-delivered group. However, as the intervention in the two face to face groups was the same in all other aspects, it seems likely that this difference is a spurious one. The data for the two face to face groups were combined to compare with the TV group. Differences for change in body weight by eight weeks (post-treatment), three months and 15 months were small: 0.09 kg, 0.2 kg, 1.75 kg respectively. Apart from eight week outcomes (p = ns), p-values across groups were not presented and it was not possible to calculate confidence intervals from the information given. It seems likely the between groups differences were non-significant.

7.9 Discussion

The studies identified for this review are heterogeneous in terms of participants, interventions, outcomes, and settings. In addition, considering the repertoire of interventions that may be employed to improve practice or the organisation of care (EPOC 1998) only a small number of different interventions have been evaluated rigorously. Combined with often poor quality, small sample-sizes, and reasonably high drop-out rates among patients, it is difficult to draw meaningful conclusions on how to improve the management of obesity from the available evidence.

The two reminder studies (McDonald *et al.* 1984; Rogers *et al.* 1982) indicate that this may be a promising approach to changing doctors' practice. More information is necessary to be able to indicate whether this finding is generalisable across other

settings and health professionals. It is not possible to say whether the change in practice may result in a reliable change in patient outcomes.

It is not possible to tell from the Ogden and Hoppe (1997) study whether training might be a useful approach to changing the behaviour of practice nurses. Nor is it not possible to tell whether it might be worth trying this approach with other health professionals. It is worth noting that a further potentially useful study on training health professionals was considered for inclusion, but was excluded on methodological grounds. Hochstrasser *et al.* (1981) divided dietitians into two groups, provided one with training, and then randomised overweight patients to dietitian-led groups. Only patient outcomes were collected. As dietitians were not randomised, any observed differences in the two groups could be attributable to baseline differences in dietitians rather than the effects of training. Therefore, this study would not provide reliable information on the effects of dietitian training.

The study by Richman *et al.* (1996) indicated some positive effects in the short-term from encouraging shared care between GPs and a hospital service, but these were not sustained over the long-term. It seems that additional strategies might be necessary to attempt to ensure the maintenance of improvements among patients.

The findings from studies evaluating setting and deliverer effects are inconclusive. Most are small and of limited quality, making the findings unreliable. In most cases the comparisons are not similar enough across studies to be able to qualitatively 'pool' the findings. The studies do not appear to demonstrate any consistent setting or deliverer effects.

The single study by Hakala (1994) comparing in-patient and outpatient treatments is interesting in that it offers a novel approach to obesity management. In this study, benefits were seen in the in-patient group, including in the longer term. It would be useful to know whether these findings can be replicated on a larger scale across different settings. However, the cost of such an approach to obesity management may prove prohibitive. Without good quality studies including reliable cost effectiveness analyses, it is not possible to say whether the health benefits are worth the additional financial outlay.

As in an earlier review (EHCB:3:2 1997; Glenny *et al.* 1997), studies that provided data on long-term weight changes (Rogers *et al.* 1982; Perri *et al.* 1987; Hakala 1994; Meyers *et al.* 1996) showed that many participants re-gained weight over time. However, in most cases, weight did not return to baseline levels and participants generally weighed less than at the outset (with the exception that the five year follow-up in the Hakala (1994) study indicated a modest weight increase for women relative to baseline).

There were no studies assessing whether negative attitudes amongst providers were impinging on good practice and whether interventions to change attitudes might result in improved clinical decisions. One potentially relevant study was identified (Wiese, Wilson, Jones and Neises 1992), but this fell outside EPOC's inclusion criteria because the intervention was delivered to medical students and focused on attitude change without an objective measure of behaviour change. Given that much commentary has been passed on the possible implications of negative views toward this group of patients, it is surprising there have been no rigorous evaluations of strategies to improve negative attitudes and related practices.

Also, there were no studies comparing whether organisational interventions designed to change the structure of services for overweight and obese people are more effective than educational or behavioural interventions for health professionals. The rationale behind this comparison was that changes in the provision of weight loss services may be more effective than attempting to change health professionals' practice on an individual basis. That is, health professionals could utilise a service rather than think about what to do with overweight and obese patients themselves, thereby overcoming negative perceptions of patients and treatment efficacy (e.g., Summerbell 1998), as well as knowledge and time barriers. Along with more general evaluations of interventions to implement obesity services, such comparisons would be of interest.

Given the large number of commercially run weight loss programmes in some countries, it would be most interesting to know whether interventions delivered by health professionals are more effective than those delivered by lay people. However, no studies were found that evaluated this comparison. It would also be interesting to know if less resource-intensive interventions (such as programmes delivered in the

home) are cost-effective relative to more intensive face to face treatments, but based on the available evidence it is not possible to say whether this might be so.

This review demonstrates that few recommendations for strategies to improve practice or the organisation of care are available from the current evidence. Health professionals, and in particular primary care providers have the potential to access large numbers of patients, but there is currently very little information about how they may be encouraged to improve their practice. Until such evidence is available, provider decisions for the improvement of services must be based on the existing evidence on interventions with patients (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998) and good clinical judgement. The limited resources available within existing health care provision mean that cost-effective, well designed interventions need to be developed, with health professionals playing an important role in this. Policy makers would also do well to explore how the organisation of health services for this patient group might be improved based on the available evidence from patient interventions.

There are a number of implications for future research from this review. There is an urgent need for well-designed studies in this area. There is a need to determine whether effective patient interventions can be implemented successfully in the health care setting. Good evidence about patient interventions (EHCB:3:2 1997; Glenny et al 1997; NHLBI 1998) was not available at the time the studies in this review were undertaken. It is difficult to determine the extent to which the strategies used in these studies reflect what has subsequently become known about good practice. Studies that are not based on good evidence run the risk of implementing changes that are not worthwhile. As far as possible, future studies aiming to improve health professionals' management of obesity should be based on the evidence of different patient approaches.

Researchers and clinicians are faced with a challenge to formulate innovative ideas for encouraging health professionals to adopt better obesity-management options. From the existing evidence, reminders to health professionals and interventions to improve shared care across existing services may be worth further exploration. The use of intensive in-patient services may also be worth investigation, although the cost may well prove prohibitive. There are a whole range of other interventions that could also be explored: provider training, the audit and feedback of practice, the use of local 'opinion leaders' to persuade clinicians that obesity treatment is worthwhile,

organisational initiatives, or financial incentives (EPOC 1998). Other areas that may be worth exploring are those that fell outside the scope of this review: patient interventions with organisational implications, such as the effects of the length of follow-up by providers, the length of consultations, the frequency of consultations, the use of different combinations of interventions and the use of patient financial incentives. Interventions could focus on a number of areas, including changing attitudes and practice, provider behaviour (advice giving, record keeping, prescribing) or the organisation of care.

All new strategies need to be properly evaluated. Particular attention should be given to the following aspects of the design of studies: statistical power; adequate patient follow-up, both in terms of the numbers of recruited participants and the duration of follow-up; analysis by intention to treat; inclusion of cost effectiveness analyses; clarification of patient inclusion criteria and the definition of overweight or obesity; use of objective process and health outcome measures. There is a need for investigators to devise and adopt standard measures for assessing patient outcomes in this area (for example, mean weight lost, percentage excess weight lost, change in BMI). Such standard measures would allow easier comparison of effectiveness across different interventions and provide a benchmark against which clinicians could measure success.

7.10 Conclusions

It is difficult to provide recommendations for strategies to encourage better practice among health professionals from the available evidence. However, a few options may warrant further exploration: reminders to health professionals, the use of intensive in-patient services, and interventions to improve shared care across existing services. Other types of interventions have yet to be evaluated.

Considering the huge public health problem posed by escalating levels of obesity, it is surprising that this area of investigation has been so neglected. Researchers are faced with a challenge to be able to provide policy makers and providers with information about improving health care delivery for overweight and obese people. Future studies must pay particular attention to the existing evidence and methodological quality, in order to be able to provide reliable and generalisable

findings. Good cost-effectiveness analysis is essential for making a judgement about whether the benefits of any intervention are justified by the costs.

Table 7.1: Table of included studies: Professional interventions versus usual care

Trial	Methods	Participants	Comparison Groups	Outcomes
McDonald et al 1984	RCT Randomisation concealment: NOT CLEAR Follow up: providers: DONE patients: NOT CLEAR Blinded assessment: DONE Baseline: NOT CLEAR Reliable outcomes: DONE Protection against contamination: DONE for residents, NOT DONE for faculty members and nurses working across study groups Follow-up duration: DONE Unit of allocation: Teams Unit of analysis: Patients	N (providers): 115 residents + faculty and nurse staff N (total patients): 2,369 patients at least 130% above ideal weight attending a general medicine clinic Country: US Proportion of eligible providers who participated: NOT CLEAR	1. Reminders: computerised decision support (computer generated report attached to front of patient chart before meeting with a doctor, suggesting weight reduction diet) (N (physicians or patients) = NOT CLEAR) 2. Usual care control (N = NOT CLEAR	Process: Compliance with prompt to offer weight reduction diet, response rate to intentions to perform an action. Patient: NOT DONE
Ogden and Hoppe 1997	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NOT DONE patients: NOT DONE Blinded assessment: NOT CLEAR Baseline: NOT CLEAR Reliable outcomes: NOT CLEAR Protection against contamination: DONE Follow-up duration: NOT DONE Unit of allocation: Providers Unit of analysis: Patients	N (providers): 900 practice nurses approached, 586/900 responded, 240/586 randomly selected. N (total patients): 179 Level of overweight and other characteristics of patients NOT CLEAR. Country: UK Proportion of eligible providers who participated: 66/240 (27.5%) returned their 1 and 6 month post intervention questionnaires (NB 66/900 = 7.3%)	1. Educational materials (leaflet containing information about definitions, causes and risks of obesity, plus advice on giving patient-centred advice) + 2 hour seminar (learner centred: information-giving by presenters and reflection by nurses). (N = 80 nurses, but only 30 (37.5%) attended the seminar.) 2. Educational materials (as above) (expert group) (N = 80) and 3. No intervention control group (N = 80)	Process: No objective measures (beliefs, confidence in advice giving, content and style of practice, knowledge, consultation style). Patient: Beliefs, advice received, self-report weight loss.

Table 7.1 (cont.): Table of included studies: Professional interventions versus usual care

Trial	Methods	Participants	Comparison Groups	Outcomes
Rogers et al 1982	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment: DONE Baseline: DONE for weight, NOT DONE for proportion of obese patients with diabetes and length of prior clinic attendance Reliable outcomes: NOT CLEAR Protection against contamination: NOT CLEAR Follow-up duration: DONE Unit of allocation: Patients (and physicians) Unit of analysis: Patients	N (providers): NOT CLEAR N (total patients): 147 obese patients at least 20% above ideal weight (NOT CLEAR how determined), randomly selected from attendees at Cardiac, Pulmonary and Renal Clinics. Country: US Proportion of eligible providers who participated: NA	Within and between group comparisons: 1. Reminders: computerised decision support (computerised print out with concise and current information on patients, with identified deficiencies in medical care and recommendations for corrective action, in addition to usual records) 2. Usual care control group (hand-written traditional medical record) 3. Physicians with half computerised and usual records, and half usual records only. N (patients) = 68 experimental, 79 control	Process: Failure to give or review diet Patient: Lbs overweight (NOT CLEAR how measured)

Table 7.1 (cont.): Table of included studies: Organisational intervention versus usual care

Trial	Methods	Participants	Comparison Groups	Outcomes
Richman et al 1996	CBA Follow up: providers: NA patients: NOT DONE Baseline: DONE for weight, BMI, fat mass, blood pressure, NOT DONE for marital and occupational status. Characteristics of study groups: DONE Blinded assessment: NOT DONE Reliable outcomes: NOT CLEAR Protection against contamination: NOT CLEAR Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): Shared care (SC) = 24 GPs, hospital based service - Metabolism and Obesity Service (MOS) NOT CLEAR. N (total patients): 138, BMI 30-40 (approx. 29 kg overweight, approx. 46 years) 110 F, 28 M. The SC patients were the first 37 referred to MOS in the study period. These were each matched with 1-4 MOS patients, on gender, age and BMI. Country: Australia Proportion of eligible providers who participated: NA	1. SC = professional intervention: conferences (group meeting, plus observation of MOS procedures), Plus: Organisational intervention: professional, integration of services and continuity of care (patient held records). SC aimed to encourage consistent messages from primary and secondary care (MOS) professionals and to encourage treatment of obesity by GPs. N (patients) = 37 2. MOS usual care control group (established hospital programme: weekly sessions by allied health professionals, with negotiated level of follow-up). N (patients) = 101.	Process: NOT DONE Patient: Weight loss, measured by electronic scales with accuracy to 0.1 kg, % excess weight lost (change in weight/kg overweight x 100), BMI. (Also Food Habits Questionnaire, cognitive restraint, disinhibition and hunger.)

Table 7.1 (cont.): Table of included studies: Organisational interventions (no usual care comparison): Revision of professional roles

Trial	Methods	Participants	Comparison Groups	Outcomes
Balch and Balch 1976	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment:: NOT DONE Baseline: NOT CLEAR Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): 4 N (total patients): 50 patients at least 10% overweight (by standard weight for height tables), all students, mean 22.4 years, 47 F, 3 M, recruited through advert in campus newspaper and physician referrals Country: US Proportion of eligible providers who participated: NA	9 week behavioural weight reduction patient intervention, including $23.50 returnable deposit, delivered by: 1. Psychologist (experienced in behavioural obesity treatment) (N = 12) 2. Social worker (experienced in behavioural obesity treatment) (N = 13) 3. Nurse trained in behaviour modification for the study (N = 12) 4. Nurse trained in behaviour modification for the study (N = 12)	Process: NOT DONE Patient: Weight loss (not clear how data collected), change in % overweight.
Lindstrom et al 1976	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: DONE Blinded assessment: NOT CLEAR Baseline: NOT CLEAR Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): 5 N (total patients): 68 patients at least 10% overweight (Metropolitan Life 1969) (mean 27.9%), 62F 6M, no other current treatments for overweight, recruited through campus newspaper. Country: US Proportion of eligible providers who participated: NA	9 week behavioural weight reduction patient intervention delivered by: 1. Clinical psychology doctoral student 'pre-professional', face to face (N = 14) 2. Trained undergraduates 'paraprofessionals', face to face (N = 14) 3. Untrained undergraduates 'paraprofessionals', face to face (N = 14) 4. Clinical psychology doctoral student 'pre-professional', telephone-delivered (plus patient educational materials) (N = 14) 5. No intervention control group (N = 12)	Process: NA Patient: Weight change (lbs) (measured at meetings, but self-report for telephone group)

Table 7.1 (cont.): Table of included studies: Organisational interventions (no usual care comparison): Revision of professional roles

Trial	Methods	Participants	Comparison Groups	Outcomes
Perri et al 1987	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment: NOT DONE Baseline: DONE Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: DONE Unit of allocation: Patient Unit of analysis: Patient	N (providers): NOT CLEAR N (total patients): 109 patients 20-100% overweight, 21-60 years, 87 F 22 M, free of medical problems, recruited through newspaper adverts. Country: US Proportion of eligible providers who participated: NA	1. Behaviour therapy (BT): delivered by psychologists and nurse or doctor, 20 weekly group sessions, $100 returnable financial contingency, behavioural and cognitive elements, aerobic programme (N = 22) 2. BT + 15 biweekly peer support sessions (N = 46) 3. BT + 15 biweekly therapist contact sessions (N = 41)	Process: NA Patient: Weight loss (NOT CLEAR how measured but weight data gathered at follow-up sessions), BMI, self-reported adherence to principles (items on 7 point Likert scale, higher score = more adherence).

Table 7.1 (cont.): Table of included studies: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Trial	Methods	Participants	Comparison Groups	Outcomes
Hagen 1974	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: DONE Blinded assessment: NOT CLEAR Baseline: DONE Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): 3 N (total patients): 90 patients at least 10% overweight (by 1959 Metropolitan Life Insurance tables), all F students 17-22 years, recruited through advert in campus newspaper (deemed motivated for attending 2 meetings prior to inclusion) Country: US Proportion of eligible providers who participated: NA	10 week program based on Wollersheim (1970) learning principles. 1. Mailed lessons from manual, once a week over 10 weeks, with homework (N = 18) 2. Group meeting, face to face lessons from manual + weigh-ins, and discussions (N = 18) 3. Group face to face weigh-ins, discussions of principles + relaxation (no manual) (N = 18) 4. No treatment waiting list (N = 36)	Process: NA Patient: Weight (by standard physician balance scales), Eating Patterns Questionnaire (Wollersheim 1970), modification of Schifferes' (1966) Physical Activity Scale.
Hakala 1994	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE at 2 years, DONE at 5 years (but mixed objective and self-report data) Blinded assessment: DONE Baseline: DONE Reliable outcomes: DONE at 2 years, NOT CLEAR at 5 years. Protection against contamination: NA Duration of follow-up: DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): NOT CLEAR N (total patients): 60 patients at least 54% overweight (not clear how assessed), BMI approx. 39, 25-53 years, 42 F, 18 M, recruited by advert in local newspaper. Country: Finland Proportion of eligible providers who participated: NA	1. Inpatient weight loss program (RC) (3 weeks in a research centre, with counselling on nutrition and behavioural aspects of nutrition by a nutritionist, food preparation by a dietitian, physical activation and training, recreational activation by an occupational therapist, social counselling and a lecture by a physician) (N = 30) 2. Outpatient weight loss program (HC) (10 weeks of group meetings by 3 public health nurses trained in weight reduction over 2 days at the research centre, with lectures by a GP, psychologist and physiotherapist) (N = 30) Both groups of patients were asked to see their GP at 1-2 month intervals for up to 2 years.	Process: NA Patient: Weight loss, measured by electronic scales (Seca 708), (and self-report at 5 years)

Table 7.1 (cont.): Table of included studies: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Trial	Methods	Participants	Comparison Groups	Outcomes
Jeffery and Wing 1979	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment: NOT CLEAR Baseline: DONE Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): 2, plus 2 undergraduates N (total patients): 45 overweight patients needing to lose 10-30 lbs (not clear how determined) randomised, 19-55 years, 31 F, 5 M, recruited through a newspaper advertisement. Country: US Proportion of eligible providers who participated: NA	6 week behavioural weight loss program, including $20 returnable deposit, with either 1. No additional contact (N = 13) 2. 12 extra face to face contacts during the 6 weeks (N = 12) 3. 12 extra telephone contacts during the 6 weeks (N = 11)	Process: NA Patient: Weight loss (measured at meetings), and self-report calorie intake and expenditure.
Jeffery (and Danaher) et al 1982	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment: NOT CLEAR Baseline: DONE Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): NOT CLEAR. N (patients): 60 overweight (NOT CLEAR how determined) people, approx. 80% F, mean weight approx. 190 lbs. Recruited through local newspaper advertisements. Country: US Proportion of eligible providers who participated: NA	All groups received core treatment materials for an 8 week behaviourally-oriented program, and all participants deposited $50, returnable contingent upon different criteria. 1. Mail only: one chapter of treatment manual each week, weekly homework assignments, $50 returned at post-treatment interview (N = 10) 2. Mail + contract: manual (as above) plus homework assignments verified by signature of second person (e.g., spouse) with $5 for each assignment and $10 returned at the end (N = 12). 3. Mail + contract + phone: manual and assignments (as 2. above), plus work-daily phone calls to recorded message with monetary refunds based on adherence to calls and homework (N = 11) 4. Group: face to face group, including financial contingencies similar to 2 above (N = 14)	Process: NA Patient: Weight loss in lbs by calibrated balance beam scale.

Table 7.1 (cont.): Table of included studies: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Trial	Methods	Participants	Comparison Groups	Outcomes
Lindstrom et al 1976	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: DONE Blinded assessment: NOT CLEAR Baseline: NOT CLEAR Reliable outcomes: NOT CLEAR Protection against contamination: NA Follow-up duration: NOT DONE Unit of allocation: Patients Unit of analysis: Patients	N (providers): 5 N (total patients): 68 patients at least 10% overweight (Metropolitan Life 1969) (mean 27.9%), 62F 6M, no other current treatments for overweight, recruited through campus newspaper. Country: US Proportion of eligible providers who participated: NA	9 week behavioural weight reduction patient intervention delivered by: 1. Clinical psychology doctoral student 'pre-professional', face to face (N = 14) 2. Trained undergraduates 'paraprofessionals', face to face (N = 14) 3. Untrained undergraduates 'paraprofessionals', face to face (N = 14) 4. Clinical psychology doctoral student 'pre-professional', telephone-delivered (plus patient educational materials) (N = 14) 5. No intervention control group (N = 12)	Process: NA Patient: Weight change (lbs) (measured at meetings, but self-report for telephone group)
Meyers et al 1996	RCT Randomisation concealment: NOT CLEAR Follow up: providers: NA patients: NOT DONE Blinded assessment:: NOT CLEAR Baseline: NOT CLEAR Reliable outcomes: NOT CLEAR for weight, % overweight, diet and exercise knowledge, self report calories, DONE for problem solving ability Protection against contamination: NA Follow-up duration: DONE Unit of allocation: Patient Unit of analysis: Patient	N (providers): NOT CLEAR N (total patients): 77 randomised, 71 attended first session. Patients at least 20% overweight (Metropolitan Life Insurance Tables 1983), 90.9% F, mean 39.1 years, free of medical problems, recruited through announcements in newspapers, radio and television. Country: US Proportion of eligible providers who participated: NA	8 week cognitive-behavioural patient weight loss intervention, delivered (plus 1 orientation and 1 pre-treatment group session): 1. Face to face, and videoed 2. Face to face, not videoed 3. TV delivered (video of group 1 above) with phone contact and mailed progress reports to group leader (N for 1., 2., and 3. = 56) and 4. Waiting list control group (N = 15)	Process: NA Patient: Weight (Seca electronic scales with 0.113 kg accuracy), but some weight loss measures may be self-reported), % overweight, problem solving ability, patient knowledge, self-concept (esteem), self-report calorie consumption and expenditure

Table 7.2: Results Table: Comparison 1: Interventions to improve health professionals' management of overweight and obesity or health care delivery are more effective than usual care

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
McDonald et al 1984	24 month intervention, no additional follow-up	Computer generated reminders *vs.* usual care	% response to prompt: 29% (Potential unit of analysis error)	NOT DONE
Ogden and Hoppe 1997	One-off interventions, with post intervention questionnaires at 1 and 6 months	a. Educational materials + seminar (learner centred) *vs.* no intervention control b. Educational materials (expert group) *vs.* no intervention control	N.B. Follow-up: 900 practice nurses approached, 586/900 responded, 240/586 randomly selected to participate. 30/80 (37.5%) in the learner group attended the seminar 66/240 (27.5%) returned their 1 and 6 month post intervention questionnaires. No objective outcome measures	Follow-up: 190 nurses (those attending seminar or in expert or control group) asked to give a questionnaire to 5 consecutive weight-related patients at 1 month - 179/950 (18.8%) possible patient questionnaires returned. 35/179 (19.6%) who returned 1 month questionnaires returned 6 month questionnaires (35/950 = 3.7%) One month: N.B. Learner group patient N = 82, expert N = 58, control group N = 39, 1-7 scale, higher = more positive: (Self reported weight loss not given.) Patient satisfaction: a. Learner *vs.* control = 0.08 b. Expert *vs.* control = 0.1

Table 7.2 (cont.): Results Table: Comparison 1: Interventions to improve health professionals' management of overweight and obesity or health care delivery are more effective than usual care

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Ogden and Hoppe 1997 (cont.)				Likely to follow advice: a. Learner *vs.* control = -0.33 b. Expert *vs.* control = -0.06 Likely to lose weight: a. Learner *vs.* control = 0.19 b. Expert *vs.* control = 0.98 Confidence in losing weight (self-efficacy): a. Learner *vs.* control = 0.39 b. Expert *vs.* control = 1.36 Easy to follow advice: a. Learner *vs.* control = 0.43 b. Expert *vs.* control = 0.8 Nurse time in consultation (min): a. Learner *vs.* control = 4.15 b. Expert *vs.* control = 0.3 6 month self reported weight loss, 7 point scale (1 = now weigh much more, 7 = now weigh much less). Learner group patient N = 16, expert group N = 13, control N = 6) a. Learner *vs.* control = -0.4 b. Expert *vs.* control = 0.36 (Potential unit of analysis errors)

Table 7.2 (cont.): Results Table: Comparison 1: Interventions to improve health professionals' management of overweight and obesity or health care delivery are more effective than usual care

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Rogers et al 1982	Intervention and measurement of outcomes both for 2 years.	Computerised reminders *vs.* usual care	Number of diets given or reviewed: Reminders *vs.* control: Year 1: 2 (4.8%) Year 2: 4 (9.1%) Done both years: 7 (13.5%) Not done: 24 (27.5%) p = 0.007 'for all obese patients combined for sex' (but not clear which of the above figures this is for). (No SD/SEs so not possible to calculate CIs.)	Follow-up: 147 patients classified as obese, 23 dropped out, but data collected for: Baseline: 114/147 (77.6%), (88 F, 26M) After 10-15 months: 112/147 (76.2%) After 22-24 months: 90/147 (61.2%) Difference in mean lbs overweight across groups: 10-15 months, not adjusted: Reminders N = 55, control N = 57 Reminders *vs.* control females: 3 males: 11.7 Adjusted for baseline pounds overweight, ideal weight, prior time in clinics, and number of concomitant diseases (no N given): Reminders *vs.* control females: 3 males: 3

Table 7.2 (cont.): Results Table: Comparison 1: Interventions to improve health professionals' management of overweight and obesity or health care delivery are more effective than usual care

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Rogers et al 1982 (cont.)				22-24 months, not adjusted: Reminders N = 46, control N = 44: Reminders *vs.* control females: 2.8 males: 24.7 Adjusted: females: 4.3 males: 12.9 N.B. p = 0.023 for main effect of treatment at 22-24 months, but not clear if this for adjusted or unadjusted means. All other differences non-significant. N.B. Not possible to calculate CIs as not clear whether SEs or SDs are presented.

Table 7.2 (cont.): Results Table: Comparison 1: Interventions to improve health professionals' management of overweight and obesity or health care delivery are more effective than usual care: Organisational intervention versus usual care

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Richman et al 1996	The SC group saw their GP weekly in weeks 2-9, were reviewed at MOS at week 10 (and negotiated visits to their GP in weeks 11-26). Data collected at week 10 (end of programme) and week 26.	SC *vs.* MOS	NOT DONE	Follow-up at 10 weeks: SC = 28/37 (75.7%) MOS = 60/101 (59.4%) (p = ns) Follow-up at 26 weeks: SC = 17/37 (45.9%) MOS = 27/101 (26.7%) (p = 0.041) 10 weeks (changes from baseline): SC: N = 28, MOS: N = 60 SC *vs.* MOS: Weight loss: 2.2 kg (p = 0.0016) (CIs 1.99 to 2.41) (unequal variances) % excess weight lost: 8.5% (p = 0.0073) (CIs 7.34 to 9.06) BMI: 0.9 (p = 0.0021) (CIs 0.81 to 0.99) 26 weeks (changes from baseline): SC: N = 17, MOS N = 27: SC *vs.* MOS: Weight loss: 0 kg (p = ns) (CIs -0.64 to 0.64) % excess weight lost: -4.2% (p = ns) (CIs 0.52 to 7.88) (unequal variances) BMI: 0 (p = ns) (CIs -0.28 to 0.28)

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Revision of professional roles

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Balch and Balch 1976	Weekly meetings for 9 weeks, 4 week follow-up	Post intervention outcomes for all groups	Not applicable (NA)	Follow-up: 37/50 (74%). Mean change in weight (weight lost) and % body weight 1. 7.0 lbs, 5.74% (psychologist) N = 11 2. 9.7 lbs, 7.30% (social worker) N = 9 3. 8.0 lbs, 6.46% (nurse) N = 8 4. 7.2 lbs, 6.20% (nurse) N = 9 1. *vs.* 2.: 2.7 lbs, 1.56% (favours social worker) 1. *vs.* 3. and 4. combined: 0.6 lbs, 0.59% (favours nurses) 2. *vs.* 3. and 4. combined: 2.1 lbs, 0.97% (favours social worker) p = ns (across groups) No SDs or SEs given so not possible to calculate CIs. (NB. 13 week data not presented, but authors report 'no significant changes between end of treatment to follow-up')
Lindstrom et al 1976	9 week intervention, with 6 week follow-up.	Post intervention outcomes given for groups: 1. Clinical psychology doctoral student 'pre-professional', face to face (N = 14) 2. Trained undergraduates 'paraprofessionals', face to face (N = 14) 3. Untrained undergraduates 'paraprofessionals', face to face (N = 14)	NA	Follow-up: 57/68 (83.8%) Mean weight loss per group at 15 weeks: 1. 6.92, SD = 10.68, N = 12 2. 6.60, SD = 9.18, N = 10 3. 6.54, SD = 9.95, N = 13 1. *vs.* 2. and 3. combined: 0.35 lbs (favours clinical psychology pre-professional) (CIs -6.86 to 7.56) p = ns across groups N.B. All treatment groups lost significant amounts of weight pre-treatment to follow-up, $p<0.05$.

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Revision of professional roles

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Perri et al 1987	20 week therapy, 15 biweekly sessions follow-up sessions, 7 month and 18 month follow-up data collection.	Post intervention outcomes given for all groups, but the comparison of interest is 2 *vs.* 3 (group 1 data given so the reader can see the additional effect of the different types of contact). 1. Behaviour therapy (BT) only 2. BT + peer support sessions 3. BT + therapist contact sessions	NA	Follow-up: Pre-post treatment = 85/109 (78%), but data presented for 75/109 (69%) for all time points 18 months = 75/109 (69%) Mean weight kg (SD), adherence (SD) BT N = 16, BT + peer N = 32, BT + therapist N = 27. Pre-treatment: 1. 88.13 kg (20.66) 2. 94.24 kg (16.49) 3. 89.83 kg (15.50) Post treatment: 1. 77.87 kg (16.81), 39.96 (5.45) 2. 83.34 kg (16.72), 37.66 (5.21) 3. 79.13 kg (14.13), 40.26 (4.72) 2. *vs.* 3. 4.21 kg (CIs -3.95 to 12.37), 2.6 (CIs -0.012 to 5.21) (both favour therapist contact), p = ns for weight and adherence.

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Revision of professional roles

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Perri et al 1987 (cont.)				7 month follow-up: 1. 80.31 kg (16.61), 26.31 (5.52) 2. 84.93 kg (17.82), 25.44 (8.13) 3. 78.29 kg (16.56), 34.26 (7.03) 2. *vs.* 3. 6.64 kg (CIs -2.39 to 15.67), p<0.05 for therapist *vs.* peer and no follow-up groups combined, 8.82 adherence (CIs 4.82 to 12.82), p<0.05, (both favour therapist contact) 18 month follow-up: 1. 85.06 kg (19.39), 20.86 (5.30) 2. 87.77 kg (17.83), 19.16 (7.27) 3. 83.44 kg (18.15), 22.15 (8.57) 2. *vs.* 3. 4.33 kg (CIs -5.07683 to 13.74), p = ns (from the text, but reported significant in the tables), 2.99 adherence (CIs -1.14 to 7.12) p = ns, (both favour therapist contact) N.B. a. All groups lost significant weight pre-post treatment (p<0.0001). All groups gained weight 7-18 months (p<0.001). b. No BMI data presented but authors note it corresponds to the weight data)

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Hagen 1974	Weekly intervention for 10 weeks (over 11 weeks - one week vacation), plus 4 week follow-up	Post intervention outcome data presented for 1. Mailed manual (N = 18) 2. Group meeting, face to face lessons from manual + weigh-ins, and discussions (N = 18)	NA	Follow-up: 89/90 (99%) Mean weight lbs (SD) Pre-treatment Face to face: 153.06 (21.42) N = 18 Mailed: 152.83 (17.97) N = 18 Post treatment Face to face: 138.06 (19.13) N = 18 Mailed: 140.83 (17.82) N = 18 Face to face *vs.* mailed: 2.77 (favours face to face) (CIs -9.75 to 15.29) (p = ns) Follow-up Face to face: 139.72 (18.72) N = 18 Mailed: 142.33 (18.36) N = 18 Face to face *vs.* mailed: 2.61 (favours face to face) (CIs -9.95 to 15.17) (p = ns) No significant differences between groups for eating patterns, physical activity.

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Hakala 1994	In-patient (RC) intervention for 3 weeks, out-patient intervention (HC) lasted 10 weeks. 5 year follow-up (from start of intervention)	Post intervention outcomes presented for 1. In-patient RC intervention 2. Out-patient HC intervention	NA	Follow-up: 6 months = 43/60 (72%) 12 months = 39/60 (65%) 24 months = 43/60 (72%) 5 years = 54/60 (90%), but mixed objective (72%) and self report data (28%). Mean change in body weight (SD) from baseline and absolute % difference: 6 months: 1. RC: M = 19.0 kg, 15.6%, F = 11.5 kg, 11.1% Combined = 13.8 (8.6) kg, 12.6%, N = 23 2. HC: M = 12.2 kg, 10.1%, F = 5.5 kg, 5.3% Combined = 7.5 (10.0) kg, 6.9%, N = 20 RC *vs.* HC: M: 5.2 kg, 5.5% (favours RC) p = ? (not possible to calculate CIs because no separate N) F: 6 kg, 5.8% (favours RC) p = ? (not possible to calculate CIs because no separate N) Combined: 6.3 kg (5.7%) (favours RC) p < 0.05 (CIs 0.57 to 12.03) 12 months: 1. RC: M + F combined = 11.9 kg (10.8), 10.9%, N = 23 2. HC: M + F combined = 5.4 (8.2) kg, 5.0%, N = 20 RC *vs.* HC: 6.5 kg (5.9%) (favours RC) reported p = ns, but calculated p = 0.034, (CIs 0.52 to 12.48)

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Hakala 1994 (cont.)				24 months: 1. RC: M + F combined = 7.5 (9.5) kg, 6.8%, N = 23 2. HC: M + F combined = 3.1 (11.1) kg, 2.8%, N = 20 RC *vs.* HC: 4.4 kg (4%) (favours RC) p = ns (CIs -1.94 to 10.74) 5 years: 1. RC: M = 6.8 (5.0) kg N = 7, F = -0.3 (8.7) kg (weight gain) N = 20 2. HC: M = -0.2 (12.0) kg N = 8, F = -0.5 (9.6) kg N = 19 RC *vs.* HC: p = ? M = 7.0 kg (favours RC), (CIs -3.55 to 17.55) (unequal variances) F = -0.2 kg (favours RC) (CIs -5.74 to 6.14) NB. Many p values reported for within group differences, above are those given for between group differences.
Jeffery and Wing 1979	6 week intervention, no additional follow-up.	Post intervention outcomes given for all groups, but the comparison of interest is 2 *vs.* 3 (group 1 data given so the reader can see the additional effect of the extra contact) 1. No additional contact 2. 12 extra face to face contacts during the 6 weeks (usual care?) 3. 12 extra telephone contacts during the 6 weeks	NA	Follow-up: 35/45 (78%) Pre treatment weight lbs (no SDs/SEs given) 1. No extra contact: 158.09, N = 13 2. Face to face: 164.68, N = 12 3. Telephone: 164.20, N = 11 Post treatment weight lbs (no SDs/SEs given) 1. No extra contact: 152.92, N = 13 2. Face to face: 155.95, N = 12 3. Telephone: 154.15, N = 10 2. *vs.* 3. 1.8 lbs (favours face to face), p = ns Unable to calculate CIs because no SDs or SEs.

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Jeffery (and Danaher) et al 1982	Measurement at end of 8 week intervention, and 8 months following completion of intervention.	Post intervention outcomes presented for groups: 1. Mail only 2. Mail + contract 3. Mail + contract + phone 4. Group: face to face	NA	Follow-up: Post treatment: 36/60 (60%) 8 months later: 8/60 (13.3%) - data not presented due to poor follow-up. Mean weight lost (lbs) 1. Mail only: 9.67 (±3.48), N = 9 2. Mail + contract: 6.92 (±3.82), N = 9 3. Mail + contract + telephone: 6.99 (±4.81), N = 8 4. Group: 5.84 (±5.11), N = 10 1. *vs.* 4. 3.83 lbs (favours mail only) 2. *vs.* 4. 1.08 lbs (favours mail + contract) 3. *vs.* 4. 1.15 lbs (favours mail + contract + telephone) Across groups p = ns. Unable to calculate CIs because not clear if SD or SEs presented. NB Significant pre-post change in all groups (p< 0.05)
Lindstrom et al 1976	9 week intervention, with 6 week follow-up.	Post intervention outcomes given for groups: 1. Clinical psychology doctoral student 'pre-professional', face to face 4. Clinical psychology doctoral student 'pre-professional', telephone-delivered (plus patient educational materials)	NA	Follow-up: 57/68 (83.8%) Mean weight lost per group at 15 weeks: 1. 6.92 lbs, SD = 10.68, N = 12 4. 7.50 lbs, SD = 9.08, N = 10 1. *vs.* 4. 0.58 lbs, (favours telephone delivered) (CIs -8.34 to 9.50) p = ns across groups (data aggregated for all face to face groups *vs.* telephone delivered)

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Meyers et al 1996	1 orientation, 1 pre-treatment session, followed by 8 week program, and 3 and 15 month follow-ups	Post intervention outcomes measures presented for 1. Face to face, and videoed 2. Face to face, not videoed 3. TV delivered (i.e., the only difference between the face to face groups is one is videoed for TV)	NA	Follow-up: 56/77 (73%) Mean body weight kg (SD), mean % (SD) overweight: Pre treatment 1. 82.06 kg (17.87), 36.5% (22.2), N = 13 2. 86.55 kg (15.69), 44.2% (25.5), N = 18 3. 88.77 kg (10.66), 42.4% (17.0), N = 14 Post treatment (8 weeks) 1. 77.93 kg (13.90), 29.8% (23.3), N = 13 2. 82.06 kg (15.65), 36.8% (25.4), N = 18 3. 84.55 kg (10.02), 35.6% (16.8), N = 14 1. and 2. combined *vs.* 3.: 4.55 kg (CIs -4.23 to 13.33), 2.3% (CIs -12.21 to 16.81) (favours face to face) Change (loss) in body weight kg (no SDs or SEs given so not possible to calculate CIs) Pre-post: 1. 4.13 kg 2. 4.49 kg 3. 4.22 kg 1. and 2. combined *vs.* 3.: 0.09 kg (favours face to face), p = ns (across all groups)

Table 7.2 (cont.): Results Table: Comparison 4: Organisational interventions (no usual care comparison): Changes in setting or site of service delivery

Study	Outcome measurement	Comparisons	Main process effect	Main patient outcome
Meyers et al 1996 (cont.)				0-3 months: 1. 4.7 kg 2. 5.9 kg 3. 5.1 kg 1. and 2. combined *vs.* 3.: 0.2 kg (favours face to face), p = not given 0-15 months: 1. 0.7 kg 2. 6.6 kg 3. 5.4 kg 1. and 2. combined *vs.* 3.: 1.75 kg (favours TV delivered), p = not given. N.B. Significant weight losses in all 3 groups from treatment to 3 months. 3 - 15 months group 1 gained significant weight, groups 2. and 3. no significant changes.

For all tables:

i) $p > 0.05$ = ns
ii) P values and CIs are not given where unavailable for the observed comparison, and insufficient data to recalculate.
iii) N.B. In all cases, a positive result indicates beneficial difference between groups (e.g., weight loss), and a negative one indicates negative difference (e.g., weight gain)
iv) Unless otherwise stated, data presented is for mean values and standard deviations, and 95% confidence intervals (CIs)
v) 1 kg = 2.2 lbs

8. Discussion

The purpose of this thesis was to study the health professionals' views and practice in relation to overweight and obesity. In particular, the aims were: to describe the key cognitions of health professionals that may underpin their obesity stereotype and related attitudes; to describe the key cognitions of dieters that may underpin their obesity stereotype and related attitudes; to compare and contrast the views of health professionals and dieters; to explore the relationship between health professionals' beliefs, attitudes and practice in relation to overweight and obesity; and to examine the ways in which health professionals' management of obesity might be improved. In this way, a number of dimensions from Marteau's (1995) framework were explored. The purpose of this discussion chapter is to outline the main findings of the research and summarise the implications for improving cognitions and practice, as well as implications for future research.

8.1 Health professionals' views of overweight people and smokers

The results of Study 1 have indicated that beliefs and attitudes towards overweight people were mixed. Health professionals reported similar beliefs about the causes of overweight and obesity. Physical inactivity was rated as the most important causative factor, with addiction, mood-related variables, interpersonal factors, personality and genetics all rated as important. In particular, in comparison to beliefs about smokers, mood and genetics were rated as significantly more important. Overweight people were also rated as less responsible for acting on their situation than smokers. Taken as a whole, these results describe perceptions of a mixed pattern of both controllable and uncontrollable factors as contributing weight gain.

Attitudes were also mixed, with overweight people being viewed as ordinary people with ordinary lives, but with reduced self-esteem. However, there were clear level effects with obese people rated more negatively overall. In particular, obese people were rated low (most negatively) in terms of self-esteem, sexual attractiveness and health. These weight level effects can not be explained in terms of beliefs about causes or responsibility.

It has been argued that the distinction between beliefs and attitudes is not clear (Eagley and Chaiken 1993). For example, the attitude scale may also have measured beliefs about obese people (i.e., that they do indeed suffer from reduced self-esteem), while a number of belief statements may have incorporated an implicit, evaluative component (e.g., overweight people lack willpower). Therefore, it may be more helpful to summarise the key *cognitions* that may underpin the obesity stereotype among health professionals. In particular, the perceptions that appeared to differentiate the obesity stereotype from the overweight stereotype, were that obese people were seen to suffer from reduced self-esteem, and being sexually unattractive and unhealthy.

It must be remembered that views of obese people were not all bad. Nevertheless, because of the bias associated with self-report methods, it is possible that the views of respondents were more negative than described here. Furthermore, the relativity of the findings is reasonably assured: that negative cognitions were more pronounced at the extreme level. Given that obese people are most in need of intervention, the results indicate that there is room for improvement in the perceptions of professionals.

8.2 Dieters' views of overweight people

Study 2 explored the cognitions of dieters' using the same dimensions as those for health professionals. Respondents' views were not influenced by their own weight level. Also, beliefs about causes and responsibility were not influenced by the weight level upon which respondents were commenting (moderate or extreme). Dieters appeared to have quite traditional, stereotypic beliefs about the causes of overweight and obesity, with mood related factors, lack of willpower and physical inactivity all figuring quite highly. The respondents also viewed overweight people as quite responsible in terms of recognising a problem and doing something about it.

Despite these more traditional beliefs, dieters' attitudes were mixed. Overweight people were seen as ordinary people with ordinary lives, but noticeably, self-esteem related factors, sexual attractiveness and healthiness were rated most negatively. It seems that it is this collection of cognitions that summarises the obesity stereotype and corresponding attitudes: that there were some traditional beliefs, but that these did not relate to overwhelmingly negative views of overweight people.

8.3 Comparing the views of health professionals and dieters

Through direct comparisons of data from Studies 1 and 2 the differences and similarities of health professionals' and dieters' cognitions were explored. Although there were a number of similarities in the beliefs of the two groups, dieters viewed a number of mood-related factors, lack of willpower and addiction as more important in causing overweight and obesity. (Health professionals, however, rated personality as more important than dieters). Dieters also rated overweight people as more responsible, although both groups combined rated obese people as more responsible than overweight people. This set of beliefs generally confirms that dieters seemed to be more traditional in their perceptions of overweight people.

As indicated in the main studies, both groups viewed overweight people quite favourably in terms of ordinary people with ordinary lives. Likewise, both groups gave the most negative ratings to those items that described self-esteem, sexual attractiveness and health (although health professionals rated these latter two significantly lower). Health professionals were also much more influenced by the degree of overweight than dieters, so that they viewed the extremely overweight person most negatively overall.

8.4 Dietitians' views and reported weight management practices

Study 3 explored dietitians' beliefs, attitudes and practice in relation to overweight and obesity, and the relationship between these three concepts. Beliefs and attitudes were once again mixed. Respondents viewed physical inactivity as the most important causative factor, but mood, eating too much of the wrong foods, repeated dieting and interpersonal factors were also seen as important. There were no weight level effects for these beliefs about causes. Dietitians viewed overweight people, but especially obese people, as responsible for acting on their situation. Like the health professionals and dieters surveyed in Chapters 3 and 4, dietitians rated overweight people most positively in terms of social integration, but most negatively in terms of perceived low self-esteem, sexual attractiveness and health. Also, as in the survey of health professionals, a number of level effects indicated that dietitians were more negative in their rating of obese people than of overweight people. Dietitians reported

very similar management strategies for overweight and obese clients. The options used most frequently were advice and guidance on a number of dimensions, provision of diet sheets, and regular recording of weight.

Explorations of the relationship between beliefs, attitudes and behaviour, revealed that beliefs about the causes of overweight (both levels) explained more of the variance in practice than beliefs about responsibility, or attitudes. For overweight people, the key belief appeared to be repeated dieting. Lack of willpower was an important belief statement in relation to both overweight and obesity, but especially for obesity. Mood also explained some of the variance for two obesity management practices. The associations between beliefs and attitudes came out consistently for both overweight and obesity: in all cases, the total responsibility score explained most of the variance in attitudes, in terms of the total attitude score, and the social difficulties and attractiveness factors.

8.5 Improving health professionals' practice

Study 4 examined the evidence for strategies to improve health professionals' management of obesity and the delivery of health care for overweight and obese patients, using systematic review methodology. It has been argued that health professionals' practice may be less than optimal because of a number of factors, one of which is negative views of the patient group. Other factors include lack of knowledge about effective treatments, lack of access to suitable services, and patient expectations. Unfortunately, despite an apparent need, from the available evidence very little is known about how to improve practice or related health outcomes for this group of patients. Considering the repertoire of interventions that could be employed to improve practice or the organisation of care (EPOC 1998), very few studies have been undertaken. These were mostly of limited quality, with small sample-sizes and reasonably high drop-out rates among patients, making it difficult to draw meaningful conclusions on how to improve the management of obesity from the available evidence. Some strategies may warrant further investigation (reminders to health professionals to perform specific actions, the use of shared care approaches, and intensive in-patient services), but there are a whole host of alternatives that need to be tried and tested. Researchers are faced with a challenge to develop innovative

approaches to improving practice, based on evidence of the effectiveness of patient-interventions and the available resources.

8.6 Summary of key findings

The key findings of this thesis can therefore be summarised as follows:

- There were mixed beliefs and attitudes among health professionals towards overweight and obesity.
- In relation to health professionals, dieters tended to have more traditional views about the causes of overweight and responsibilities of overweight people, but had similar attitudes.
- Health professionals beliefs about the causes of overweight were not influenced by its level of severity
- Health professionals had more negative attitudes towards obese people than overweight people.
- Health professionals viewed overweight and obese people as ordinary people with ordinary lives.
- The key cognitions differentiating the obesity stereotype from the overweight stereotype were perceptions of reduced self-esteem, attractiveness and health.
- Beliefs about the causes of obesity explained more of the variance in reported practices than attitudes or perceptions of responsibility.
- Perceptions of responsibility explained more of the variance in attitudes than beliefs about the causes.
- Where practice needs to be improved, there is currently very little reliable evidence about how this might be done.

8.7 Appraisal of methods

A number of methodological shortcomings have been identified in terms of the surveys of health professionals and dieters. In particular, low response rates among health professionals in the first study, a lack of previously validated assessment instruments, and reliance on self-report methods may limit the reliability and generalisability of the findings. Nevertheless, the response rate to the survey of

dietitians was much better, and the findings of this study were generally consistent with the first study, suggesting that they were in fact reliable. Also, the measures of internal consistency of the scales were good, and factor analyses supported the observed patterns in terms of the differences across groups. Furthermore, for each comparison, the characteristics of the groups were very similar (except in the case of the health professional-dieter comparison where fewer similarities would be expected), providing a good basis for assessing between-group differences in the dependent variables. Despite the possibility of underestimating the existence of negative attitudes, the relativity of the findings across groups can be reasonably assured. Health professionals' views of obese people were shown to be mixed, but most negative of all the comparisons, with negative to neutral scores overall. This indicates a potential for improvement.

The systematic review methods employed in Chapter 7 are more reliable. Although arguably open to some bias (Egger and Davey Smith 1995), this type of review is immeasurably more reliable for determining the current state of the evidence than traditional reviews. From the searches for published and unpublished studies, and the structured approach for assessing studies for inclusion and quality, it is possible to be reasonably certain that the review provides a fair representation of the information available.

8.8 Conclusions

The cognitions of the health professionals studied in Chapters 3 and 6, and the cognitions of dieters reported in Chapter 4 were remarkably similar in many ways, supporting the supposition that views of overweight are culturally transmitted and shared. However, there were also a few noticeable differences. The beliefs about causes reported in the two studies of health professionals tended to be a mixture of controllable or personal factors (e.g., physical activity, mood-related aspects, personality) and factors beyond the control of the individual (e.g., interpersonal factors, genetics). In contrast, the beliefs about causes among dieters were more traditional (e.g. a greater emphasis on mood and lack of willpower) and dieters also viewed overweight people as more responsible. This suggests that dieters' views were more in line with the traditional stereotype of overweight people. Accordingly, dieters are likely to benefit from more balanced information about the causes of

obesity in terms of what is controllable and what is beyond their control. Health professionals' may be in a key position to provide such information.

Attitudes towards overweight people studied in all three surveys indicated strong similarities in perceptions. In each case, overweight people were viewed as suffering in terms of self-esteem, sexual attractiveness and health. On the other hand, perceptions of social integration or 'ordinariness' were consistently favourable. The key finding that differentiated health professionals and dieters was that health professionals were demonstrably more negative in their ratings of obese people. These level effects were not explained in terms of beliefs about causes, although obese people were occasionally rated as more responsible for acting on their situation.

So what do these results say for the obesity stereotype and related attitudes? In the general psychological, attitudes literature, there is debate about the distinctiveness of the terms *beliefs* and *attitudes*. Some argue these are separate issues (Petty and Cacioppo 1981), but others suggest they form part of the same overall 'attitude' concept (Rosenberg and Hovland 1960). In compromise, some have suggested that the degree of overlap or delineation depends on the attitude object being studied (Breckler 1984; Eagley and Chaiken 1993). In the case of prejudice, it seems that it may often be impossible to separate beliefs from implicit evaluations of those beliefs. Therefore, although prejudice theorists draw a distinction between the terms stereotypes and prejudice (at face value separating the belief and attitude dimensions) they also postulate that stereotypes may be *positive or negative* (e.g. Deaux *et al.* 1993), and so by the very use of such labels indicate that stereotypes have evaluative components. Likewise, the general obesity attitudes literature does not appear to make the distinction between the two concepts, with apparent belief statements (e.g., overweight people are lazy) being hard to differentiate from an inherent evaluation that being lazy is a negative attribute. Therefore, the obesity attitudes literature has summarised the obesity stereotype in terms that may technically include both thoughts (beliefs) and evaluations of those thoughts (attitudes). For example, the stereotype proposed by DeJong and Kleck (1986) includes terms such as 'less intelligent', 'lonely', 'dependent' and 'lazy', and Crandall's (1994) summary of the literature describes overweight people as unattractive, aesthetically displeasing, morally and emotionally impaired, alienated from their sexuality and discontent with themselves.

To overcome this philosophical debate about the constituent parts of attitudes, it is proposed that it is more helpful to describe health professionals' (and lay people's) views in terms of key 'cognitions'. This term has been helpfully used by Marteau (1995) to encapsulate a whole variety of internal mental processes. Such cognitions may in this context simultaneously describe the obesity stereotype and summarise obesity attitudes.

This thesis has set out the key cognitions of health professionals in relation to obesity, relative to those of dieters. Health professionals views of the causes of overweight and obesity were mixed, so although there may be some room for improving these perceptions, health professionals' views were in fact a little more balanced than those of the dieters studied. Health professionals also rated overweight and obese people as responsible for acting on their situation, but less so than the dieters group. This indicates that some of the health professionals' cognitions were more favourable than may have been expected. In any case, viewing overweight and obese people as responsible for taking some action about their situation may not be a bad thing, especially when there is general awareness of the need to also accept overweight people.

All the groups studied viewed overweight people relatively favourably in terms of social integration, but they also rated them as low in self-esteem, sexual attractiveness and health. Indeed, the health professionals in the first study rated obese people significantly more negatively on these dimensions, suggesting that it is these that characterise the obesity stereotype and related attitudes as distinct from an overweight stereotype. It also indicates that it may be these cognitions that need to be targeted with a view to improving health professionals' perceptions of this patient group, since it is the negative perceptions, and not the positive ones, that need to be addressed. As obese people are in greater need of intervention, there is greater reason to challenge health professionals' views of obese people. However, it seems logical to argue that of these cognitions, there is little point in looking to change the belief that obesity is unhealthy, because the evidence suggests that it is indeed detrimental to health. The need for health professionals to view patients as attractive is debatable, but there is reasonable evidence to suggest that people generally act less favourably towards others they find unattractive (Hayes 1993). Therefore it would seem reasonable to at least explore with health professionals the effect that this may

have on their responses to obese patients. Likewise, the impact that the perception of reduced self-esteem might have also warrants attention. Given that dieters themselves shared this view of overweight people, it may be that such views among health professionals are grounded in fact, from direct experience of working with obese people. Nevertheless, it is still worth addressing the possible impact of provider responses, since it seems likely that perceptions of low self-regard may engender the victim-blaming reaction that some commentators have suggested is widespread (Frank 1993). Precisely because dieters shared these views, it is important that health professionals do not inadvertently or otherwise tap into feelings of low self-worth among overweight people.

The findings from the first two studies suggest that the key cognitions that need to be improved among health professionals are more to do with perceived self-esteem and attractiveness than beliefs about the causes. However, Study 3 has indicated that in terms of reported practice, more variance was explained by the latter than the former concepts. For overweight people, repeated dieting was shown to be associated with a number of practice choices, while for both overweight and obesity, but especially obesity, lack of willpower appeared to be a key variable. It is interesting to note that this belief that has previously been highlighted in the literature as being associated with negative attitudes, was in fact associated with reported practice. This apparent belief statement has negative undertones, and therefore is worth addressing with health professionals. However, care must be taken not to assume causative relationships for such associations, since the relationship could be, for example, to do with more traditional beliefs and practices being prevalent among older dietitians. It is also worth remembering that the directions of the relationships were not necessarily what might have been expected. For example, increasing importance placed on willpower was not consistently associated with more negative practices.

It is also interesting that clear relationships emerged between attitudes and perceived responsibility, but not attitudes and beliefs about causes, or attitudes and practice. Therefore, while some relationships between cognitions and practice were found, there are still gaps in understanding the relationships between the key cognitions explored in this study. Likewise, there may be a number of other possibilities for predicting behaviour that were not examined here, which include not only key cognitions (beliefs, attitudes, knowledge), but also such things as situational variables (Eagley and Chaiken 1993), like resource constraints within dietetic services and

dietetic training. It may be that there are so many influences on practice that they will never be fully explained. Certainly, attitude theorists have been considering this conundrum for many years.

In this thesis, it has been argued that improving cognitions among health professionals may be one way of improving obesity management practices. From the study of dietitians it does indeed appear that some cognitions are related to practice variables. Therefore, the final study investigated what strategies have been undertaken to improve health professionals' practice in relation to overweight and obese people. This included searching for studies that aimed to improve practice through manipulating cognitions. Unfortunately, given the current state of the evidence, little is known about how health professionals' practice may be improved, and strategies remain to be developed and tested.

8.9 Implications for improving practice

From the studies included in this thesis, it appears that the cognitions of health professionals of overweight and obese people may not be as bad as previously documented. Encouragement may be taken from the fact that attitudes towards moderately overweight people were relatively favourable, and health professionals have reported that even with obesity, views were not completely negative (e.g., many of the items relating to social integration and normality were rated quite highly). However, due to the overt stigma towards obesity in industrialised countries, the possibility of underestimating with self-report methods, and the relatively *greater* negativity towards obese people (those most in need of intervention), it can be concluded that is some room for improvement in perceptions of this patient group.

Given weaknesses in the available evidence, however, the most appropriate channel for changing attitudes may be as part of a multi-dimensional approach to improve professional practice in general. Although a proportion of health professionals may hold negative views about obese people, and such perceptions *may* impinge on good practice, the literature is not especially reliable. There is little good evidence to suggest a direct link between negative perceptions among health professionals and bad practice. Focusing on attitudes alone is probably not the best bet for improving what health professionals do. Greater improvements for patients are likely to come

when specific clinical practices, as well as attitudes, are targeted. Therefore, this section addresses both strategies to change cognitions, but also specific behaviours that may be targeted directly with a view to improving service provision.

8.9.1 Changing cognitions

Strategies to change health professionals' cognitions may be done through education programmes with groups of qualified health care providers, or through undergraduate training programmes. Including an attitudes dimension to an intervention would not be about *assuming* negativity amongst all health professionals (current and future), but about raising awareness and *exploring* it as a possibility. In both cases, the aim would be to bring attention to the social construction of obesity prejudice and its consequences. To this end, some of the issues raised through earlier and the present work may be utilised. There are apparently very few studies that have been undertaken with a view to manipulating obesity attitudes (two that have been located will be discussed later), but there are a number of ideas from the psychological literature that may be usefully considered.

8.9.1.1 Psychological theory on changing attitudes

How might prejudice be overcome? In summarising the literature, Hayes (1993) has proposed that five conditions need to be satisfied in order for prejudice to be reduced:

- Observers and attitude objects need to have equal status (so that both share, for example, valued jobs and roles in society).
- There needs to be potential for personal acquaintance (so that observers see beyond the perceived social role to the individual).
- Contact with non-stereotypical individuals is important (so that the cognitions underlying the stereotype are challenged).
- Social support for contact between groups is necessary (the surrounding environment supports contact and equal, fair treatment).
- Occasions for co-operative effort are needed (to break down barriers between 'us' and 'them').

Unfortunately, it is not easy to see how most of these criteria either apply to overweight people, or can begin to be addressed in an environment that still widely

legitimises pressure against overweight people. For example, overweight people are not segregated, overweight and obesity is common, and given the health risks, there is plenty of opportunity for health professionals to experience personal contact with non-stereotypical individuals. The review by Sobal and Stunkard (1989) and the study by Gortmaker et al. (1993) reported in Chapter 2 suggest that obesity does result in social inequalities, at least for women. Equal status and social support is not likely to be addressed while obesity prejudice is not yet widely acknowledged as unacceptable (Crandall 1994).

Changing the whole of society's beliefs and expectations is likely to be a long gradual process, much like other movements for equality. Instead it seems there is a need to look for more specific, targeted strategies to change the ideas and attitudes of health professionals towards obese people. The attitudes psychological literature offers a number of leads with regard to changing attitudes in general. For example, cognitive consistency views suggest that people like to have their cognitions (beliefs, attitudes, perceptions) organised in a non-contradictory, tension free way (Heider 1944, 1946). Festinger (1957) proposed that cognitive dissonance (when people perceive inconsistency in their cognitions) is a major source of attitude change. For example, in one experiment, Festinger and Carlsmith (1959) gave study participants a very boring task to do. On completing the task, they were asked to lie to other potential participants and tell them that it was an interesting task. They were paid either $1 or $20 for doing this. Subsequently, those in the $20 dollar group still rated the task as boring, but those in the $1 group tended to rate the task as more interesting. Festinger and Carlsmith (1959) argued that $20 was enough to satisfy those participants that the lie was worthwhile, but in the $1 group the payment did not justify the lie, so they had to change their attitudes to reduce the dissonance between what they felt and what they told the other participants.

Thus, a potential means of changing obesity attitudes is to emphasise or create dissonance in the cognitions of health professionals. For example, an apparent source of dissonance is to demonstrate the conflict between prejudicial thoughts and the role of carer. Other possibilities would be to manipulate beliefs by emphasising the aspects of overweight that are beyond individual control so that obese people are not blamed as the cause of their situation, or to emphasise the 'artificial' social construction of ideas that dictate beauty ideals, so that the boundaries of what is

attractive are broadened. In both cases, the aim would be to create dissonance so that cognitions are shifted in line with more positive perceptions of the group.

Another major source of attitude change highlighted in the literature, which is not inconsistent with these ideas, is persuasion. Broadly speaking persuasion is about changing cognitions through effective communication. Systematic processing models focus on the fact that the content of an argument is actively attended to and assessed in some way by the target audience. For example, the information-processing model proposed by McGuire (1968, 1969, 1985) suggests that the impact of a message is the product of at least five steps: attention (the message reaches the target), comprehension (the target understands the message), yielding (the target agrees with the message), retention (the target retains the message), behaviour (the target acts on the message). In addition, while McGuire's model focuses on message comprehension (that the message is received and understood), the cognitive-response model proposed by Greenwald (1968) stresses the mediating role of people's cognitive reactions as they receive and reflect on a message (more active cognitive processes). In this way, listening to information can be like a kind of internal conversation, where the listener argues for or against the various components of an argument. Messages are more persuasive, therefore, if they create more favourable thoughts with regard to the message.

The dual-process models of persuasion (elaboration likelihood model and the heuristic-systematic model) take a slightly broader view by suggesting that the processing of information can take place via two routes: central route processing (when people are actively attending to the message) and peripheral route processing (when people are not particularly attending to the message) (Petty and Cacioppo 1979). Petty and Cacioppo (1986a, b) have used the term 'elaboration likelihood' to denote the extent to which the arguments are rehearsed and evaluated, or not – the central route being at one end of the continuum and the peripheral route at the other. In the peripheral route to persuasion, other processes are activated in the absence of message scrutiny, like classical and operant conditioning and heuristic processing. In the case of conditioning, it has already been noted in Chapter 2 that attitudes can be gained by positive and negative associations with various stimuli. In the heuristic-systematic model (Chaiken 1980) processing can again take place by systematic (central route) or heuristic (peripheral route) processing. The latter denotes when

decisions about messages are based things such as the credibility of the source or other non-content information (e.g., Eagley and Chaiken 1993).

All these theories have in common that information is likely to be persuasive if it is at least understood. For this reason, Eagley and Chaiken (1993) have noted that the most important variables in persuasion are the target's motivation and ability to turn to effortful and systematic forms of processing, as opposed to taking the sort of cognitive short-cuts involved in stereotyping. However, the dual processing models also note that other non-content variables are critical. As already mentioned, the credibility of the source is one such factor frequently highlighted in the literature. This was demonstrated by key work by Carl Hovland and colleagues in the 1950s, which showed that changing the source of a message could result in different degrees of attitude change. For example, in one such study, Kelman and Hovland (1953) asked participants to listen to a message about the lenient treatment of young offenders. In one condition they were told that the person communicating the message was a high court judge (high status) and in the other, someone who was suspected of drug-dealing (low status). Participants were more greatly influenced by the message from the judge, at least in the short term. Likewise, Eagley and Chaiken (1993) have reported that liking a particular person, or viewing them as an expert is likely to enhance their credibility as a source.

In addition to the source of the message, its structure and content are also important. For example, a message delivered with confidence is more persuasive than one that is not. Maslow, Yoselson and London (1971) found that when participants were asked to judge the guilt of someone in a hypothetical legal case, they responded more readily to arguments that were presented with confident language (e.g., 'obviously', 'it is beyond doubt') than those expressed more cautiously (e.g., 'it seems that').

On the other hand, Jaspars (1978) has argued that the structure and content of messages are likely to explain less of the variation in persuasiveness than the individual's motivation and ability to attend to a message. Nevertheless, in summarising the literature on message structure, he has suggested the following:

- there is often no difference between emotional and logical appeals for attitude change
- high fear arousal produces greater persuasive effects, but the findings are not always consistent

- a dynamic style of delivery appears not to make a big difference
- explicitly drawing conclusions for the audience is better than leaving them to draw their own conclusions
- refuting counter arguments may help to protect the recipient from later attempts to change his or her attitudes in the opposite direction
- repetition of the message increases its effect
- sometimes information presented at the beginning (primacy) has more impact, and sometimes information at the end has the greater effect (recency)

In summary, these theories provide a number of main issues to consider in the process of improving health professionals' cognitions in relation to obese people. Firstly, one potential source of change would be to increase the amount of cognitive dissonance and provide information that may reduce this dissonance in line with more positive perceptions. Secondly, the message needs to come from a credible source. Thirdly, and crucially, health professionals need to be motivated to attend to the information. (In dealing with this specialist group, their *ability* to attend is taken as read.)

An ideal opportunity for meeting these criteria would be to target student health professionals. Although the same principles could be applied to qualified health care professionals, targeting future providers has a number of distinct benefits: students are in an environment where they are receptive to learning (they are motivated), and teachers are more likely to be viewed as figures of authority (experts), so the messages they give out are more likely to be seen as worthwhile. They can also be presented with new or challenging information (to create cognitive dissonance). In addition, large numbers of students may be reached simultaneously and in plenty of time for cognitions to be influenced before clinical work with obese people commences.

8.9.1.2 Changing obesity attitudes

Despite the apparent emphasis in the literature on the existence of negative attitudes towards obesity, few studies have directly evaluated the effects of attempts to manipulate perceptions of overweight and obese people. Two studies have been located – these do not appear to have been grounded in psychological theory, but provide some useful ideas that in future could be used alongside the strategies of

persuasion highlighted by the psychological literature above. Robinson *et al.* (1993) reported that it was possible to reduce 'fat phobia' amongst women with negative feelings about their body shape and size, by (a) reducing blame for obesity by presenting evidence of the factors determining weight gain that are outside the individual's control (b) broadening the standards of beauty and attractive body size, (c) minimising the perceived disability associated with being fat, and (d) presenting information about discrimination towards overweight people and encouraging assertiveness and political activism. Of course, this study focused on overweight people themselves – those who arguably have more of a vested interest in improving their current situation (although this vested interest did not equate with better perceptions in the group of dieters studied in this thesis). Whether this type of effect could be replicated with other groups, and specifically with health professionals is not clear.

In a study more closely linked to professional practice, Wiese *et al.* (1992) undertook an intervention to modify the stigma held by first year medical students towards obese patients. Through the use of video material, written materials discussing the genetic and environmental components of obesity, and role playing exercises, they found a significant reduction in the likelihood that the subjects would blame the obese for their condition, and found that subjects were more likely to rate genetic factors as important in obesity.

These studies provide some useful ideas in exploring how the content of perceptions might be improved. Both studies emphasise the role of beliefs about factors outside the control of the individual. Likewise, a number of other investigators have also emphasised the role of these beliefs in improving perceptions (DeJong 1980; Crandall 1994; Allison *et al.* 1991). Although beliefs about causes were mixed in the studies reported in this thesis, suggesting they are not all bad, there is still an argument for challenging the traditional views of obesity as due to emotional or personality problems (both of which figured reasonably prominently). Also, in Study 3, lack of willpower was found to be associated with a number of reported obesity practices. Therefore, health professionals (and consumers) could benefit from balanced, up-to-date information on the causes of weight gain. This is not to give the impression of relinquishing overweight people from responsibility in improving their situation, but to provide a realistic assessment of contributing factors and to prevent unrealistic

expectations about change. Overweight is not about personality, but it is about a range of environmental, biological and social factors.

Robinson *et al.* (1993) also noted the role of existing beauty standards and political awareness. These two considerations may be usefully linked. It is apparent that our perceptions of the attractiveness of different body sizes are entirely socially constructed. That is, social preferences for shape change over time and depend on geographical location. Even as westernised countries heavily promote the attractiveness of thinness, there are many countries where excess weight is associated with higher socio-economic status and is seen as beautiful (Sobal and Stunkard 1989). Fat prejudice is akin to any other prejudice – racism, sexism, disability – it is a political matter. Cultural messages about obesity are strong and pervasive, and tackling beliefs about obesity is no easy task, but if professionals are provided with accurate information on the causes and consequences of obesity, perhaps they can be persuaded to re-examine their evaluations of obese people.

Further ideas for improving professionals' views are also available from the obesity literature. Some investigators have suggested that the existence of negative attitudes may be linked to perceptions of treatment efficacy (Cade and O'Connell 1991; HEA 1995; Summerbell 1998). Problems may arise when health professionals do not feel personally equipped to treat obesity themselves, or feel that what they do has no effect. For example, Price *et al.* (1987) found that 93% of US doctors believed they were obligated to counsel patients on the health risks of obesity, 70% found weight loss counselling difficult, 47% found it inconvenient, and only 29% believed obese people could lose significant amounts of weight. Likewise, in a US national random sample of paediatricians, 83% felt obliged to counsel parents on the health risks of obesity in children, but 70% found treating obesity difficult and only 11% found counselling parents and children on weight loss professionally gratifying (Price, Desmond, Ruppert and Stelzer 1989). Cade and O'Connell (1991) found similar results in a UK sample of doctors: 98% thought it was their role to counsel obese patients as to the risks of obesity, 84% disagreed that counselling patients who need to lose weight was easy, and only 26% found it professionally rewarding. Even professionals who believe in their role as obesity counsellors may end up blaming patients for the perceived failures of their intervention. For example, Hoppe and Ogden (1997) undertook a survey of 586 UK practice nurses. They found that although practice nurses thought weight loss was beneficial for obese patients, and

reported high levels of confidence in their own ability to provide weight loss advice, they had little faith in the fact that obese patients would follow their advice and lose weight. Hoppe and Ogden (1997) have suggested that this can be described as *'the operation was a success but the patient died'* (p.146) approach to obesity management.

Wooley and Garner (1991) have suggested that perceived failure in achieving therapeutic goals (i.e. significant and sustained weight loss) can lead health professionals to question their own competency and to view obese people as a symbol of their own inadequacy. The implication is that rather than blame themselves, health professionals end up blaming the very people they are there to help.

The response to this situation is two-fold. Firstly, a change in the philosophy of treatment seems necessary. Frank (1993) has pointed out that a similar lack of ability to affect a 'cure' in other conditions does not result in the same frustration and apparent withdrawal among health professionals. He has suggested that health professionals might need to be encouraged to view obesity as a chronic problem with the need for long-term treatment: to move away from a quest for definitive cures and all the disappointments that may bring, to the management of a long-term problem, much as any other chronic condition. Changing perceptions of what constitutes a successful outcome may help providers to avoid blaming overweight people for failure.

Secondly, practitioners could be provided with good information about the effectiveness of various treatment options. Until recently, a plethora of intervention studies of variable quality proposed a range of treatment options, with no consistent and clear conclusions, other than an apparent pessimism about the long-term effectiveness of treatments. Some practitioners may also have been aware of the 'anti-dieting movement', with calls to abandon dieting altogether leaving them feeling even less equipped to provide treatments or advice. Although there are still gaps in the evidence, recent systematic reviews of treatments have provided a clearer picture of the options. These have identified a number of potentially effective weight loss interventions: those to reduce sedentary behaviour in obese children; diet, exercise and behavioural strategies for adults, in combination where possible; the use of maintenance strategies such as continued therapist contact; limited use of

pharmaceutical interventions in conjunction with strategies to change lifestyle; and surgery for selected morbidly obese patients (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998). Recent guidelines for UK doctors (SIGN 1996) may also provide a useful resource for helping practitioners to improve their own practice. Both of the above approaches may help professionals to feel more equipped to treat obesity, resulting in less frustration being expressed, either overtly or more subtly, towards obese patients.

8.9.2 Targeting specific practices

In addition to improving professionals' perceptions of obese people and treatment, there are a number of other areas that could be targeted. It is possible that health professionals are not very good at diagnosing obesity, and without a diagnosis, treatment cannot begin. Certainly, health professionals' ability to recognise obesity is one are that could be explored with a view to improving practice. Eck *et al.* (1994) found that doctors made errors in the identification of obesity, although these were in the minority. In a sub-sample of 10,457 patients in the US Second National Health and Nutrition Examination Survey (NHANES II), doctors' subjective judgements of obesity were compared to actual BMI of patients. It was found that 12.6% of obese patients (defined as a BMI ≥30.4) were misdiagnosed as normal weight. An incorrect diagnosis of normal weight when patients were obese was more likely with increasing patient age, with a central pattern of obesity, and if patients were male.

It may not be that the ability to recognise obesity is the greatest problem: the health professionals' response to acknowledging the presence of obesity seems more important. For example, if obesity is not seen as a risk to health and not recorded in medical records, health professionals may be less inclined to act. In a study of 25 family practice residents and 2,746 patients in the US, McArtor *et al.* (1991) asked doctors to identify (general) health risk factors in patients. They found that obesity was identified and recorded as a health risk factor in 51.6% patients with a BMI ≥30. There was no effect for patient's age or gender, but the likelihood of identification of obesity increased as BMI increased. When obesity was recorded on a 'problem list', management actions were taken for 92.9% of the patients. Overall, management actions were taken for 46.5% of all obese patients. When obesity was *not* recorded

on a problem list or risk factor evaluation form, management actions occurred for only 3.2% of obese patients.

A study in Germany of a random sample of 6,085 patients also suggested obesity was under-reported in medical records. Hauner, Köster and von Ferber (1996) examined the medical records of 6,085 health insurance members for a diagnosis of obesity and found a prevalence rate of 6.2%. The authors commented that this was much lower than the prevalence of obesity in Germany, again suggesting a failure to document obesity in routine care.

In a UK study of general practitioner (GP) documentation of obesity, one commentator has suggested that improving documentation will not necessarily lead to improvements in the management of obesity. Little (1998) studied 755 consecutive patient attenders to one GP, at a time when GPs were targeted for documenting the measurement of BMI under general practice contracts. He found that patients were generally good at estimating their own heights and weights, and despite a slight tendency to underestimate weight and overestimate height, they knew if they were overweight or not. The majority of obese patients also knew their weight posed a risk to their health. He questioned how 'medicalising' the measurement of obesity would improve outcomes, when patients are already aware of their weight and some of the risks. It could equally be argued, however, that health professionals could play a role in treatment and motivating patients, which it is up to them to initiate, much as they might in providing smoking cessation advice.

A large UK survey of GP patient attitudes to lifestyle factors, suggests there are gaps in patients knowledge and motivation (Silagy, Muir, Coulter, Thorogood *et al.* 1993). Health professionals might reasonably play a role in addressing these gaps. Silagy *et al.* (1993) found that only 45% of obese people (N = 289, BMI ≥30), perceived their current diet to be harmful to their health, with significantly more women than men seeing their diet as harmful (49% *vs.* 37%). Of the whole survey population (not just the obese), most people who were inactive viewed this as a risk to their health (74%), but motivation to change was lowest in those with the *greatest* number of cardiovascular risk factors. In addition, those with the highest fat intake were least likely to perceive their diet as harmful. This study highlighted some important gender differences. In addition to more obese women than men viewing their diet as harmful, more women than men who were obese or had a high dietary fat intake were

motivated to change their diet (76% *vs.* 48%). Silagy *et al.* (1993) suggested that this is down to the greater social pressures on women in relation to body shape and size. They also recommend efforts to educate the public as to the risks of a high fat diet and to improve motivation to exercise. From this study, it would appear that obese men may be most in need of lifestyle information. Health professionals could reasonably be expected to play a role in addressing these issues.

Without providers' recognition (and documentation) of obesity, they could hardly be expected to intervene, but without rigorous evaluations of the effects of documentation, it is not possible to say with any certainty whether this could lead to improved health outcomes for overweight and obese people. Improved record keeping may not be enough. It seems plausible that documentation would be only one factor among others that may positively influence the clinical management of obesity. Even if obesity is recorded and some action is taken, other aspects of practice may be inappropriate. McArtor *et al.* (1992) found that even though management actions were undertaken for 92.9% of obese patients for whom obesity had been recorded on a problem list, the management actions undertaken were of questionable benefit. Most doctors selected patient self-care options rather than repeat office visits for obese patients. They suggested that in addition to systems for reliably identifying obese patients, office-based strategies for improving management need to be developed and tested.

Other aspects of clinician behaviour that may leave room for improvement are referral practices. For example, one study of 45 family practitioners, obstetricians and general internists explored decisions to refer obese patients to an endocrinologist (Rothert, Rovner, Elstein, Holzman *et al.* 1984; Rovner, Rothert, Holmes, Ravitch *et al.* 1985). Participants responded to 24 case vignettes for a judgement on the likelihood that they would refer. Although the authors note that the use of hypothetical patients deviates from actual practice, they suggest that this technique allows the investigator to ask more pertinent questions of the decision procedure than the use of more naturalist techniques such as chart extraction, where such information may not be available. The patient's desire for treatment by an endocrinologist was the biggest factor in the decision to refer, over and above a history of overeating, presence or absence of red striae (commonly seen as related to an endocrine disorder), and the percentage overweight. Although patient desires are an important part of the decision making process, the fact that they appeared to override clinical information in this

situation is not indicative of good clinical practice. Here, doctors recognised that the likelihood of an endocrine disorder was low and did not have expectations of improved health outcomes through referral, but suggested they would have referred nevertheless.

Other studies have found an apparent *reluctance* to refer on to other specialties. Kristeller and Hoerr (1997) undertook a mailed survey of 1,222 US physicians in six different specialties on attitudes towards managing obesity. They found an apparent resistance to making outside referrals and suggested that the available resources were being under-utilised. For example, the reported use of psychological services was low, even when weight gain was reported as being related to stress. The exception in this study was that expectations for the value of dietetics services may have been over-stated, given the small number of actual visits.

Some commentators have suggested doctors' nutrition knowledge is lacking and needs improvement in order for doctors to be able to give good advice. Cade and O'Connell (1991) found in a survey of 299 UK GPs, that the most common advice to overweight patients was to eat less in general (78%) or to eat fewer calories (75%), to exercise (77%), or to attend a slimmers' group (54%). They suggest that telling patients to eat less in general is poor advice, as certain types of high calorie foods should be targeted. Also, citing Francis, Roche, Mant, Jones *et al.* (1989), they suggest that primary care workers can give dietary advice that is confusing or misleading to patients.

As previously mentioned, McArtor *et al.* (1992) found that the most common management strategy with obese patients was to advise self-care over office-based interventions, a strategy that may be wholly ineffective if doctors and patients do not have access to the right nutrition knowledge and the resources to make changes. Summerbell (1996) has also argued that nutrition training for doctors be improved, starting with undergraduate medical training, and that dietitians have a role to play in providing nutritional information. She outlines the key areas that training of doctors should cover, based on the findings of the Nutrition Task Force, established to respond to the nutritional elements of the UK government's health strategy for England and Wales, the Health of the Nation (HoN 1992). The key areas relevant to obesity include basic nutrition knowledge and the provision of consistent and clear advice to patients – aspects that are currently lacking.

It appears that most of the literature on obesity-related practice focuses on doctors' behaviour, and more specifically, GPs. As the gate-keepers to health care, to concentrate on GPs' practice might be no bad thing – they are uniquely placed to deal with large numbers of people on a day-to-day basis. There are encouraging signs that family doctors recognise the need to treat obesity and see merit in doing so. The vast majority of those participating in the surveys by Price *et al.* (1987) and Cade and O'Connell (1991) indicated that they believed it was their role to counsel obese patients. This is a positive indicator because it may be seen as the first step to approaching the management problem.

There is a need to explore GPs' office-based strategies for the management of obesity as well as the appropriate use of referrals to other services. However, doctors are also limited by the amount of time they can spend with patients, and many other professions are implicated in the management of obesity. As previously mentioned, dietitians may be well placed to provide doctors with good information and advice on nutrition for patients, but the extent to which this occurs routinely is not clear. It would also seem a good use of resources for dietitians to run weight loss groups in addition to, or in some cases instead of, individual referrals from clinicians. More information is needed on consumer preferences, but at least one study (Murphree 1994) has suggested overweight people value group approaches. Certainly, commercial slimming groups appear popular. At the same time, access to similar public sector initiatives seems limited, offering the health care consumer little choice but to attend programmes that have not been properly evaluated. Public sector group programmes could offer the opportunity of greater control over the content and quality of treatments, and may prove to be a cost-effective approach to obesity management.

Psychologists have a role in delivering behavioural interventions that the recent systematic reviews have suggested may be useful in treating obesity (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998), or in training other professionals to deliver such interventions. However, these reviews also suggest that such strategies are more effective when combined with diets and exercise, and so the involvement of other professions is important. Supervised exercise programmes or exercise on prescription initiatives may mean enlisting the help of physical therapists (sports development officers, physiotherapists).

Surgeons may need to be informed about the appropriateness of different treatment options to make sure surgery is undertaken only on the right group of patients and that riskier procedures are avoided (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998). In taking an integrated approach, initiatives to promote multi-disciplinary practice or shared care may improve the treatment delivery for overweight and obese patients.

8.9.3 Improving services

In addition to targeting different professions, service provision in general needs to be addressed. Health professionals will be hampered in their ability to perform well without access to appropriate services. For example, GPs can not refer to group weight-loss support programmes if none exist locally. Likewise, the apparent need for long-term follow-up can not be realised if resources do not support continued contact. The availability of other services (e.g. behavioural training, dietetics, surgery) also needs to be addressed. These types of issues will depend less on the individual practitioner, and more on policy makers and service providers. In all these cases, however, the principles should be the same. Attitudes to obese people and treatment may need to be explored and efforts made to improve perceptions. For any service, there needs to be an emphasis on incorporating the available evidence, or where there are gaps in the evidence, setting up and evaluating innovative and cost-effective treatment programmes.

In summary, it is clear that there are many areas where obesity-related practice and service provision may need to be improved. There is currently very little evidence to say how we may go about this, but this should not be taken as a reason not to act. A good starting point to improving practice would be to encourage health professionals to view obesity as something that is serious and warrants their attention. Doctors, for example, have reported that they consider obesity to be an important matter for them to address (Price *et al.* 1987; Cade and O'Connell 1991). Addressing the possibility of negative perceptions may help to break down barriers to good practice. A range of options for improving practice need to be considered: identification, documentation, professional-patient communication and advice-giving, utilising appropriate services, inter-disciplinary collaboration, the use of follow-ups, and the general organisation of care. The existence of and access to appropriate services will also need to be

addressed. Existing evidence on the effectiveness of interventions with patients needs to be incorporated into interventions designed to improve health professionals' practice and the delivery of health care. Rigorous evaluations of interventions are needed to determine whether health professionals' practice and service delivery may be improved and whether this results in changes to patient outcomes.

8.10 Implications for future research

There are a number of issues that could be usefully examined by future work. Priorities necessarily depend on the perceived importance of answering a number of questions: whether it is more important to know if health professionals' attitudes towards obese people are generally negative, whether negative attitudes adversely affect practice, whether practice can be improved by addressing attitudes, or whether practice can be improved at all. That is, whether explanatory issues (designed to test scientific hypotheses) *or* pragmatic ones (designed to determine the choice of procedure in clinical practice) are being addressed (e.g. Schwartz and Lellouch 1967). For example, *are attitudes the key to improving practice?* versus *can practice be improved?*

In examining the role of attitudes towards obesity, a systematic review of current attitude research would help to establish the evidence for the existence and degree of negativity among professionals. Given the nature of the topic and the apparent heterogeneity of studies, this could prove to be an onerous task that may leave many questions unanswered. Nevertheless, such a procedure could also be utilised to develop a standardised approach to measuring attitudes towards and beliefs about overweight and obesity. It would also be helpful to know how health professionals' perceptions of obesity influence their actual practice with obese people. The impact of attitudes can be determined more reliably by providing objective measures of professional practice, which are lacking in current attitude studies.

It could be argued that with limited resources, the most important issue is whether health professionals' management of obesity can be improved at all and whether this results in improvements in patient outcomes. Good intervention studies to improve practice and the delivery of health care for overweight and obese people are desperately needed. Exploring and addressing attitudes may be one dimension of

comprehensive strategies for change. Researchers and clinicians are faced with a challenge to formulate innovative, cost-effective interventions for improving service delivery. Ideas may be taken from the EPOC (EPOC 1998) taxonomy of interventions, based on studies of strategies that have been employed in a wide variety of settings and clinical areas. Also, strategies must be based on implementing the evidence on patient interventions wherever possible (EHCB:3:2 1997; Glenny *et al.* 1997; NHLBI 1998).

Investigators need to bear in mind the often limited quality of existing intervention studies and particular attention should be given to the following aspects of design: statistical power; adequate patient follow-up, both in terms of the numbers of recruited participants and the duration of follow-up; analysis by intention to treat; inclusion of cost effectiveness analyses; clarification of patient inclusion criteria; and the use of objective process and health outcome measures.

There is also a need to define the level of overweight that is being considered. Firstly, because different degrees of overweight carry implications for perceptions, risk and treatment. Secondly, because adopting standard definitions will facilitate the interpretation of findings and comparisons across studies. An increasingly popular approach that is relatively easy to implement is a definition of overweight as BMI 25-30, and obesity as 30+ (EHCB:3:2 1997; NHLBI 1998).

8.11 Final statement

This thesis has demonstrated that health professionals' cognitions in relation to overweight people were mixed and may not be as bad as previously documented. However, attitudes towards obese people were more negative than those towards overweight people – the key cognitions that appeared to differentiate between the overweight and obesity stereotype were those of perceived self-esteem, sexual attractiveness and health. Given that there may be a lack of sensitivity in the employed methods, that obese people are at the greatest risk and in most need of intervention, and that obesity prejudice in general culture is often overt, it seems that there is at least some room for improvement in health professionals' perceptions of obese people. The available evidence is, however, currently not strong enough to assume widespread negativity among providers. Nor does it provide reliable

information of the possible effects on practice. Therefore, it may be helpful to explore and address cognitions as *one* aspect of a multi-component approach to improving management. There is currently very little good information on strategies to improve practice and service delivery in this area. Investigators face a challenge to develop and test methods for improving the management of obesity and service delivery for overweight and obese people.

9. References

Abrahms JL, Allen GJ. Comparative effectiveness of situational programing, financial pay-offs and group pressure in weight reduction. Behavior Therapy. 1974; 5(3):391-400.

Adams CH, Smith NJ, Wilbur DC, Grady KE. The relationship of obesity to the frequency of pelvic examinations: do physician and patient attitudes make a difference? Women and Health. 1993; 20(2):45-57.

Adams GR. Physical attractiveness research: Toward a developmental social psychology of beauty. Human Development. 1977; 20:217-39.

Adorno TW, Frenkel-Brunswick G, Levinson DJ, Sanford RN. The authoritarian personality. New York: Harper, 1950.

Agell G, Rothblum ED. Effects of clients obesity and gender on the therapy judgements of psychologists. Professional Psychology: Research and Practice. 1991; 22:223-9.

Agras WS, Taylor CB, Feldman DE, Losch M. Developing computer-assisted therapy for the treatment of obesity. Behavior Therapy. 1990; 21(1):99-109.

Ajzen I. Attitudes, personality and behaviour. Milton Keynes: Open University Press; 1988.

Ajzen I. The theory of planned behavior. Organizational Behavior and Human Decision Processes. 1991; 50:179-211.

Ajzen I, Fishbein M. Attitude-behavior relations: a theoretical analysis and a review of empirical research. Psychological Bulletin. 1977; 84:888-918.

Ajzen I, Fishbein M. Understanding attitudes and predicting behavior. Engelwood Cliffs NJ: Prentice-Hall, 1980.

Ajzen I, Madden TJ. Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. Journal of Experimental Social Psychology. 1986; 22:453-74.

Alefaio L. Report on the evaluation of the manual on nutrition: A food package for doctors and medical students. 1997; Unpublished report.

Alessi DF, Anthony WA. The uniformity of children's attitudes toward physical disabilities. Exceptional Children. 1969; 35:543-5.

Allied Dunbar National Fitness Survey. A report on activity patterns and fitness levels. London: Sports Council and Health Education Authority; 1992.

Allison DB, Basile VC, Yuker HE. The measurement of attitudes toward and beliefs about obese persons. International Journal of Eating Disorders. 1991; 10:599-607.

Allison DB, Heshka S. Emotion and eating in obesity? A critical analysis. International Journal of Eating Disorders. 1993; 13(3):289-95.

Allport GW. Attitudes. In: C Murchinson, (Ed.). A handbook of social psychology. Worchester, Massachusetts: Clark University Press, 1935:798-844.

Allport GW. The historical background of social psychology. In: G. Lindzey and E. Aronson (Eds.). Handbook of social psychology. 3rd edition. New York: Random House, 1985.

Allport GW. The nature of prejudice. New York: Doubleday Anchor, 1958.

Andersen AE, DiDomenico L. Diet vs shape content of popular male and female magazines: A dose-response relationship to the incidence of eating disorders? International Journal of Eating Disorders. 1992; 11(3):283-7.

Andres R. Body weight and age. In: KD Brownell and C Fairburn (Eds.). Eating disorders and obesity: A comprehensive handbook. New York: The Guilford Press; 1995; pp. 65-70.

Andres R. Influence of obesity on longevity in the aged. In: C Borek, CM Ferioglio and DW King (Eds.). Aging, cancer and cell membranes. Stuttgart: Theme Verlag; 1980.

Annest JL, Sing CF, Biron P, Mongeau JG. Familial aggregation of blood pressure and weight in adoptive families III. Analysis of the role of shared genes and shared household environment in explaining family resemblance for height, weight and selected weight/height indices. American Journal of Epidemiology. 1983; 117(4):492-506.

Antman EM, Lau J, Kupelnick B, Mosteller F, Chalmers TC. A comparison of results of meta analyses of randomised control trials and recommendations of clinical experts. Journal of the American Medical Association. 1992; 268:240-8.

Atkinson RL, Russ CS, Ciavarella PA, Owsley ES, Bibbs ML. A comprehensive approach to outpatient obesity management. Journal of the American Dietetic Association. 1984; 84(4):439-44.

Bagley CR, Conklin DN, Isherwood RT, Pechiulis DR, Watson LA. Attitudes of nurses toward obesity and obese patients. Perceptual and Motor Skills. 1989; 68:954.

Bakx JC, Stafleu A, van Staveren WA, van den Hoogen HJ, van Weel C. Long-term effect of nutritional counseling: a study in family medicine. American Journal of Clinical Nutrition. 1997; 65(6 Suppl):1946S-1950S.

Balch P, Balch K. Establishing a campus-wide behavioral weight reduction program through a university student health service: the use and training of health service personnel as behavioral weight therapists. Journal of the American College of Health Associations. 1976; 25(2):148-52.

Bandura A. The stormy decade: Fact or fiction. In: D Rogers, (Ed.). Issues in adolescent psychology. New York: Appleton Century Crofts, 1972.

Basler HD, Brinkmeier U, Buser K, Haehn K-D, Mölders-Kober R. Behaviour modification in obese patients with essential hypertension. Group treatment versus health counselling in a general practice setting. Allegemeinmedizin. 1985; 14(1):18-24.

Bastian H. The power of sharing knowledge: Consumer participation in the Cochrane Collaboration. Unpublished report: The UK Cochrane Centre; 1994.

Beck SB, Ward-Hull CI, McLean PM. Variables related to women's somatic preferences of the male and female body. Journal of Personality and Social Psychology. 1976; 34:1200-1210.

Bennett W, Gurin J. The dieter's dilemma. New York: Basic Books; 1982.

Benson PL, Severs D, Tatgenhorst J, Loddengaard N. The social costs of obesity: A non-reactive field study. Social Behaviour and Personality. 1980; 8:91-6.

Berscheid E, Walster E. Physical attractiveness. In: L Berkowitz (Ed.). Advances in experimental social psychology, Vol 7. New York: Academic Press; 1974.

Biron P, Mongeau JG, Bertrand D. Familial resemblance of body weight and weight/height in 374 homes with adopted children. Pediatrics. 1977; 91:555-8.

Bjorntorp P. Regional patterns of fat distribution. Annals of Internal Medicine. 1985; 103: 994-5.

Blumberg P, Mellis LP. Medical students attitudes toward the obese and the morbidly obese. International Journal of Eating Disorders. 1985; 4:169-75.

Bolton-Smith C, Woodward M. Dietary composition and fat to sugar ratios in relation to obesity. International Journal of Obesity. 1994; 18:820-8.

Borjeson M. The aetiology of obesity in children. Acta Paediatrica Scandanavia. 1976; 65:279-87.

Bouchard C, Tremblay A, Despres J-P, Nadeau A, Lupien PJ, Theriault G, Dussault J, Moorjani S, Pinault S, Fournier G. The response to long-term overfeeding in identical twins. The New England Journal of Medicine. 1990; 322(21):1477-87.

Bray GA. Metabolic responses to positive energy balance. In: BC Hansen (Ed.). Controversies in obesity. New York: Praeger; 1983; pp. 3-14.

Bray GA. Obesity: Historical development of scientific and cultural ideas. International Journal of Obesity. 1990; 14:909-26.

Bray GA, York B, DeLany J. A survey of the opinions of obesity experts on the causes and treatment of obesity. American Journal of Clinical Nutrition. 1992; 55:151-4.

Breckler SJ. Empirical validation of affect, behavior, and cognition as distinct components of attitude. Journal of Personality and Social Psychology. 1984; 47:1191-205.

Breytspraak LM, McGee J, Conger JC, Whatley JL, Moore JT. Sensitizing medical students to impression formation processes in the patient interview. Journal of Medical Education. 1977 Jan; 52(1):47-54.

Brook CGD, Huntley RMC, Slack J. Influence of heredity and environment in determination of skinfold thickness in children. British Medical Journal. 1975; 2:719-21.

Brownell KD. Dieting and the search for the perfect body: Where physiology and culture collide. Behavior Therapy. 1991; 22:1-12.

Brownell KD, Fairburn CG. Eating disorders and obesity: A comprehensive handbook. New York: The Guilford Press; 1995.

Brownell KD, Rodin J. The dieting maelstrom: Is it possible and advisable to lose weight? American Psychologist. 1994; 49(9):781-91.

Brownell KD, Rodin J. Medical, metabolic, and psychological effects of weight cycling. Archives of Internal Medicine. 1994; 154:1325-30.

Brownell KD, Wadden TA. The very-low-calorie diet: A weight reduction technique. In: KD Brownell and JP Foreyt (Eds.). Handbook of eating disorders: Physiology,

psychology, and treatment of obesity, anorexia, and bulimia. New York: Basic Books; 1986.

Bryant-Waugh R, Lask B. Childhood-onset eating disorders. In: KD Brownell and CG Fairburn (Eds.). Eating disorders and obesity: A comprehensive handbook. New York: The Guilford Press; 1995; pp. 183-7.

Bryman A, Cramer D. Quantitative data analysis for social scientists. London: Routledge; 1990.

Cade J, O'Connell S. Management of weight problems and obesity: knowledge, attitudes and current practice of general practitioners. British Journal of General Practice. 1991; 41:147-150.

Cadman L, Wiles R. Nutrition advice in primary care: evaluation of practice nurse nutrition training programmes. Journal of Human Nutrition and Dietetics. 1996; 9:147-156.

Cairella M, Godi R. [Continuing medical education in the field of obesity]. Clin Ter. 1990; 133(4):251-7.

Cameron R, MacDonald MA, Schlegel RP, Young CI, Fisher SE, Killen JD, Rogers T, Horlick L, Shepel LF. Toward the development of self-help health behaviour change programs: Weight loss by correspondence. Canadian Journal of Public Health. Revue Canadienne De Sante Publique. 1990; 81(4):275-9.

Campbell DT. Social attitudes and other acquiried behavioural dispositions. In: S Koch, (Ed.). Psychology: A study of science, Vol. 6. New York: McGraw-Hill, 1963.

Canning H, Mayer J. Obesity: Its possible effects on college admissions. New England Journal of Medicine. 1966; 275:1172-4.

Canning H, Mayer J. Obesity: An influence on high school performance. American Journal of Clinical Nutrition. 1967; 20:352-4.

Carter EN, Rice AP, De Julio S. Role of the therapist in the self-control of obesity. Journal of Consulting and Clinical Psychology. 1977; 45(3):503.

Castro L, Rachlin H. Self-reward, self-monitoring, and self-punishment as feedback in weight control. Behavior Therapy. 1980; 11(1):38-48.

Central Statistical Office. Social trends 24. London: HMSO; 1994.

Chaiken S. Heuristic versus systematic information processing and the use of source versus message cues in persuasion. Journal of Personality and Social Psychology. 1980; 39:752-66.

Charlwood R, Gibbons K. The nutritional management of obese patients – a utilisation review. Australian Clinical Review. 1986 Mar; 6(20):49-52.

Chetwynd SJ, Stewart GE, Powell RA. Social attitudes towards the obese physique. Paper presented at the First International Congress on Obesity, London; 1974.

Coates TJ, Jeffery RW, Slinkard LA, Killen JD, Danaher BG. Frequency of contact and monetary reward in weight loss, lipid change, and blood pressure reduction with adolescents. Behavior Therapy. 1982; 13(2):175-85.

Cochrane Library. Database available on CD-ROM. Oxford: Update Software. Updated quarterly.

Conner M. Pros and cons of social cognition models in health behaviour. Health Psychology Update 1993; 14:24-31.

Counts CR, Jones C, Frame CL, Jarvie GJ, Strauss CC. The perception of obesity by normal-weight versus obese school-age children. Child Psychiatry and Human Development. 1986, 17(2):113-20.

Craig P. Practice assessment of obesity/overweight: Report of an audit. School of Community Medicine, UNSW, Sydney 2052, Australia; Unpublished .

Crandall C, Biernat M. The ideology of anti-fat attitudes. Journal of Applied Social Psychology. 1990; 20(3):227-43.

Crandall CS. Prejudice against fat people: Ideology and self-interest. Journal of Personality and Social Psychology. 1994; 66(4):882-94.

Davey A. Learning to be prejudiced: Growing up in multi-ethnic Britain. London: Edward Arnold (Publishers) Ltd, 1983.

Deaux K, Dane FC, Wrightsman LS. Social psychology in the '90s (6th edition). California: Brooks/Cole Publishing Company, 1993.

DeJong W. The stigma of obesity: The consequences of naive assumptions concerning the causes of physical deviance. Journal of Health and Social Behavior. 1980; 21:75-87.

DeJong W, Kleck RE. The social psychological effects of overweight. In: CP Herman, MP Zanna and ET Higgins (Eds.). Physical appearance, stigma and social behaviour: The Ontario Symposium, Volume 3. Hillsdale, New Jersey: Lawrence Erlbaum; 1986; pp. 65-87.

DeLucia JL, Kalodner CR, Horan JJ. The effect of two nutritional software programs used as adjuncts to the behavioral treatment of obesity. Journal of Substance Abuse. 1988; 1(2):203-8.

Diamond H, Diamond M. Fit for Life. New York: Warner Books; 1985.

Dickersin K, Min YI. NIH clinical trials and publication bias. Online Journal of Current Clinical Trials [serial online]. Doc. No. 50; 1993.

Dickersin K, Scherer R, Lefebvre C. Identifying relevant studies for systematic reviews. In: I Chalmers and DG Altman (Eds.). Systematic Reviews. London: BMJ Publishing Group; 1995; pp. 17-36.

Dutra-de-Oliveira JE, Marchini JS. Primary care physicians and clinical nutrition: Can good medical nutrition care be offered without well-trained physicians in the area? American Journal of Clinical Nutrition. 1997; 65(Suppl 6):2010S-2012S.

Eagley AH, Chaiken S. The psychology of attitudes. Fort Worth, Texas: Harcourt Brace College Publishers, 1993.

Easterbrook PJ, Berlin JA, Gopalan R, Matthews DR. Publication bias in clinical research. Lancet. 1991; 337:867.

Eck LH, Ray JW, Klesges RC, Relyea GE, Hackett Renner C. Physicians' diagnosis of obesity status in NHANES II. International Journal of Obesity. 1994; 18(10):704-8.

Egger G, Swinburn B. An 'ecological' approach to the obesity pandemic. BMJ. 1997; 315:477-80.

Egger M, Davey Smith G. Misleading meta-analysis: Lessons from "an effective, safe, simple" intervention that wasn't . BMJ. 1995; 310:752-4.

EHCB:3:2. Glanville G, Glenny A-M, Melville A, O'Meara S, Sharp F, Sheldon T, Wilson C, NHS Centre for Reviews and Dissemination. The prevention and treatment of obesity. Effective Health Care Bulletin. Vol 3(2). UK: Churchill Livingstone; 1997.

EPOC. In: Bero L, Grilli R, Grimshaw J and Oxman A (Eds.). Methods used in reviews. Cochrane Effective Practice and Organisation of Care (EPOC) Module of The Cochrane Database of Systematic Reviews. In: The Cochrane Library. 1998; Issue 2. Update Software; 1998. Updated quarterly.

Epstein LH, Wing RR, Thompson JK, Griffin W. Attendance and fitness in aerobics exercise: the effects of contract and lottery incentives. Behavior Modification. 1980; 4:465-79.

Erfurt JC, Foote A, Heirich MA. The cost-effectiveness of worksite wellness programs for hypertension control, weight loss, smoking cessation, and exercise. Personnel Psychology. 1992; 45(1):5-27.

Erfurt JC, Foote A, Heirich MA, Gregg W. Improving participation in worksite wellness programs: Comparing health education classes, a menu approach, and follow-up counseling. American Journal of Health Promotion. 1990; 4(4):270-8.

Evans J St BT, Harries C, Dennis I, Dean J. General practitioners' tacit and stated policies in the prescription of lipid lowering agents. British Journal of General Practice. 1995; 45:15-8.

Eysenck HJ, Wilson G. Know your own personality. London: Maurice Templeton Smith, 1975.

Fabsitz R, Feinleib M, Hrubec Z. Weight changes in adult twins. Acta Genet Med Gamelloi. 1978; 17:315-32.

Fairburn CG, Garner DM. The diagnosis of bulimia nervosa. International Journal of Eating Disorders. 1986; 5:403-19.

Family Heart Study. Randomised controlled trial evaluating cardiovascular screening and intervention in general practice: principal results of British Family Heart Study. Family Heart Study Group. BMJ. 1994; 308(6924):313-20.

Fazio RH, Zanna MP. Direct experience and attitude-behaviour consistency. In: L Berkowitz (Ed.). Advances in experimental social psychology, Vol. 14. New York: Academic Press, 1981: 161-202.

Feinleib M, Garrison RJ, Fabsitz R, Christian JC, Hrubec Z, Borhani NO, Kannel WB, Rosenman R, Schwartz JT, Wagner JO. The NHLBI twin study of cardiovascular disease risk factors: methodology and summary of results. American Journal of Epidemiology. 1977; 106:284-95.

Ferguson JM. A clinical program for the behavioral control of obesity. In: BJ Williams, S Martin and JP Foreyt (Eds.). Obesity: Behavioral approaches to dietary management. New York: Brunner/Mazel; 1976.

Ferrer Lorente B, Fenollosa Entrena B, Ortega Serrano S, Gonzalez Diaz P, Dalmau Serra J. Multidisciplinary treatment of pediatric obesity. Results on 213 patients. Anales Espanoles De Pediatria. 1997; 46(1):8-12.

Festinger L. A theory of cognitive dissonance. Stanford: Stanford University Press, 1957.

Festinger L, Carlsmith LM. Cognitive consequences of forced compliance. Journal of Abnormal and Social Psychology. 1959; 58:203-10.

Fiedler K. Processing social information for judgements and decisions. In: M Hewstone, W Stroebe and GM Stephenson (Eds.). Introduction to social psychology. Second edition. Oxford: Blackwell Publishers Ltd, 1996.

Fishbein M, Ajzen I. Belief, attitude, intention, and behaviour: An introduction to theory and research. Reading, Massachusetts: Addison-Wesley; 1975.

Fiske S. Controlling other people: The impact of power on stereotyping. American Psychologist. 1993; 48(6):621-8.

Forster JL, Jeffery RW, Sullivan S, Snell MK. A work-site weight control program using financial incentives collected through payroll deduction. Journal of Occupational Medicine. 1985; 27(11):804-8.

Francis J, Roche M, Mant D, Jones L, Fullard E. Would primary health care workers give appropriate dietary advice after cholesterol screening? BMJ. 1989; 298(6688):1620-2.

Frank A. Futility and avoidance. Medical professionals in the treatment of obesity. JAMA. 1993; 269(16):2132-3.

Friedman MA, Brownell KD. Psychological correlates of obesity: Moving to the next research generation. Psychological Bulletin. 1995; 117(1):3-20.

Fullard E, Fowler G, Gray M. Promoting prevention in primary care: controlled trial of low technology, low cost approach. British Medical Journal of Clinical Research and Education. 1987; 294(6579):1080-2.

Ganley RM. Emotion and eating in obesity: A review of the literature. International Journal of Eating Disorders. 1989; 8(3):343-61.

Garner DM, Rockert W, Olmsted MP, Johnson C, Coscina DV. Psychoeducational principles in the treatment of bulimia and anorexia nervosa. New York: Guilford Press; 1985.

Garrow JS. Obesity and related diseases. Edinburgh: Churchill Livingstone; 1988.

Glanz K. Review of nutritional attitudes and counseling practices of primary care physicians. American Journal of Clinical Nutrition. 1997; 65(Suppl 6):2016S-2019S.

Glenny A-M, O'Meara S, Sheldon T, Wilson C. The treatment and prevention of obesity: a systematic review of the literature. International Journal of Obesity. 1997; 21:715-37.

Glucksman ML, Rand CS, Stunkard AJ. Psychodynamics of obesity. Journal of the American Academy of Psychoanalysis. 1978; 6:103-15.

Gortmaker SL, Must A, Perrin JM, Sobol AM, Dietz WH. Social and economic consequences of overweight in adolescence and young adulthood. New England Journal of Medicine. 1993; 329(14):1008-12.

Greenwald AG. Cognitive learning, cognitive response to persuasion, and attitude change. In: AG Greenwald, TC Brock and TM Ostrom (Eds.). Psychological foundations of attitudes. San Diego, California: Academic Press; 1968: 147-70.

Greenwald P and Sondik EJ (Eds.). Cancer control objectives for the nation: 1985 - 2000. Bethesda Maryland: National Cancer Institute; 1986.

Gregory J, Foster K, Tyler H, Wiseman M. The dietary and nutritional survey of British adults. London: HMSO; 1990.

Haas R. Eat to win: The sports nutrition bible. New York: Signet; 1983.

Hagen RL. Group therapy *vs.* bibliotherapy in weight reduction. Behavior Therapy. 1974; 5:222-34.

Hakala P. Weight reduction programmes at a rehabilitation centre and a health centre based on group counselling and individual support: short- and long-term follow-up study. International Journal of Obesity. 1994; 18(7):483-9.

Hall SM. Self-control and therapist control in the behavioral treatment of overweight women. Behavior Research and Therapy. 1972; 10(1):59-68.

Hall SM, Hall RG, DeBoer G, O'Kulitch P. Self and external management compared with psychotherapy in the control of obesity. Behavior Research and Therapy. 1977; 15(1):89-95.

Hamilton DL, Rose T. Illusory correlation and the maintenance of stereotypic belief. Journal of Personality and Social Psychology. 1980; 39:832-45.

Harris MB, Bruner CG. A comparison of a self-control and a contract procedure for weight control. Behavior Research and Therapy. 1971 Nov; 9(4):347-54.

Harris MB, Smith SD. The relationships of age, sex, ethnicity, and weight to stereotypes of obesity and self perception. International Journal of Obesity. 1983; 7(4):361-71.

Harris MB, Hopwood J. Attitudes toward the obese in Australia. Journal of Obesity and Weight Regulation. 1982; 2:107-20.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell C. Improving health professionals' management of obesity (Cochrane review protocol). The Cochrane Library, Update Software, Updated Quarterly. 1998; Issue 2.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell CD. Effective professional practice: protocol for a systematic review of health professionals' management of obesity. Journal of Human Nutrition and Dietetics. 1998; 11(3):243-7.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell C. Improving health professionals' management and the organisation of care for overweight and obese people. The Cochrane Library, Update Software, Updated Quarterly. 1999; Issue 1.

Hauner H, Köster I, von Ferber L. Frequency of 'obesity' in medical records and utilization of out-patient health care by 'obese' subjects in Germany. An analysis of health insurance data. International Journal of Obesity. 1996; 20(9):820-4.

Hayes N. Principles of social psychology. Hove UK: Laurence Erlbaum Associates Ltd; 1993.

HEA, Health Education Authority's National Unit for Health Promotion in Primary Care. Obesity in primary health care: A literature review. London: Health Education Authority; 1995.

Heber D, Ashley JM, Wang H-J, Elashoff RM. Clinical evaluation of a minimal intervention meal replacement regimen for weight reduction. Journal of the American College of Nutrition. 1994; 13(6):608-14.

Heider F. Attitudes and cognitive organization. Journal of Psychology 1946; 21:107-12.

Heider F. The psychology of interpersonal relations. New York: Wiley; 1958.

Heider F. Social perception and phenomenal causality. Psychological Review 1944; 51:358-74.

Herzlich C. Health and illness: A social-psychological analysis. London: Academic Press, 1973.

Hill AJ, Draper E, Stack J. A weight on children's mind: Body shape dissatisfactions at 9 years old. International Journal of Obesity. 1994; 18:383-9.

Hill AJ, Rogers PJ, Blundell JE. Techniques for the experimental measurement of human eating behaviour and food intake: a practical guide. International Journal of Obesity. 1995; 19:361-75.

Hill AJ, Silver EK. Fat, friendless and unhealthy: 9 year old children's perception of body shape stereotypes. International Journal of Obesity. 1995; 19:423-30.

Hill AJ, Williams J. Psychological health in a non-clinical sample of obese women. International Journal of Obesity. 1998; 22:578-83.

Hill T, Lewicki P, Czyzewska M, Boss A. Self-perpetuating development of encoding biases in person perception. Journal of Personality and Social Psychology 1989; 57:373-87.

Hinton PR. The psychology of interpersonal perception. London: Routledge, 1993.

Jaspars JMF. Determinants of attitudes and attitude change. In: H Tajfel and C Fraser, (Eds.). Introducing social psychology. London: Penguin Group; 1978: 277-301.

Hochstrasser B, Abelin T, Dietschi S, Hoffmann C, Muller HP. [Behavior therapeutic training for weight reduction]. Sozial Und Praventivmedizin. 1981; 26(5):354-6.

Hodge AM, Dowse GK, Toelupe P, Collins VR, Imo T, Zimmet PZ. Dramatic increase in the prevalence of obesity in Western Samoa over 13 year period 1978-1991. International Journal of Obesity. 1994; 18:419-28.

Hoebel BG, Teitelbaum P. Weight regulation in normal and hypothalmic hyperphagic rats. Journal of Comparative and Physiological Psychology. 1966; 61:189-93.

HoN. The Health of the Nation: A strategy for health in England. Department of Health. London: HMSO; 1992.

Hoppe R, Ogden J. Practice nurses' beliefs about obesity and weight related interventions in primary care. International Journal of Obesity. 1997; 21:141-6.

Horm J, Anderson K. Who in America is trying to lose weight? Annals of Internal Medicine. 1993; 119:672-6.

Hunter SM, Larrieu JA, Ayad FM, O'Leary JP, Griffies WS, Deblanc CH, Martin LF. Roles of mental health professionals in multidisciplinary medically supervised treatment programs for obesity. Southern Medical Journal. 1997; 90(6):578-86.

Ikezono E, Ikezono T, Hanai K. The effect of auricular acupuncture on satiation determined by the changes in the acidic fibroblast growth factor-like activity. Unpublished manuscript 1998.

Ikezono E, Takahashi G, Ikezono T. The effect of ear acupuncture on satiation in obese patients undergoing a diet therapy on an outpatient basis. Obesity in Europe 1993: Proceedings of the 5th European Congress on Obesity. 1994; Chapter 29:185-90.

Ikezono E, Takahashi G, Ikezono T. The effects of weight loss in patients with non-insulin-dependent diabetes mellitus and an impaired glucose tolerance. Prevention and Treatment of NIDDM. 1992; 10:437-42.

Imperial Cancer Research Fund OXCHECK study group. Effectiveness of health checks conducted by nurses in primary care: final results of the OXCHECK study. BMJ. 1995; 310(6987):1099-104.

Jarvie GJ, Lahey B, Graziano W, Framer E. Childhood obesity and social stigma: What we know and what we don't know. Developmental Review. 1983; 3:237-273.

Jeffery RW, Danaher BG, Killen J, Farquhar JW, Kinnier R. Self-administered programs for health behavior change: smoking cessation and weight reduction by mail. Addictive Behaviors. 1982; 7(1):57-63.

Jeffery RW, Gerber WM, Rosenthal BS, Lindquist RA. Monetary contracts in weight control: effectiveness of group and individual contracts of varying size. Journal of Consulting and Clinical Psychology. 1983; 51(2):242-8.

Jeffery RW, Hellerstedt WL, Schmid TL. Correspondence programs for smoking cessation and weight control: a comparison of two strategies in the Minnesota Heart Health Program. Health Psychology. 1990; 9(5):585-98.

Jeffery RW, Thompson PD, Wing RR. Effects on weight reduction of strong monetary contracts for calorie restriction or weight loss. Behavior Research and Therapy. 1978; 16(5):363-9.

Jeffery RW, Wing RR. Frequency of therapist contact in the treatment of obesity. Behavior Therapy. 1979; 10(2):186-192.

Jeffery RW, Wing RR, Thorson C, Burton LR, Raether C, Harvey J, Mullen M. Strengthening behavioral interventions for weight loss: a randomized trial of food provision and monetary incentives. Journal of Consulting and Clinical Psychology. 1993; 61(6):1038-45.

Jeffery RW, Bjornson-Benson WM, Rosenthal BS, Kurth CL, Dunn MM. Effectiveness of monetary contracts with two repayment schedules of weight reduction in men and women from self-referred and population samples. Behavior Therapy. 1984; 15(3):273-9.

Jeffery RW, Bjornson-Benson WM, Rosenthal BS, Lindquist RA, Johnson SL. Behavioral treatment of obesity with monetary contracting: Two-year follow-up. Addictive Behaviors. 1984; 9(3):311-3.

Jeffery RW, Forster JL, French SA, Kelder SH. The Healthy Worker Project: A work-site intervention for weight control and smoking cessation. American Journal of Public Health. 1993; 83(3):395-401.

Jeffery RW, Forster JL, Schmid TL. Worksite health promotion: Feasibility testing of repeated weight control and smoking cessation classes. American Journal of Health Promotion. 1989; 3(4):11-16.

Jeffery RW, French AS, Forster JL, Spry VM. Socioeconomic status differences in health behaviors related to obesity: the Healthy Worker Project. International Journal of Obesity. 1991; 15:689-96.

Jeffery RW, French SA. Preventing weight gain in adults: design, methods and one year results from the Pound of Prevention study. International Journal of Obesity. 1997, 21:457-64.

Jeffery RW, Gerber WM. Group and correspondence treatment for weight reduction used in the multiple risk factor intervention trial. Behavior Therapy. 1982; 13:24-30.

Jeffery RW, Wing RR. Long-term effects of interventions for weight loss using food provision and monetary incentives. Journal of Consulting and Clinical Psychology. 1995; 63(5):793-6.

Jeffery RW, Wing RR, Stunkard AJ. Behavioral treatment of obesity: The state of the art 1976. Behavior Therapy. 1978; 9:189-99.

Jeffrey DB. A comparison of the effects of external control and self-control on the modification and maintenance of weight. Journal of Abnormal Psychology. 1974; 83(4):404-10.

Jones EE, Davis KE. From acts to dispositions: the attribution process in person perception. In: L Berkowitz (Ed.). Advances in experimental psychology, Vol 2. New York: Academic Press; 1965.

Kannel WB, Thom T. Implications of the recent decline in cardiovascular mortality. Cardiovascular Medicine. 1979; 4:983-97.

Kaplan HL, Kaplan HS. The psychosomatic concept of obesity. Journal of Nervous and Mental Disease. 1957; 125:181-201.

Karlsson J, Sullivan M, Sjöström L. Swedish Obese Subjects (SOS): An intervention study of obesity. Four year follow-up of weight loss and quality of life. International Journal of Obesity. 1997; 21(Suppl 2):S122.

Kausman R, Murphy M, O'Connor T, Klein D. An evaluation of the weight management program of the Melbourne Weight Management and Eating Behaviour Clinic. Unpublished report; 1998.

Keesey RE. A set-point model of body weight regulation. In: KD Brownell and CG Fairburn (Eds.). Eating disorders and obesity: A comprehensive handbook. New York: Guilford Press; 1995; pp. 46-50.

Kelman HC, Hovland CI. Reinstatement of the communicator in delayed measurement of opinion change. Journal of Abnormal and Social Psychology 1953; 31:245-53.

Kennedy F. Teaching dietitians to use psychological techniques with obese clients. Behavioural Psychotherapy. 1987; 15:88-99.

Ketley D, Woods KL. Impact of clinical trials on clinical practice: example of thrombolysis for acute myocardial infarction. The Lancet. 1993; 342:891-4.

Keys A. Is overweight a risk factor for coronary heart disease? Cardiovascular Medicine. 1979; 4:1233-42.

Keys A. Seven Countries: A multivariate analysis of death and coronary heart disease. Cambridge, Massachusetts: Harvard University Press; 1980.

Keys A, Brozek J, Henschel A, Mickelson O, Taylor HL. The biology of human starvation (Vol. 1 & 2). Minneapolis: University of Minnesota Press; 1950.

Kirkman MS, Weinberger M, Landsman PB, Samsa GP, Shortliffe EA, Simel DL, Feussner JR. A telephone-delivered intervention for patients with NIDDM. Effect on coronary risk factors. Diabetes Care. 1994; 17(8):840-6.

Klesges RC, Klem ML, Hanson CL, Eck LH, Ernst J, O'Laughlin D, Garrott A, Rife R. The effects of applicant's health status and qualifications on simulated hiring decisions. International Journal of Obesity. 1990; 14:527-35.

Knight I. The heights and weights of adults in Great Britain. London: OPCS/HMSO.; 1984.

Korkeila M, Kaprio J, Rissanen A, Koskenvuo M. Effects of gender and age on the heritability of body mass index. International Journal of Obesity. 1991; 15:647-54.

Kothandapani V. Validation of feeling, belief, and intention to act as three components of attitude and their contribution to prediction of contraceptive behavior. Journal of Personality and Social Psychology 1971; 19:321-33.

Kramer FM, Jeffery RW, Snell MK, Forster JL. Maintenance of successful weight loss over 1 year: Effects of financial contracts for weight maintenance or participation in skills training. Behavior Therapy. 1986; 17:295-301.

Kristeller JL, Hoerr RA. Physician attitudes toward managing obesity: Differences among six specialty groups. Preventive Medicine. 1997; 26:542-49.

Kuczmarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among US adults. The National Health and Nutrition Examination Surveys, 1960 to 1991. JAMA. 1994; 272(3):205-11.

Kyle A. Are practice nurses an effective means of delivering dietary advice as part of health promotion in primary health care? Evaluation of practice nurse training in Somerset. Journal of Human Nutrition and Dietetics. 1993; 6:149-162.

LaPière RT. Attitudes vs. actions. Social Forces. 1934; 13:230-37.

Lavrakas PJ. Female preferences of male physiques. Journal of Research in Personality. 1975; 9:324-34.

Lazarus K. Nutrition practices of family physicians after education by a physician nutrition specialist. American Journal of Clinical Nutrition. 1997; 65(6 Suppl):2007S-2009S.

Lean M, Anderson A. Clinical strategies for obesity management. Diabetic Medicine. 1988; 5(6):515-8.

Lerner RM, Gellert G. Body build identification, preference, and aversion in children. Developmental Psychology. 1969; 5:256-62.

Lindstrom LL, Balch P, Reese S. In person versus telephone treatment for obesity. Journal of Behavior Therapy and Experimental Psychiatry. 1976; 7(4):367-369.

Little J. Management of the obese child in the school. Journal of School Health. 1983; 53(7):440-1.

Little P. GP documentation of obesity: what does it achieve? British Journal of General Practice. 1998; 48:890-4.

Lloyd JK. Nutrition and the training of doctors. Proceedings of the Nutrition Society. 1984; 43(2):219-21.

Lomas J, Anderson GA, Domnick-Pierre K, Vayda E, Enkin M, Hannah WJ. Do practice guidelines guide practice? The effect of a consensus statement on the practice of physicians. New England Journal of Medicine. 1989; 321(9):1306-11.

Lubitz RM, Litzelman DK, Dittus RS, Tierney WM. Is obesity a barrier to physician screening for cervical cancer? American Journal of Medicine. 1995; 98(5):491-6.

Maddox GL, Liederman V. Overweight as a social disability with medical implications. Journal of Medical Education. 1969; 44(3):214-20.

Maddox GL, Back K, Liederman V. Overweight as social deviance and disability. Journal of Health and Social Behavior. 1968; 9:287-98.

MAFF, Ministry of Agriculture, Fisheries and Foods. Household food consumption and expenditure. 1940-1994. London: HMSO.

MAFF, Ministry of Agriculture, Fisheries and Foods. Household food consumption and expenditure. London: HMSO; 1992.

Mahoney MJ. Self-reward and self-monitoring techniques for weight control. Behavior Therapy. 1974; 5(1):48-57.

Maiman LA, Wang VL, Becker MH, Finlay T, Simonson M. Attitudes toward obesity and the obese among professionals. Journal of the American Dietetic Association. 1979; 174:334-6.

Mann RA. The behavior-therapeutic use of contingency contracting to control an adult behavior problem: weight control. Journal of Applied Behavior Analysis. 1972; 5(2):99-102.

Marston AR, Marston MR, Ross JA. A correspondence course behavioral program for weight reduction. Obesity and Barriatric Medicine. 1977; 7:140-7.

Marteau TM. Health beliefs and attributions. In: A Broome and S Llwewlyn (Eds.). Health psychology: Processes and applications. Second edition. London: Chapman and Hall; 1995.

Maslow C, Yoselson K, London M. Persuasiveness of confidence expressed via language and body language . British Journal of Social and Clinical Psychology. 1971; 10:234-40.

Massari A, Point C, Truffe P, Chatellier G, Simon A, Menard J. [Effect of 2 types of diet changes on dietary habits, body weight and cholesterol levels in high risk cardiovascular patients]. Arch Mal Coeur Vaiss. 1995; 88(8):1101-4.

Mazzuca SA, Moorman NH, Wheeler ML, Norton JA, Fineberg NS, Vinicor F, Cohen SJ, Clark CM Jr. The diabetes education study: a controlled trial of the effects of diabetes patient education. Diabetes Care. 1986; 9(1):1-10.

McArthur LH. Nutrition and nonnutrition majors have more favorable attitudes toward overweight people than personal overweight. Journal of the American Dietetic Association. 1995; 95(5):593-6.

McArthur LH, Ross JK. Attitudes of registered dietitians toward personal overweight and overweight clients. Journal of the American Dietetic Association. 1997; 97(1):63-6.

McArtor RE, Iverson DC, Benken D, Dennis LK. Family practice residents' identification and management of obesity. International Journal of Obesity. 1992; 16(5):335-40.

McColl E, Jacoby A, Thomas L, Soutter J, Bamford C, Thomas R, Harvey E, Garratt A, and Bond J. Designing and using patient and staff questionnaires: A review of best practice. Draft report to NHS HTA Programme. Unpublished report; 1998.

McColl E, Jacoby A, Thomas L, Soutter J, Bamford C, Garratt A, Harvey E, Thomas R and Bond J (1998). Designing and using patient and staff questionnaires. In N Black, J Brazier, R Fitzpatrick and B Reeves (Eds.). Health services research methods: A guide to best practice. London: BMJ Books. Chapter 5, pp. 46-58, 1998.

McDonald CJ, Hui SL, Smith DM, Tierney WM, Cohen SJ, Weinberger M, McCabe GP. Reminders to physicians from an introspective computer medical record. A two-year randomized trial. Annals of Internal Medicine. 1984; 100(1):130-8.

McEwen H, Jacobson H, Battrum EC, Crealock RJ, Mitchell MN, McLaren B. A. Experience with a hospital-based weight reduction program. Canadian Medical Association Journal. 1972; 107(1):43-6.

McGuire WJ. Personality and attitude change: An information-processing theory. In: AG Greenwald, TC Brock and TM Ostrom (Eds.). Psychological foundations of attitudes. New York: Academic Press; 1968.

McGuire WJ. The nature of attitudes and attitude change. In: G Lindzey and E Aronson (Eds.). Handbook of social psychology, Vol. 3. Reading Massachusetts: Addison-Wesley; 1969: 136-314.

McGuire WJ. Attitudes and attitude change. In: G Lindzey and E Aronson (Eds.). Handbook of social psychology, Vol.2. Third edition. New York: Random House; 1985: 233-346.

McPhee SJ, Bird JA, Fordham D, Rodnick JE, Osborn EH. Promoting cancer prevention activities by primary care physicians. Results of a randomized, controlled trial. JAMA. 1991; 266(4):538-44.

McReynolds WT. Behavior therapy for obesity: another fad or a new set of facts? Part II. A study of two behavior modification procedures with nutritionists as therapists. Nebraskan Medical Journal. 1976; 61(6):196-8.

McReynolds WT, Lutz RN, Kennedy Paulsen B, Kohrs MB. Weight loss resulting from two behaviour modification procedures with nutritionists as therapists. Behavior Therapy. 1976; 7:283-91.

Medlund P, Cederlof R, Floderus-Myrrhed B, Friberg L, Sörensen S. A new Swedish twin registry. Acta Medica Scandanavia. 1976; Suppl 600:5-107.

Menezes, Lucyamma. Innovative programs in a health care setting. Social Work in Health Care. 1980; 6(1):101-5.

Metropolitan Life Insurance Company. New standards for men and women. Statistical Bulletin of the Metropolitan Life Insurance Company . 1959; 40:1-4.

Metropolitan Life Insurance Company. Metropolitan height and weight tables. Statistical Bulletin of the Metropolitan Life Insurance Company. 1983; 64:2-9.

Metzler, B. [Use of paramedical personnel in nutritional consultation of overweight hypertensive patients]. Medizin Monatsschr. 1975; 29(1):16-8.

Meyers AW, Graves TJ, Whelan JP, Barclay DR. An evaluation of a television-delivered behavioral weight loss program: are the ratings acceptable? Journal of Consulting and Clinical Psychology. 1996; 64(1):172-8.

Moscovici S. On social representations. In: JP Forgas (Ed.). Social cognition: Perspectives in everyday understanding. London: Academic Press, 1981.

Mulrow CD. Rationale for systematic reviews. BMJ. 1994; 309:597-9.

Mulrow CD. Rationale for systematic reviews. In: I Chalmers and DG Altman (Eds.). Systematic reviews. London: BMJ Publishing Group; 1995; pp. 1-8.

Murphree D. Patient attitudes toward physician treatment of obesity. Journal of Family Practice. 1994; 38(1):45-8.

Narbro K, Agren G, Jonsson E, Larsson B, Naslund I, Sjöström L, Wedel H. Sick-leave and disability pension before and after treatment of obesity. International Journal of Obesity. 1997; 21(Suppl 2):S24.

National Center for Health Statistics. Plan and operation of National Health and Nutrition Examination Survey, 1979-1980. Washington DC: Government Printing Office; 1981; DHHS (PHS) Publication No. 81-1317.

National Heart Foundation of Australia. Risk Factor Prevalence Study 1989. Survey No. 3. Canberra; 1990.

NHLBI. The National Heart, Lung, and Blood Institute, Obesity Education Initiative Expert Panel. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: The evidence report. Bethesda Maryland: National Institutes of Health; 1998 Jun.

NHS Executive. Health Service Circular 1998/139. Leeds: Department of Health; 1998.

NHS Trust Project. NHS Executive. The NHS Executive's Health of the Nation: NHS Trust Project: A strategic framework and operational plan. UK: Unpublished report; 1997 Jan 16.

Nisbett RE. Hunger, obesity, and the ventromedial hypothalamus. Psychological Review. 1972; 79(6):433-53.

O'Neil PM, Dansky BS, Kilpatrick DG, Brewerton TD. Methods and results of dieting by U.S. women: Preliminary findings from the National Women's Study. Paper presented at the meeting of the North American Association for the Study of Obesity: 1992 Apr; Atlanta, Georgia.

Oberrieder H, Walker R, Monroe D, Adeyanju M. Attitude of dietetics students and registered dietitians toward obesity. Journal of the American Dietetic Association. 1995; 95(8):914-6.

Ockene JK, Ockene IS, Quirk ME, Hebert JR, Saperia GM, Luippold RS, Merriam PA, Ellis S. Physician training for patient-centered nutrition counseling in a lipid intervention trial. Preventive Medicine. 1995; 24(6):563-70.

Office of Population Censuses and Surveys. General household survey. London: HMSO; 1994.

Ogden J, Hoppe R. The relative effectiveness of two styles of educational package to change practice nurses' management of obesity. International Journal of Obesity. 1997; 21(11):963.

OHN. Department of Health. Our Healthier Nation. London: The Stationery Office; 1998.

Oliver S, Entwistle V, Hodnett E. Roles for lay people in the implementation of health care research. In: A Haines and A Donald (Eds.). Getting Research Findings into Practice. London: BMJ Books; 1998; pp. 43-51.

Ong LML, DeHaes JCJM, Hoos AM, Lammes FB. Doctor-patient communication: A review of the literature. Social Science and Medicine. 1995; 40(7):903-18.

Ostrom TM. The relationship between the affective, behavioral and cognitive components of attitude. Journal of Experimental Social Psychology. 1969; 5:12-30.

Paulsen BK, Lutz RN, McReynolds WT, Kohrs MB. Behavior therapy for weight control: long-term results of two programs with nutritionists as therapists. American Journal of Clinical Nutrition. 1976; 29(8):880-8.

Perri MG, McAdoo WG, McAllister DA, Lauer JB, Jordan RC, Yancey DZ, Nezu AM. Effects of peer support and therapist contact on long-term weight loss. Journal of Consulting and Clinical Psychology. 1987; 55(4):615-7.

Perri MG, McAllister DA, Gange JJ, Jordan RC, McAdoo G, Nezu AM. Effects of four maintenance programs on the long-term management of obesity. Journal of Consulting and Clinical Psychology. 1988; 56(4):529-34.

Perri MG, Shapiro RM, Ludwig WW, Twentyman CT, McAdoo WG. Maintenance strategies for the treatment of obesity: an evaluation of relapse prevention training and posttreatment contact by mail and telephone. Journal of Consulting and Clinical Psychology. 1984; 52(3):404-13.

Perri MG, McAdoo WG, McAllister DA, Lauer JB, Yancey DZ. Enhancing the efficacy of behavior therapy for obesity: Effects of aerobic exercise and a multicomponent exercise program. Journal of Consulting and Clinical Psychology. 1986; 54:670-5.

Perri MG, McAdoo WG, Spevak PA, Newlin DB. Effect of a multicomponent maintenance program on long-term weight loss. Journal of Consulting and Clinical Psychology. 1984; 52:480-1.

Peternelj-Taylor CA. The effects of patient weight and sex on nurses' perceptions: a proposed model of nurse withdrawal. Journal of Advanced Nursing. 1989; 14(9):744-54.

Petty RE, Cacioppo JT. Effects of forewarning of persuasive interest and involvement on cognitive responses and persuasion. Personality and Social Psychology Bulletin. 1979; 5:173-6.

Petty RE, Cacioppo JT. Attitudes and persuasion. Dubuque IA: Wm C Brown; 1981.

Petty RE, Cacioppo JT. Communication and persuasion: central and peripheral routes to attitude change. New York: Springer-Verlag; 1986a.

Petty RE, Cacioppo JT. The elaboration likelihood model of persuasion. In: L Berkowitz (Ed.). Advances in experimental social psychology, Vol. 19. New York: Academic Press, 1986b: 123-205.

Pimblett C. Evaluation of a nutrition programme for practice nurses involved in diabetes care. Unpublished: King's College London; 1996.

Pingitore R, Dugoni BL, Tindale RS, Spring B. Bias against overweight job applicants in a simulated employment interview. Journal of Applied Psychology. 1994; 79(6):909-17.

Polivy J, Herman CP. Breaking the diet habit: The natural weight alternative. New York: Basic Books; 1983.

Polivy J, Herman CP. The diagnosis and treatment of normal eating. Journal of Consulting and Clinical Psychology. 1987; 55:635-44.

Polivy J, Herman CP. Undieting: A program to help people to stop dieting. International Journal of Eating Disorders. 1992; 11(3):261-8.

Popkin BM, Paeratakul S, Ge K, Zhai F. Body weight patterns among the Chinese: results from the 1989 and 1991 China Health and Nutrition Surveys. American Journal of Public Health. 1995; 85(5):690-4.

Powley TL, Keesey R. Relationships of body weight to the lateral hypothalamic feeding syndrome. Journal of Comparative and Physiological Psychology. 1970; 70:25-36.

Prentice AM, Jebb SA. Obesity in Britain: gluttony or sloth? British Medical Journal. 1995; 311:437-40.

Price JH, Desmond SM, Ruppert ES, Stelzer CM. Pediatricians' perceptions and practices regarding childhood obesity. American Journal of Preventive Medicine. 1989; 5(2):95-103.

Price JH, Desmond SM, Krol RA, Snyder FF, O'Connell JK. Family practice physicians beliefs, attitudes, and practices regarding obesity. American Journal of Preventive Medicine. 1987; 3(6):339-45.

Price RA, Cadoret RJ, Stunkard AJ, Troughton E. Genetic contributions to human fatness: An adoption study. American Journal of Psychiatry. 1987; 144(8):1003-8.

Prochaska JO, DiClemente CC. Transtheoretical therapy: Toward a more integrative model of change. Psychotherapy: Theory, Research and Practice. 1982; 20:161-73.

Rand CS, Stunkard AJ. Obesity and psychoanalysis. American Journal of Psychiatry. 1978; 135:547-551.

Rand CS, Stunkard AJ. Psychoanalysis and obesity. Journal of the American Academy of Psychoanalysis. 1977; 5:459-97.

Rand CSW. Psychoanalytic treatment of obesity. In: BB Wolman (Ed.). Psychological aspects of obesity: A handbook. New York: Van Nostrand Reinhold; 1982.

RCGP, Royal College of General Practitioners, Office of Population Censuses and Surveys (Department of Health and Social Security). 1981-81 Morbidity statistics from general practice. London: HMSO; 1986.

Richardson SA. Sex differences in values toward obesity: A cross-cultural study. Unpublished manuscript. 1977. Albert Einstein College of Medicine, New York.

Richardson SA, Hastorf AH, Goodman N, Dornbusch SN. Cultural uniformity in reaction to physical disabilities. American Sociological Review. 1961; 26:241-7.

Richman RM, Webster P, Salgo AR, Mira M, Steinbeck KS, Caterson ID. A shared care approach in obesity management: the general practitioner and a hospital based service. International Journal of Obesity. 1996; 20(5):413-9.

Rissanen AM, Heliovaara M, Knekt P, Reunanen A, Aromaa A. Determinants of weight gain and overweight in adult Finns. European Journal of Clinical Nutrition. 1991; 45:419-30.

Robinson BE, Bacon JG, O'Reilly J. Fat phobia: Measuring, understanding and changing anti-fat attitudes. International Journal of Eating Disorders. 1993; 14:467-80.

Roderick P, Ruddock V, Hunt P, Miller G. A randomized trial to evaluate the effectiveness of dietary advice by practice nurses in lowering diet-related coronary heart disease risk. British Journal of General Practice. 1997; 47(414):7-12.

Rodin J, Radke-Sharpe N, Rebuffe-Scrive, Greenwood MRC. Weight cycling and fat distribution. International Journal of Obesity. 1990; 14:303-10.

Rogers JL, Haring OM, Wortman PM, Watson RA, Goetz JP. Medical information systems: assessing impact in the areas of hypertension, obesity and renal disease. Medical Care. 1982; 20(1):63-74.

Rosenberg MJ, Hovland CI. Cognitive, affective, and behavioral components of attitudes. In: CI Hovland and MJ Rosenberg (Eds.). Attitude organization and change. New Haven Connecticut: Yale University Press; 1960: 1-14.

Rosenstock IM. The health belief model: Explaining health behavior through expectancies. In: K Glanz, FM Lewis and BK Rimer (Eds.). Health behavior and health education: Theory, research and practice. San Francisco: Jossey-Bass Publishers; 1990: 39-62.

Ross L. The intuitive psychologist and his shortcomings: distortions in the attribution process. In: L Berkowitz (Ed.). Advances in experimental social psychology, Vol. 10. New York: Academic Press;1977.

Ross L, Amabile T, Steinmentz J. Social rules, social control, and biases in social perception processes. Journal of Personality and Social Psychology 1977; 35:485-94.

Rothblum ED, Miller CT, Garbutt B. Stereotypes of obese female job applicants. International Journal of Eating Disorders. 1988; 7:277-83.

Rothert ML, Rovner DR, Elstein AS, Holzman GB, Holmes MM, Ravitch MM. Differences in medical referral decisions for obesity among family practitioners, general internists, and gynecologists. Medical Care. 1984; 22(1):42-55.

Rotter JB. Social learning and clinical psychology. Englewood Cliffs, New Jersey: Prentice-Hall; 1954.

Rovner DR, Rothert ML, Holmes MM, Ravitch MM, Holzman GB, Elstein AS. Rationale for physicians' decisions to refer obese patients. Medical Decision Making. 1985; 5(3):279-92.

Rozensky RH, Bellack AS. Individual differences in self-reinforcement style and performance in self- and therapist-controlled weight reduction programs. Behavior Research and Therapy. 1976; 14(5):357-64.

Sarlio-Lähteenkorva S, Stunkard A, Rissanen A. Psychosocial factors and quality of life in obesity. International Journal of Obesity. 1995; 19(Suppl 6):S1-S5.

Schlundt DG, Hill JO, Sbrocco T, Pope-Cardle J, Kasser T. Obesity: A biogenetic or biobehavioural problem. International Journal of Obesity. 1990; 14(9):815-828.

Schubmann R, Graban I, Hölz G, Zwingmann C. Ergebnisqualität stationärer Rehabilitation bei Patienten mit Adipositas. Deutsche Rentenversicherung. 1997; 9-10/97:1-22.

Schubmann R, Hölz G, Wechsler JG. Therapie der Adipositas. Deutsche Medizinische Wochenschrift. 1998; 123:648-9.

Schwartz D, Lellouch J. Explanatory and pragmatic attitudes in clinical trials. Journal of Chronic Diseases. 1967; 20:637-48.

Schwarzer R. Self-efficacy in the adoption and maintenance of health behaviors: Theoretical approaches and a new model. In: R Schwarzer (Ed.). Self-efficacy: Thought control of action. London: Hemisphere; 1992.

Secord PF, Backman CW. Social psychology (Second Edition). Tokyo: McGraw-Hill; 1974.

Seidell JC. The impact of obesity on health status: Some implications for health care costs. International Journal of Obesity. 1995; 19(Suppl 6):S13-6.

Seidell JC. Obesity in Europe. Obesity Research . 1995; 3:S89-93.

Seidell JC. Obesity in Europe: scaling an epidemic. International Journal of Obesity. 1995; 19(Suppl 3):S1-4.

Serdula MK, Collins ME, Williamson DF, Anda RF, Pamak ER, Byers TE. Weight control practices of US adolescents and adults. Annals of Internal Medicine. 1993; 119:667-71.

Sichieri R, Coitinho DC, Leao MM, Recine E, Everhart JE. High temporal, geographic and income variation in body mass index among adults in Brazil. American Journal of Public Health. 1994; 84:793-8.

SIGN (Scottish Intercollegiate Guidelines Network). Obesity in Scotland: Integrating prevention with weight management. A national clinical guideline recommended for use in Scotland by the Scottish Intercollegiate Guidelines Network. Pilot edition. Edinburgh: SIGN; 1996 Nov.

Silagy C, Ketteridge S. The effectiveness of physician advice to aid smoking cessation. In: Lancaster T, Silagy C, Fullerton D (Eds.) Tobacco Addiction Module of The Cochrane Database of Systematic Reviews. Available in The Cochrane Library [Database on Disk and CDROM]. The Cochrane Collaboration; Issue 2. Oxford: Update Software, 1997. Updated Quarterly.

Silagy C, Muir J, Coulter A, Thorogood M, Roe L. Cardiovascular risk and attitudes to lifestyle: what do patients think? BMJ. 1993; 306:1657-60.

Simpson M, Buckman R, Stewart M, Maguire P, Lipkin M, Novack D, Till J. Doctor-patient communication: the Toronto consensus statement. British Medical Journal 1991; 303:1385-7.

Sims EA, Kelleher PE, Horton ES, Gluck CM, Goodman RF, Rowe DA. Experimental obesity in man. Excerpta Medica Monograph. 1968.

Sobal J, Stunkard AJ. Socioeconomic status and obesity: A review of the literature. Psychological Bulletin. 1989; 105(2):260-75.

Society of Actuaries. Build and Blood Pressure Study 1959. Vol. 1 ed.. Chicago: Society of Actuaries; 1959.

Society of Actuaries and Associations of Life Insurance Medical Directors. Build Study 1979. Chicago: Society of Actuaries and Associations of Life Insurance Medical Directors; 1980.

Sorlie P, Gordon T, Kannel WB. Body build and mortality. The Framingham Study. Journal of the American Medical Association. 1980; 243:1828-31.

Sothern MS, von-Almen TK, Schumacher H, Zelman M, Farris RP, Carlisle L, Udall JN Jr, Suskind RM. An effective multidisciplinary approach to weight reduction in youth. Annals New York Academy of Sciences. 1993; 699:292-4.

Sperduto WA, O'Brien RM. Effects of cash deposits on attendance and weight loss in a large-scale clinical program for obesity. Psychological Reports. 1983; 52(1):261-2.

Staats AW, Staats CK. Attitudes established by classical conditioning. Journal of Abnormal and Social Psychology. 1958; 57:37-40.

Stahlberg D, Frey D. Attitudes: Structure, measurement and functions. In: M Hewstone, W Stroebe and GM Stephenson (Eds.). Introduction to social psychology. Second edition. Oxford: Blackwell Publishers Ltd; 1996.

Stamps PL, Catino DC, Feola AC. Treatment of obesity in three rural primary care practices. Journal of Family Practice. 1983; 17(4):629-634.

Stanton HE. Fee-paying and weight loss: Evidence for an interesting interaction. American Journal of Clinical Hypnosis. 1976; 19(1):47-9.

Stein GH. The use of a nurse practitioner in the management of patients with diabetes mellitus. Medical Care. 1974; 12(10):885-90.

Stewart M. Effective physician-patient communication and health outcomes: A review. Canadian Medical Association Journal. 1995; 152(9):1423-33.

Striegel-Moore RH, Silberstein LR, Rodin J. Toward an understanding of risk factors for bulimia. American Psychologist. 1986; 41:246-63.

Stroebe W, Jonas K. Principles of attitude formation and strategies of change. In: M Hewstone, W Stroebe and GM Stephenson (Eds.). Introduction to social psychology. Second edition. Oxford: Blackwells Publishers Ltd; 1996.

Stunkard AJ, Wadden TA. Psychological aspects of severe obesity. American Journal of Clinical Nutrition. 1992; 55(2 Suppl):524S-532S.

Stunkard AJ, Foch TT, Hrubec Z. A twin study of human obesity. Journal of the American Medical Association. 1986; 256(1):51-4.

Stunkard AJ, Sorensen TA, Hanis C, Teasdale TW, Chakraborty R, Schull WJ, Schulsinger F. An adoption study of human obesity. New England Journal of Medicine. 1986; 314:193-8.

Sullivan M, Karlsson J, Sjöström L, Backman L, Bengtsson C, Bouchard C, Dahlgren S, Jonsson E, Larsson B, Lindstedt S, Näslund I, Olbe L, Wedel H. Swedish obese subjects (SOS) – an intervention study of obesity. Baseline evaluation of health and psychosocial functioning in the first 1743 subjects examined. International Journal of Obesity. 1993; 17(9):503-12.

Summerbell CD. Dietary treatments for obesity. In: M Stock and P Kopelman (Eds.). Clinical Obesity. Blackwell Scientific Press; 1998.

Summerbell CD. Teaching nutrition to medical doctors: the potential role of the State Registered Dietitian. Journal of Human Nutrition and Dietetics. 1996; 9:349-56.

Tajfel H. The structure of our views about society. In: H Tajfel and C Fraser (Eds.). Introducing social psychology: An analysis of individual reaction and response. London: Penguin Group; 1978.

Tajfel H, Fraser C. Introducing social psychology. London: Penguin Group; 1978.

Tarui S, Tokunaga K, Fujioka S, Matsuzawa Y. Visceral fat obesity: Anthropological and pathophysiological aspects. International Journal of Obesity. 1991; 15:1-8.

Taylor SE, Fiske ST. Salience, attention, and attribution: Top of the head phenomena. In: L Berkowitz (Ed.). Advances in experimental social psychology, Vol. 11. San Diego, California : Academic Press; 1978: 249-88.

The Nutrition and Physical Activity Task Forces. Reversing the increasing problem of obesity in England: A report from the Nutrition and Physical Activity Task Forces. UK: Department of Health; 1995.

Tobias LL. The relative effectiveness of behavioristic bibliotherapy contingency contracting, and suggestions of self-control in weight reduction. Dissertation Abstracts International. Unpublished thesis; 1972.

Troiano RP, Frongillo EA, Sobal J, Levitsky DA. The relationship between body weight and mortality: A quantitative analysis of combined information from existing studies. International Journal of Obesity. 1996; 20:63-75.

Tucker JA, Samo JA, Rand CSW, Woodward ER. Behavioral interventions to promote adaptive eating behavior and lifestyle changes following surgery for obesity: Results of a two-year outcome evaluation. International Journal of Eating Disorders. 1991; 10(6):689-98.

USDHHS (U.S. Department of Health and Human Services). The Surgeon General's report on nutrition and health. (DHHS Publication No.88-50210). Washington D.C.: U.S. Government Printing Office; 1988b.

Verplanck WS. The control of the content of conversation: Reinforcement of statements of opinion. Journal of Abnormal and Social Psychology. 1955; 51:668-76.

Vila Corcoles A, Llor Vila C, Pelleja Pelleja J, Gisbert Aguilar A, Jordana Ferrando P, Casacuberta Monge JM. [Evaluation of the effectiveness of personalized and frequent dietetic counseling in the treatment of obesity]. Atención Primaria. 1993; 11(6):298-300.

Vincent JP, Schiavo L, Nathan R. Effect of deposit contracts and distractibility on weight loss and maintenance. In: BJ Williams, S Martin and JP Foreyt (Eds.). Obesity: behavioral approaches to dietary management. New York: Brunner/Mazel; 1976; pp. 65-97.

Vinicor F, Cohen SJ, Mazzuca SA, Moorman N, Wheeler M, Kuebler T, Swanson S, Ours P, Fineberg SE, Gordon EE, Duckworth W, Norton JA, Fineberg NS, Clark CM. DIABEDS: a randomized trial of the effects of physician and/or patient education on diabetes patient outcomes. Journal of Chronic Diseases. 1987; 40(4):345-56.

Waddell G, Feder G, McIntosh A, Lewis M, Hutchinson A. Low back pain: Clinical guidelines and evidence review. London: Royal College of General Practitioners; 1996.

Wadden TA, Brown G, Foster GD, Linowitz JR. Salience of weight-related worries in adolescent males and females. International Journal of Eating Disorders. 1991; 10(4):407-14.

Wadden TA, Van Itallie TB, Blackburn GL. Responsible and irresponsible use of very-low-calorie-diets in the treatment of obesity. Journal of the American Medical Association. 1990; 263:83-85.

Weingarten MA, Bazel D, Shannon HS. Computerized protocol for preventive medicine: a controlled self-audit in family practice. Family Practice. 1989; 6(2):120-4.

Westrate JA. Fat and obesity. International Journal of Obesity. 1995; 19 (Suppl. 5):S38-43.

White A, Nicolaas G, Foster K, Browne F, Carey S. Health Survey for England 1991. London: HMSO; 1993.

Wiese HJC, Wilson JF, Jones RA, Neises M. Obesity stigma reduction in medical students. International Journal of Obesity . 1992; 16:859-68.

Wiesemann A, Metz J, Nuessel E, Scheidt R, Scheuemann W. Four years of practice-based and exercise-supported behavioural medicine in one community of the German CINDI area. International Journal of Sports Medicine. 1997; 18(4):308-15.

Wilfley DE, Rodin J. Cultural influences on eating disorders. In: KD Brownell and CG Fairburn (Eds.). Eating disorders and obesity: A comprehensive handbook. New York: The Guilford Press; 1995; pp. 78-82.

Williams S, Weinman J, Dale J. Doctor-patient communication and patient satisfaction: a review. Family Practice 1998; 15(5):480-92.

Wilson A, McDonald P, Hayes L, Cooney J. Health promotion in the general practice consultation: a minute makes a difference. BMJ. 1992; 304(6821):227-30.

Wilson GT. Relationship of dieting and voluntary weight loss to psychological functioning and binge eating. Annals of Internal Medicine. 1993; 119:727-30.

Wing RR, Jeffery RW, Burton LR, Thorson C, Nissinoff KS, Baxter JE. Food provision *vs.* structured meal plans in the behavioral treatment of obesity. International Journal of Obesity. 1996; 20(1):56-62.

Wing RR, Jeffery RW, Pronk N, Hellerstedt WL. Effects of a personal trainer and financial incentives on exercise adherence in overweight women in a behavioral weight loss program. Obesity Research. 1996; 4(5):457-62.

Withers RFJ. Problems in the genetics of human obesity. Eugen Review. 1964; 56:81-90.

Wooley SC, Garner DM. Obesity treatment: the high cost of false hope. Journal of the American Dietetic Association. 1991; 91(10):1248-51.

Wooley SC, Wooley OW. Should obesity be treated at all? Research Publications of the Association of Research into Nervous and Mental Disease. 1984; 62:185-92.

World Health Organisation. Declaration of Alma Ata: Report of the International Conference on Primary Health Care. Geneva: WHO; 1978.

Worsley A. Teenagers' perceptions of fat and slim people. International Journal of Obesity. 1981; 5(1):15-24.

Wylie-Rosett J, Swencionis C, Peters MH, Dornelas EA, Edlen-Nezin L, Kelly LD, Wassertheil-Smoller S. A weight reduction intervention that optimizes use of practitioners' time, lowers glucose level, and raises HDL cholesterol level in older adults. Journal of the American Dietetic Association. 1994; 94:37-42.

Young LM, Powell B. The effects of obesity on the clinical judgments of mental health professionals. Journal of Health and Social Behavior. 1985; 26(3):233-46.

Yuker HE, Block JR. Research with the attitudes towards disabled persons scales (ATDP) 1960 - 1985. Hempstead, New York: Center for Study of Attitudes Toward Persons with Disabilities; 1986.

Zhang Y, Proenca R, Maffei M, Barone M, Leopold L, Friedman JM. Positional cloning of the mouse obese gene and its human homologue. Nature. 1994; 372:425-32.

10. Appendices

Appendix 3.1: Sample questionnaire

Section 1

What factors do you think cause a person to be ***extremely overweight***? After each of the possible contributing factors listed below, please indicate how important you think they are in determining whether a person is **extremely overweight** or not. For example, if you feel personality is an extremely important factor, circle the number **6** next to that statement. **Please do not leave any blank.**

	1 **Not Important**	2	3	4	5	6 **Extremely Important**
1. Lack of willpower	1	2	3	4	5	6
2. Physical Inactivity	1	2	3	4	5	6
3. Food addiction (e.g., carbohydrate craving)	1	2	3	4	5	6
4. Depression, leading to overeating	1	2	3	4	5	6
5. Genetic factors	1	2	3	4	5	6
6. Metabolic defects	1	2	3	4	5	6
7. Fat cell defect	1	2	3	4	5	6
8. Repeated dieting (weight-cycling)	1	2	3	4	5	6
9. A person's age	1	2	3	4	5	6
10. A person's gender	1	2	3	4	5	6
11. A person's socio-economic status	1	2	3	4	5	6
12. Personality	1	2	3	4	5	6
13. Interpersonal factors (e.g., familial/peer influence)	1	2	3	4	5	6
14. External stressors, leading to overeating	1	2	3	4	5	6
15. Mood changes, leading to overeating	1	2	3	4	5	6

Section 2

This section aims to establish your thoughts about the ***extremely overweight*** person. For each of the following statements below, please indicate the extent to which you agree or disagree with it. **Please do not leave any blank.**

1 2 3 4 5 6
Strongly Disagree **Strongly Agree**

---

1. Extremely overweight people are as happy as normal weight people.

1 2 3 4 5 6

2. Most extremely overweight people feel that they are not as good as other people.

1 2 3 4 5 6

3. Most extremely overweight people are more self-conscious than other people.

1 2 3 4 5 6

4. Extremely overweight workers cannot be as successful as other workers.

1 2 3 4 5 6

5. Most normal weight people would not want to marry anyone who is extremely overweight.

1 2 3 4 5 6

6. Extremely overweight people are usually untidy.

1 2 3 4 5 6

7. Extremely overweight people are usually sociable.

1 2 3 4 5 6

8. Most extremely overweight people are not dissatisfied with themselves.

1 2 3 4 5 6

9. Extremely overweight people are just as self-confident as other people.

1 2 3 4 5 6

10. Most people feel uncomfortable when they associate with extremely overweight people.

1 2 3 4 5 6

1 2 3 4 5 6
Strongly Disagree **Strongly Agree**

---

11. Extremely overweight people are often less aggressive than normal weight people.

1 2 3 4 5 6

12. Most extremely overweight people have different personalities than normal weight people.

1 2 3 4 5 6

13. Very few extremely overweight people are ashamed of their weight.

1 2 3 4 5 6

14. Most extremely overweight people resent normal weight people.

1 2 3 4 5 6

15. Extremely overweight people are more emotional than other people.

1 2 3 4 5 6

16. Extremely overweight people should not expect to lead normal lives.

1 2 3 4 5 6

17. Extremely overweight people are just as healthy as normal weight people.

1 2 3 4 5 6

18. Extremely overweight people are just as sexually attractive as normal weight people.

1 2 3 4 5 6

19. Extremely overweight people tend to have family problems.

1 2 3 4 5 6

20. One of the worst things that could happen to a person would be for him/her to become extremely overweight.

1 2 3 4 5 6

Section 3

This section aims to establish your beliefs about what **extremely overweight** people should be doing? For each of the following statements below, please indicate the extent to which you agree or disagree with it. **Please do not leave any blank.**

1 2 3 4 5 6
Strongly Disagree **Strongly Agree**

Extremely overweight people should...

21. ...make efforts to understand what causes them to be overweight.

1 2 3 4 5 6

22. ...motivate themselves to lose weight.

1 2 3 4 5 6

23. ...seek professional advice and help in order to lose weight.

1 2 3 4 5 6

24. ...recognise that a problem exists.

1 2 3 4 5 6

25. ...recognise that being overweight is a risk to their health.

1 2 3 4 5 6

26. ...recognise that being overweight may influence the behaviour of close others and cause them to become overweight also.

1 2 3 4 5 6

27. ...be left alone to be content/happy with their body size/shape.

1 2 3 4 5 6

28. ...recognise that being overweight may have a negative effect on others.

1 2 3 4 5 6

29. ...not be subjected to social pressures to lose weight.

1 2 3 4 5 6

30. ...be accepted by others, whatever their body weight.

1 2 3 4 5 6

	1	2	3	4	5	6	
	Strongly Disagree						**Strongly Agree**

Extremely overweight people should...

31. ...not be held responsible for their condition, which may be caused by a complex interaction of factors.

1	2	3	4	5	6

Appendix 3.2.1

Causative factor ratings according to occupation, health status and level of severity (means ± SDs)

	GPs				CPs			
QUESTIONN-AIRE ITEM	OVERWEIGHT		SMOKING		OVERWEIGHT		SMOKING	
	MOD	EXT	MOD	HEAVY	MOD	EXT	MOD	HEAVY
Lack of willpower ∞∞	4.09 (1.27) ⊗⊗⊗	4.56 (1.34) ⊗⊗⊗	3.58 (1.58) ⊗⊗⊗	3.61 (1.54) ⊗⊗⊗	2.55 (1.21)	2.74 (1.21)	3.25 (1.77)	3.38 (1.45)
Addiction	4.17 (1.20)	4.56 (1.18)	4.37 (1.30)	4.80 (0.99)	3.73 (1.79)	3.91 (1.30)	4.56 (1.03)	4.23 (1.64)
Depression	4.17 (1.26)	4.33 (1.24)	3.37 (1.25)	3.64 (1.16)	4.73 (0.65)	3.91 (1.45)	3.06 (1.00)	3.62 (1.50)
Genetic factors	4.09 (1.20) ⊗⊗	3.94 (1.41) ⊗⊗	1.78 (1.04) ⊗⊗	1.92 (1.05) ⊗⊗	3.64 (1.03)	3.27 (1.19)	1.50 (0.73)	1.46 (0.97)
Person's age	3.50 (1.31)	2.97 (1.18)	2.98 (1.49)	3.02 (1.38)	3.45 (0.93)	2.36 (1.21)	3.31 (1.45)	3.23 (1.64)
Person's gender	3.10 (1.44)	3.11 (1.41)	2.30 (1.24)	2.56 (1.30)	3.09 (1.04)	2.73 (1.68)	2.81 (1.17)	2.30 (1.18)
Person's SES	3.72 (1.23)	3.83 (1.25)	3.90 (1.51)	4.22 (1.25)	3.72 (1.56)	3.27 (1.19)	3.81 (1.17)	3.69 (1.25)
Personality	4.10 (1.22) ⊗⊗⊗	4.42 (1.16) ⊗⊗⊗	4.32 (1.20) ⊗⊗⊗	4.36 (1.27) ⊗⊗⊗	2.55 (1.21)	3.82 (1.54)	3.25 (1.24)	3.38 (1.94)
Interpersonal factors	4.19 (1.08)	4.03 (1.13)	5.15 (0.84)	4.88 (1.04)	4.00 (1.00)	4.45 (1.12)	4.56 (1.15)	4.85 (0.90)
External stressors	4.29 (1.12)	3.89 (1.14)	4.57 (1.01)	4.34 (1.10)	4.64 (0.67)	4.00 (1.34)	4.31 (0.79)	4.31 (1.31)
Mood changes	4.19 (1.16)	3.89 (0.98)	3.67 (1.17)	3.44 (1.23)	4.27 (1.10)	4.18 (1.25)	3.25 (0.93)	3.77 (1.30)

∞∞ significant health status by occupation interaction $p < 0.01$

⊗⊗ = significant occupation effect, $p < 0.01$, ⊗⊗⊗ = $p < 0.001$

The significant differences indicated above are:

Lack of willpower, main effects for occupation ($F [1, 247] = 18.12$, $p < 0.001$), and two-way interaction for health status and occupation ($F [1, 247] = 9.24$, $p < 0.01$).

Depression: main effect for health status (F [1, 247] = 19.87, p < 0.001).

Genetic factors: main effects for health status (F [1, 247] = 133.68, p < 0.001) and occupation (F [1, 247] = 6.748, p = 0.01),

Personality: main effect for occupation (F [1, 247] = 26.81, p < 0.001).

Interpersonal factors: main effect for health status (F [1, 247] = 26.81, p < 0.001).

Mood changes: main effect for health status (F [1, 247] = 10.86, p = 0.001).

Appendix 3.2.2

Attitude ratings according to occupation, health status and level of severity (means ± SDs)

	GPs				CPs			
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		OVERWEIGHT		SMOKING	
	MOD	EXT	MOD	HEAVY	MOD	EXT	MOD	HEAVY
Sec2qu1: 'are as happy as'	3.22 (1.28) ⊗⊗	2.72 (1.14) ⊗⊗	3.61 (1.30) ⊗⊗	2.89 (1.30) ⊗⊗	4.05 (1.23)	2.00 (0.89)	3.88 (1.31)	3.85 (1.14)
Sec2qu2: 'feel not as good as'	3.59 (1.27)	2.70 (1.04)	4.07 (1.10)	3.75 (1.38)	3.73 (1.27)	2.82 (1.40)	4.50 (1.21)	4.23 (1.17)
Sec2qu3: 'are more self-conscious'	3.22 (1.03)	2.50 (1.10)	4.13 (1.10)	4.09 (1.28)	3.28 (1.62)	3.00 (1.26)	4.38 (1.15)	3.92 (1.50)
Sec2qu4: 'cannot be as successful workers'	4.47 (1.33) ⊗⊗	3.67 (1.55) ⊗⊗	4.57 (1.29) ⊗⊗	4.31 (1.30) ⊗⊗	5.09 (1.38)	4.27 (1.68)	5.06 (1.81)	4.92 (1.26)
Sec2qu5: 'people would not want to marry them'	4.22 (1.21)	3.06 (1.39)	2.73 (1.49)	2.19 (1.22)	4.55 (1.44)	3.64 (1.36)	3.25 (1.13)	2.54 (1.51)
Sec2qu6: 'are usually untidy'	5.16 (1.23) ⊗⊗⊗	4.81 (1.19) ⊗⊗⊗	4.40 (1.21) ⊗⊗⊗	3.89 (1.40) ⊗⊗⊗	5.73 (0.65)	5.55 (0.69)	5.13 (1.15)	4.92 (1.04)
Sec2qu7: 'are usually sociable'	3.36 (1.27)	3.33 (1.20)	3.32 (1.27)	3.37 (1.03)	2.73 (1.01)	2.27 (1.10)	3.31 (0.87)	3.23 (1.74)
Sec2qu8: 'are not dissatisfied with themselves'	3.19 (1.02)	2.58 (1.05)	3.58 (1.09)	3.35 (1.14)	3.00 (1.18)	2.55 (0.93)	3.19 (0.91)	3.77 (1.17)

⊗⊗ = significant occupation effect, p < 0.01, ⊗⊗⊗ = p < 0.001

Appendix 3.2.2 (cont.)

Attitude ratings according to occupation, health status and level of severity (means ± SDs)

	GPs				CPs			
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		OVERWEIGHT		SMOKING	
	MOD	EXT	MOD	HEAVY	MOD	EXT	MOD	HEAVY
Sec2qu9: 'are as self-confident'	3.48 (1.14)	2.72 (0.94)	3.83 (1.15)	3.71 (1.19)	3.55 (1.29)	2.36 (0.92)	3.81 (1.28)	4.15 (1.21)
Sec2qu10: 'feel uncomfortable to associate with'	4.83 (0.90)	4.11 (1.35)	3.80 (1.29)	2.94 (1.20)	4.73 (1.35)	4.55 (1.04)	3.69 (1.14)	3.44 (1.34)
Sec2qu11: 'are often less aggressive'	4.53 (1.13) ⊗⊗	3.97 (1.16) ⊗⊗	4.95 (0.70) ⊗⊗	4.50 (1.07) ⊗⊗	5.09 (1.14)	4.91 (0.83)	5.06 (0.85)	4.74 (0.80)
Sec2qu12: 'have different personalities'	4.71 (1.12) ⊗⊗⊗	4.08 (1.18) ⊗⊗⊗	3.95 (1.40) ⊗⊗⊗	3.76 (1.19) ⊗⊗⊗	5.36 (1.03)	4.55 (1.37)	4.62 (1.02)	4.51 (1.09)
Sec2qu13: 'are ashamed'	2.72 (1.21)	2.39 (1.10)	2.97 (1.31)	3.04 (1.37)	2.73 (1.10)	2.18 (0.87)	2.50 (1.10)	3.36 (1.27)
Sec2qu14: 'resent others'	4.33 (1.28)	4.19 (1.24)	4.15 (1.25)	3.82 (0.92)	4.45 (0.93)	4.64 (1.12)	4.31 (1.30)	4.13 (1.10)
Sec2qu15: 'are more emotional'	4.66 (1.04) ⊗⊗	4.50 (1.08) ⊗⊗	4.47 (1.05) ⊗⊗	4.22 (1.11) ⊗⊗	5.00 (1.00)	5.36 (0.67)	4.75 (1.13)	4.59 (1.09)
Sec2qu16: 'can't expect to lead normal lives'	5.03 (1.18) ⊗⊗⊗	4.31 (1.43) ⊗⊗⊗	3.78 (1.49) ⊗⊗⊗	3.54 (1.59) ⊗⊗⊗	5.91 (0.30)	5.27 (1.01)	4.56 (1.50)	4.36 (1.42)
Sec2qu17: 'are just as healthy'	2.50 (1.17)	1.61 (0.84)	1.32 (0.98)	2.02 (1.83)	2.82 (1.60)	1.64 (1.21)	1.69 (1.01)	2.59 (1.80)
Sec2qu18: 'are just as sexually attractive'	3.12 (1.29) ⊗⊗⊗	2.06 (0.86) ⊗⊗⊗	2.55 (1.41) ⊗⊗⊗	2.46 (1.63) ⊗⊗⊗	4.18 (1.47)	2.18 (0.87)	3.37 (1.45)	3.28 (1.81)
Sec2qu19: 'tend to have family problems'	4.43 (1.16) ⊗⊗⊗	3.64 (1.40) ⊗⊗⊗	4.18 (1.23) ⊗⊗⊗	3.58 (1.23) ⊗⊗⊗	5.00 (1.10)	4.55 (1.21)	4.69 (1.08)	4.59 (0.93)
Sec2qu20: 'worst thing to happen to happen to a person'	4.84 (1.25) ⊗⊗⊗	3.81 (1.49) ⊗⊗⊗	2.53 (1.66) ⊗⊗⊗	2.08 (1.13) ⊗⊗⊗	5.45 (1.29)	4.82 (1.54)	2.81 (1.76)	3.67 (1.40)
OVERALL ATTITUDE SCORE	79.6 (12.0) ⊗⊗⊗	66.8 (12.3) ⊗⊗⊗	72.9 (12.1) ⊗⊗⊗	67.5 (10.1) ⊗⊗⊗	86.4 (14.8)	73.1 (10.8)	78.6 (11.9)	78.8 (9.48)

⊗⊗ = significant occupation effect, $p < 0.01$, ⊗⊗⊗ = $p < 0.001$

The observed significant effects (above) are:

Sec2qu1: main effects for health status ($F [1, 247] = 7.91$, $p < 0.01$), level ($F [1, 247] = 17.34$, $p < 0.001$), occupation ($F [1, 247] = 2.75$, $p < 0.01$).

Sec2qu2, health status ($F [1, 247] = 22.79$, $p < 0.001$), level ($F [1, 247] = 9.38$, $p < 0.01$).

Sec2qu3, health status ($F [1, 247] = 36.55$, $p < 0.001$).

Sec2qu4, occupation ($F [1, 247] = 7.44$, $p < 0.01$),

Sec2qu5, health status ($F [1, 247] = 31.32$, $p < 0.001$), level ($F [1, 247] = 15.43$, $p < 0.001$)

Sec2qu6, health status ($F [1, 247] = 14.35$, $p < 0.001$), occupation ($F [1, 247] = 16.14$, $p < 0.001$)

Sec2qu8, health status ($F [1, 247] = 14.27$, $p < 0.001$).

Sec2qu9, health status ($F [1, 247] = 22.03$, $p < 0.001$), health status by level interaction ($F [1, 247] = 8.91$, $p < 0.01$)

Sec2qu10, health status ($F [1, 247] = 33.22$, $p < 0.001$), level ($F [1, 247] = 7.09$, $p < 0.01$),

Sec2qu11, occupation ($F [1, 247] = 8.61$, $p < 0.01$)

Sec2qu12, occupation ($F [1, 247] = 10.90$, $p = 0.001$).

Sec2qu15, occupation ($F [1, 247] = 7.70$, $p < 0.01$),

Sec2qu16, health status ($F [1, 247] = 23.56$, $p < 0.001$), occupation ($F [1, 247] = 15.24$, $p < 0.001$).

Sec2qu17, health status by level interaction ($F [1, 247] = 19.84$, $p < 0.001$).

Sec2qu18, level ($F [1, 247] = 13.81$, $p < 0.001$), occupation ($F [1, 247] = 10.51$, $p = 0.001$), health status by level interaction ($F [1, 247] = 10.90$, $p = 0.001$).

Sec2qu19, occupation ($F [1, 247] = 15.12$, $p < 0.001$)

Sec2qu20, health status ($F [1, 247] = 74.77$, $p < 0.001$), occupation ($F [1, 247] = 14.83$, $p < 0.001$).

Total attitude score: level ($F [1, 247] = 17.82$, $p < 0.001$), occupation ($F [1, 247] = 16.42$, $p < 0.001$), health status by level interaction ($F [1, 247] = 8.025$, $p < 0.01$).

Appendix 3.2.3

Responsibility ratings according to occupation, health status and level of severity (means ± SDs)

	GPs				CPs			
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING		OVERWEIGHT		SMOKING	
	MOD	EXT	MOD	HEAVY	MOD	EXT	MOD	HEAVY
Sec3qu21: 'try to understand causes'	4.47 (1.11) ⊗⊗⊗	4.89 (1.04) ⊗⊗⊗	5.03 (0.92) ⊗⊗⊗	4.88 (1.10) ⊗⊗⊗	3.91 (0.94)	4.55 (1.57)	4.50 (1.32)	3.85 (1.34)
Sec3qu22: 'motivate themselves'	4.29 (0.96) ⊗⊗⊗	4.72 (1.03) ⊗⊗⊗	5.37 (0.82) ⊗⊗⊗	5.17 (0.84) ⊗⊗⊗	3.18 (1.08)	3.55 (1.37)	4.63 (1.36)	3.77 (1.59)
Sec3qu23: 'seek professional advice/help'	3.66 (1.18) ⊗⊗⊗	4.33 (1.33) ⊗⊗⊗	4.63 (1.30) ⊗⊗⊗	4.74 (1.10) ⊗⊗⊗	2.27 (1.19)	3.18 (0.98)	4.06 (1.39)	3.69 (1.44)
Sec3qu24: 'recognise a problem exists'	4.29 (1.21) ⊗⊗⊗	5.14 (0.83) ⊗⊗⊗	5.47 (0.62) ⊗⊗⊗	5.43 (0.88) ⊗⊗⊗	3.09 (1.45)	3.55 (1.63)	4.81 (1.33)	4.08 (1.55)
Sec3qu25: 'recognise risk to health'	4.59 (1.17) ⊗⊗	5.42 (0.81) ⊗⊗	5.73 (0.52) ⊗⊗	5.78 (0.46) ⊗⊗	3.91 (1.76)	5.36 (0.81)	5.56 (0.81)	5.08 (1.32)
Sec3qu26: 'recognise impact on others'	3.62 (1.11) ⊗⊗	3.78 (1.20) ⊗⊗	5.37 (0.69) ⊗⊗	5.24 (0.94) ⊗⊗	2.45 (1.57)	2.82 (1.25)	4.75 (1.29)	4.08 (1.38)
Sec3qu27: 'left to be happy'	3.69 (1.08) ⊗⊗⊗	4.36 (0.99) ⊗⊗⊗	5.17 (0.89) ⊗⊗⊗	4.91 (1.06) ⊗⊗⊗	2.27 (1.10)	2.91 (1.70)	4.44 (1.03)	3.85 (1.41)
Sec3qu28: 'recognise negative effect on others'	2.93 (1.15) ⊗⊗⊗	3.33 (1.26) ⊗⊗⊗	5.08 (1.01) ⊗⊗⊗	5.16 (0.98) ⊗⊗⊗	2.45 (1.37)	2.73 (1.19)	4.44 (1.46)	4.38 (1.26)
Sec3qu29: 'not be socially pressured'	3.31 (1.14) ⊗⊗⊗	3.61 (1.10) ⊗⊗⊗	5.03 (1.06) ⊗⊗⊗	4.88 (1.38) ⊗⊗⊗	2.09 (1.45)	2.64 (1.36)	4.50 (1.37)	3.77 (1.48)
Sec3qu30: 'be accepted whatever'	2.00 (1.15)	2.22 (1.48)	3.70 (1.54)	3.76 (1.52)	1.64 (1.50)	1.93 (1.07)	3.69 (1.20)	3.08 (1.61)
Sec3qu31: 'not be held responsible'	3.51 (1.37)	3.78 (1.44)	4.97 (1.04)	4.82 (1.16)	3.18 (1.25)	3.57 (1.21)	4.50 (0.89)	4.00 (1.58)
OVERALL RESPONSIBILITY SCORE	40.4 (7.30) ⊗⊗⊗	45.6 (7.29) ⊗⊗⊗	55.6 (5.39) ⊗⊗⊗	54.8 (6.28) ⊗⊗⊗	30.5 (9.40)	36.8 (8.75)	49.9 (10.4)	43.6 (10.3)

⊗⊗ = significant occupation effect, $p < 0.01$, ⊗⊗⊗ = $p < 0.001$

The observed significant differences (above) are:

Sec3qu21, main effect for occupation ($F [1, 247] = 12.50$, $p < 0.001$), health status by level interaction ($F [1, 247] = 7.16$, $p < 0.01$).

Sec3qu22, health status ($F [1, 247] = 24.69$, $p < 0.001$), occupation ($F [1, 247] = 47.59$, $p < 0.001$), health status by level interaction ($F [1, 247] = 8.28$, $p < 0.01$)

Sec3qu23, health status ($F [1, 247] = 22.01$, $p < 0.001$), occupation ($F [1, 247] = 27.95$, $p < 0.001$).

Sec3qu24, health status ($F [1, 247] = 31.12$, $p < 0.001$), occupation ($F [1, 247] = 51.94$, $p < 0.001$), health status by level interaction ($F [1, 247] = 9.67$, $p < 0.01$)

Sec3qu25, health status ($F [1, 247] = 25.96$, $p < 0.001$), level ($F [1, 247] = 10.69$, $p = 0.001$), occupation ($F [1, 247] = 8.07$, $p < 0.01$), health status by level interaction ($F [1, 247] = 23.27$, $p < 0.001$).

Sec3qu26, health status ($F [1, 247] = 100.40$, $p < 0.001$), occupation ($F [1, 247] = 33.49$, $p < 0.001$).

Sec3qu27, health status ($F [1, 247] = 57.01$, $p < 0.001$), occupation ($F [1, 247] = 47.12$, $p < 0.001$), health status by level interaction ($F [1, 247] = 10.10$, $p < 0.01$)

Sec3qu28, health status ($F [1, 247] = 110.19$, $p < 0.001$), occupation ($F [1, 247] = 11.90$, $p = 0.001$)

Sec3qu29, health status ($F [1, 247] = 70.74$, $p < 0.001$), occupation ($F [1, 247] = 24.41$, $p < 0.001$).

Sec3qu30, health status ($F [1, 247] = 51.64$, $p < 0.001$)

Sec3qu31, health status ($F [1, 247] = 29.20$, $p < 0.001$).

Total responsibility score: health status ($F [1, 247] = 120.35$, $p < 0.001$), occupation ($F [1, 247] = 59.23$, $p < 0.001$), health status by level interaction ($F [1, 247] = 16.21$, $p < 0.001$)

Appendix 3.3.1

Table of causative factor ratings for common questionnaire variables, by health status and level (means ± SDs)

	QUESTIONNAIRE TYPE			
QUESTIONNAIRE ITEM	OVERWEIGHT		SMOKING	
	MODERATE	EXTREME	MODERATE	HEAVY
Lack of willpower	3.84 (1.38)	4.13 (1.51)	3.51 (1.61)	3.56 (1.51)
Addiction	4.10 (1.31)	4.40 (1.23)	4.41 (1.25)	4.68 (1.16)
Depression	4.26 (1.20) ***	4.23 (1.29) ***	3.30 (1.20)	3.63 (1.22)
Genetic	4.01 (1.18) ***	3.79 (1.38) ***	1.72 (0.99)	1.82 (1.04)
A person's age	3.49 (1.26)	2.83 (1.20)	3.05 (1.48)	3.06 (1.42)
A person's gender	3.10 (1.37) ***	3.02 (1.47) ***	2.41 (1.23)	2.51 (1.27)
A person's SES	3.72 (1.27)	3.70 (1.25)	3.88 (1.44)	4.11 (1.26)
Personality	3.86 (1.34)	4.28 (1.26)	4.09 (1.28)	4.16 (1.47)
Interpersonal factors	4.16 (1.07)	4.13 (1.13)	5.03 (0.94) ***	4.87 (1.01) ***
External stressors, leading to...	4.35 (1.07) +	3.91 (1.18)	4.51 (0.97)	4.33 (1.14)
Mood changes, leading to...	4.20 (1.15) ***	3.96 (1.04) ***	3.58 (1.13)	3.51 (1.24)

** = significant health status effect, $p < 0.01$, *** = $p < 0.001$.

++ = significant level effect, $p < 0.01$, +++ = $p < 0.001$

Appendix 3.3.2

Table of causative factor ratings, only overweight questionnaire items (means ± SDs)

	QUESTIONNAIRE TYPE	
QUESTIONNAIRE ITEM	OVERWEIGHT	
	MODERATE	EXTREME
Physical inactivity	4.70 (1.13)	4.61 (1.13)
Metabolic defects	2.62 (1.32)	2.98 (1.42)
Fat cell defect	2.39 (1.12)	2.63 (1.17)
Repeated dieting	3.76 (1.33)	3.57 (1.23)

Appendix 3.3.3

Table of causative factor ratings, only smoking questionnaire items (means ± SDs)

	QUESTIONNAIRE TYPE	
QUESTIONNAIRE ITEM	SMOKING	
	MODERATE	HEAVY
Lack of meaningful other activity	3.20 (1.27)	3.94 (1.40) ++
Previous failed attempts at quitting	3.57 (1.25)	3.33 (1.39)
Advertising	3.93 (1.41)	3.73 (1.42)

++ = significant level effect, p = 0.001.

Appendix 3.4.1: Results of principal components analysis with oblique rotation: health professionals attitudes towards overweight people

	communality	factor	eigenvalue	% of var.	cumulative %
Sec2qu1	0.66	1	6.67	33.4	33.4
Sec2qu2	0.64	2	2.75	13.8	47.1
Sec2qu3	0.57	3	1.38	6.9	54.0

Pattern matrix of attitude ratings, overweight:

	Factor 1	Factor 2	Factor 3
*Sec2qu12 (have different personalities)	**0.74**	0.16	0.12
*Sec2qu6 (are usually untidy)	**0.74**	-0.13	0.17
*Sec2qu5 (people wouldn't want to marry them)	**0.70**	0.13	-0.22
*Sec2qu4 (can not be as successful as other workers)	**0.70**	0.15	-0.18
*Sec2qu19 (tend to have family problems)	**0.69**	-0.02	0.04
*Sec2qu16 (should not expect to lead normal lives)	**0.68**	-0.06	0.01
*Sec2qu20 (one of the worst things to happen)	**0.68**	0.04	-0.07
*Sec2qu15 (are more emotional)	**0.61**	0.06	**0.52**
*Sec2qu11 (are less aggressive)	**0.57**	0.03	-0.16
*Sec2qu10 (people feel uncomfortable to associate with)	**0.53**	0.26	0.21
Sec2qu1 (are as happy as others)	0.06	**0.80**	-0.03
Sec2qu9 (are just as self confident as others)	0.14	**0.78**	-0.06
Sec2qu8 (are not dissatisfied with selves)	0.07	**0.73**	-0.14
*Sec2qu3 (are more self-conscious)	0.09	**0.72**	0.08
*Sec2qu2 (feel not as good as others)	0.29	**0.68**	0.05
Sec2qu13 (very few are ashamed)	-0.14	**0.67**	-0.06
Sec2qu7 (are usually sociable)	**-0.47**	**0.54**	0.14
*Sec2qu14 (resent others)	**0.35**	0.26	**0.60**
Sec2qu17 (are just as healthy as others)	0.24	0.22	**-0.54**
Sec2qu18 (are just as sexually attractive as others)	0.27	**0.40**	**-0.51**

Factor 1 = Social difficulties

Factor 2 = Self-esteem

Factor 3 = Attractiveness/Personal appeal

* = item reverse scored

Appendix 3.4.2: Results of principal components analysis with oblique rotation: health professionals attitudes towards smokers

	communality	factor	eigenvalue	% of var.	cumulative %
Sec2qu1	0.47	1	4.83	24.2	24.2
Sec2qu2	0.60	2	2.33	11.7	35.8
Sec2qu3	0.50	3	1.73	8.7	44.5

Pattern matrix of attitude ratings, smoking:

	Factor 1	Factor 2	Factor 3
*Sec2qu6 (are usually untidy)	**0.76**	0.07	0.14
*Sec2qu19 (tend to have family problems)	**0.73**	0.16	-0.08
*Sec2qu12 (have different personalities)	**0.64**	0.10	-0.03
*Sec2qu10 (people feel uncomfortable to associate with)	**0.63**	-0.19	0.14
*Sec2qu15 (are more emotional)	**0.63**	0.14	-0.14
*Sec2qu4 (can not be as successful as other workers)	**0.60**	0.14	-0.17
*Sec2qu16 (should not expect to lead normal lives)	**0.55**	-0.19	**0.47**
*Sec2qu20 (one of the worst things to happen to someone)	**0.47**	-0.04	0.12
*Sec2qu14 (resent others)	**0.43**	0.02	0.11
*Sec2qu11 (are less aggressive)	**0.35**	0.01	-0.15
*Sec2qu2 (feel not as good as others)	0.05	**0.76**	-0.17
Sec2qu8 (are not dissatisfied with selves)	-0.03	**0.67**	0.12
Sec2qu9 (are just as self confident as others)	0.17	**0.63**	0.14
Sec2qu13 (very few are ashamed)	**-0.43**	**0.63**	0.26
*Sec2qu3 (are more self-conscious)	**0.30**	**0.53**	**-0.34**
Sec2qu1 (are as happy as others)	0.20	**0.51**	**0.31**
Sec2qu18 (are just as sexually attractive as others)	0.20	0.08	**0.62**
Sec2qu17 (are just as healthy as others)	-0.03	0.14	**0.61**
*Sec2qu5 (people wouldn't want to marry them)	**0.41**	0.14	**0.52**
Sec2qu7 (are usually sociable)	**-0.31**	0.03	**0.48**

Factor 1 = Social difficulties

Factor 2 = Self-esteem

Factor 3 = Attractiveness/Personal appeal

* = item reverse scored

Appendix 3.4.3: Results of principal components analysis with oblique rotation: health professionals perceptions of the responsibility of overweight people

	communality	factor	eigenvalue	% of var.	cumulative %
Sec3qu21	0.59	1	4.79	43.6	43.6
Sec3qu22	0.70	2	1.39	12.6	56.2

Pattern matrix for responsibility ratings, overweight

	Factor 1	Factor 2
Sec3qu24 (should recognise there is a problem)	**0.90**	0.01
Sec3qu25 (should recognise a risk to their health)	**0.83**	-0.09
Sec3qu22 (should motivate themselves to do something)	**0.81**	0.08
Sec3qu23 (should seek professional advice)	**0.79**	-0.09
Sec3qu21 (should make efforts to understand the causes)	**0.78**	-0.04
Sec3qu26 (recognise they may influence close others)	**0.60**	0.12
Sec3qu28 (should recognise the negative effect on others)	0.29	0.28
*Sec3qu30 (should be accepted by others)	**-0.31**	**0.85**
*Sec3qu29 (should not be subjected to social pressures)	0.25	**0.66**
*Sec3qu27 (should be left to be happy)	**0.50**	**0.50**
*Sec3qu31 (should not be held responsible)	0.14	**0.48**

Factor 1 = Responsibility to act

Factor 2 = Acceptance

* = item reverse scored

Appendix 3.4.4: Results of principal components analysis with oblique rotation: health professionals perceptions of the responsibility of smokers

	communality	factor	eigenvalue	% of var.	cumulative %
Sec3qu21	0.63	1	4.69	42.7	42.7
Sec3qu22	0.68	2	1.42	12.9	55.7

Pattern matrix for responsibility ratings, smoking

	Factor 1	Factor 2
Sec3qu24 (should recognise there is a problem)	**0.82**	0.13
Sec3qu22 (should motivate themselves to do something)	**0.81**	0.04
Sec3qu21 (should make efforts to understand the causes)	**0.81**	-0.30
Sec3qu25 (should recognise a risk to their health)	**0.74**	-0.09
Sec3qu23 (should seek professional advice)	**0.71**	-0.19
Sec3qu26 (recognise they may influence close others)	**0.62**	**0.33**
*Sec3qu29 (should not be subjected to social pressures)	**0.56**	0.21
Sec3qu28 (should recognise the negative effect on others)	**0.55**	0.23
*Sec3qu27 (should be left to be happy)	**0.49**	**0.41**
*Sec3qu31 (should not be held responsible)	-0.06	**0.83**
*Sec3qu30 (should be accepted by others)	0.05	**0.69**

Factor 1 = Responsibility to act

Factor 2 = Acceptance

* = item reverse scored

Appendix 4.1: Results of principal components analysis with oblique rotation: dieters' attitudes towards overweight people

	communality	factor	eigenvalue	% of var.	cumulative %
Sec2qu1	0.43	1	3.48	17.4	17.4
Sec2qu2	0.62	2	2.37	11.8	29.3
Sec2qu3	0.65	3	1.51	7.6	36.8

Pattern matrix for attitude ratings of all respondents

	Factor 1	Factor 2	Factor 3
*Sec2qu12 (have different personalities)	**0.64**	0.07	-0.04
*Sec2qu16 (should not expect to lead normal lives)	**0.63**	-0.14	-0.13
*Sec2qu10 (people feel uncomfortable to associate with)	**0.57**	0.01	0.03
*Sec2qu19 (tend to have family problems)	**0.53**	-0.26	0.14
*Sec2qu5 (people wouldn't want to marry them)	**0.52**	0.16	-0.02
*Sec2qu15 (are more emotional)	**0.49**	0.05	0.25
*Sec2qu6 (are usually untidy)	**0.48**	-0.17	0.04
*Sec2qu11 (are less aggressive)	**0.42**	-0.11	0.06
*Sec2qu4 (can not be as successful as other workers)	**0.41**	0.14	0.02
*Sec2qu14 (resent others)	**0.41**	0.15	0.04
Sec2qu9 (are just as self confident as others)	-0.01	**0.79**	0.08
Sec2qu8 (are not dissatisfied with selves)	-0.15	**0.65**	0.12
Sec2qu1 (are as happy as others)	0.18	**0.62**	0.04
Sec2qu13 (very few are ashamed)	-0.07	**0.56**	0.07
Sec2qu17 (are just as healthy as others)	**0.32**	**0.42**	-0.06
Sec2qu18 (are just as sexually attractive as others)	**0.35**	**0.39**	-0.16
Sec2qu7 (are usually sociable)	-0.18	**0.37**	-0.29
*Sec2qu3 (are more self-conscious)	-0.11	0.16	**0.82**
*Sec2qu2 (feel not as good as others)	0.00	0.07	**0.79**
*Sec2qu20 (one of the worst things to happen)	0.27	-0.03	**0.50**

Factor 1 = Social integration

Factor 2 = Self-esteem and attractiveness

Factor 3 = Self-esteem

* = item reverse scored

Appendix 4.2: Results of principal components analysis with oblique rotation: dieters' perceptions of responsibility of overweight people

	communality	factor	eigenvalue	% of var.	cumulative %
Sec3qu21	0.70	1	3.70	33.7	33.7
Sec3qu22	0.66	2	1.86	16.9	50.6
Sec3qu23	0.58	3	1.25	11.4	62.0

Pattern matrix for responsibility ratings

	Factor 1	Factor 2	Factor 3
Sec3qu24 (should recognise there is a problem)	**0.89**	0.05	0.00
Sec3qu21 (should make efforts to understand the causes)	**0.84**	0.06	-0.03
Sec3qu22 (should motivate themselves to do something)	**0.81**	0.00	-0.02
Sec3qu25 (should recognise a risk to their health)	**0.78**	-0.07	0.13
Sec3qu23 (should seek professional advice)	**0.71**	0.05	0.17
*Sec3qu29 (should not be subjected to social pressures)	-0.09	**0.77**	-0.01
*Sec3qu31 (should not be held responsible)	0.12	**0.69**	-0.13
*Sec3qu27 (should be left to be happy)	0.15	**0.68**	-0.01
*Sec3qu30 (should be accepted by others)	**-0.34**	**0.54**	0.24
Sec3qu28 (should recognise the negative effect on others)	0.06	-0.14	**0.84**
Sec3qu26 (recognise they may influence close others)	0.12	0.07	**0.77**

Factor 1 = Responsibility to act

Factor 2 = Acceptance

Factor 3 = Affecting others

* = item reverse scored

Appendix 6.1: Dietitians' reported practice questions

Section 3 – Obesity practice and treatment

This section is about your treatment of obese clients. If you are not completely sure about your responses, please answer the questions the best you can. If necessary, please give approximate figures.

IF YOU DO NOT CURRENTLY TREAT OBESE CLIENTS, PLEASE GO STRAIGHT TO PAGE 7

1. Of the obese clients referred to you, how many do you accept for management?

(Please tick one box)

Some ☐

All ☐

2. Approximately how many different obese clients have you seen in the past year?

_____ *(Please write number)*

3. Approximately how much time do you routinely allocate for a new client appointment? *(Please give the amount of time in minutes)* _____ (mins)

4. After the first appointment, how many additional appointments do you routinely offer for a course of treatment? _____ *(If none, please write '0' and go to question 6.)*

5. How much time do you routinely allocate for additional appointments? *(Please give the amount of time in minutes)* _____ (mins)

6. How often do you routinely offer additional appointments (e.g. every week, month, two months, etc)? _____

7. On what basis do you generally see obese clients?

Always on an individual basis ☐

Once individually and then with a group of others ☐

Always as part of a group ☐

Both on an individual and/or group basis ☐

Other *(please specify)* _____ ☐

8. Do you have a protocol for the management of obese clients?

No ☐

Yes ☐

Currently being developed ☐

9. Please indicate how often you incorporate the following strategies into your management of obese clients.

	1 Never	2	3	4	5	6 Always
a) Advice or guidance on:						
(i) Calorie-controlled food intake	1	2	3	4	5	6
(ii) The proportion of fat in the diet	1	2	3	4	5	6
(iii) Eating or avoiding specific foods	1	2	3	4	5	6
(iv) Eating less in general	1	2	3	4	5	6
(v) Physical activity	1	2	3	4	5	6
(vi) General social and psychological issues (e.g. social support, cues to certain behaviours, family circumstances)	1	2	3	4	5	6
b) Provision of diet sheets	1	2	3	4	5	6
c) Provision of recipes	1	2	3	4	5	6
d) Referral on to self-help group	1	2	3	4	5	6
e) Referral on to other health professional/s	1	2	3	4	5	6
f) Any other *(please describe below)*	1	2	3	4	5	6

10. Please indicate the extent to which you agree or disagree with the following statements:

	1 **Strongly Disagree**	2	3	4	5	6 **Strongly Agree**

a) I regularly record the weight (or other measure of body fat) of each obese person I see.

1 2 3 4 5 6

b) I keep myself informed about research on the effectiveness of different treatments for obese people.

1 2 3 4 5 6

c) I tailor my treatment approach to fit in with what the obese client wants.

1 2 3 4 5 6

d) I am confident in counselling obese clients about weight loss.

1 2 3 4 5 6

e) I make sure I spend time developing a good relationship with my obese clients.

1 2 3 4 5 6

f) I believe dietitians should be involved in obesity management.

1 2 3 4 5 6

g) The best way for me to treat obese clients is as part of a multidisciplinary team.

1 2 3 4 5 6

h) I would prefer it if other health professions were responsible for treating obese clients ***instead of*** dietitians.

1 2 3 4 5 6

Comments:

Thank you for completing this questionnaire. Please return it in the enclosed envelope as soon as possible.

You do not need to complete the questions on the following pages.

THESE QUESTIONS ARE FOR DIETITIANS WHO DO NOT CURRENTLY TREAT OBESE CLIENTS

These questions aim to establish what you would do if you were to treat obese clients. You may find some of the questions difficult to answer – please do the best you can.

1. Please indicate why you do not treat obese clients (e.g., you have chosen not to, you work in a different area, you are not referred any, etc.): _____

_____

If you were to treat obese clients...

2. Approximately how much time would you allocate for a new client appointment? *(Please give the amount of time in minutes)* _____ (mins)

3. After the first appointment, how many additional appointments would you offer for a course of treatment? _____

4. How much time would you allocate for additional appointments? *(Please give the amount of time in minutes)* _____ (mins)

5. How often would you offer additional appointments (e.g. every week, month, two months, etc)? _____

6. On what basis would you generally see obese clients?

Only on an individual basis ☐

Once individually and then with a group of others ☐

Always as part of a group ☐

Both on an individual and/or group basis ☐

Other *(please specify)* _____ ☐

7. Would you have a protocol for the management of obese clients?

No ☐

Yes ☐

8. Please indicate how often you would incorporate the following strategies into your management of obese clients.

	1 **Never**	2	3	4	5	6 **Always**
a) Advice or guidance on:						
(i) Calorie-controlled food intake	1	2	3	4	5	6
(ii) The proportion of fat in the diet	1	2	3	4	5	6
(iii) Eating or avoiding specific foods	1	2	3	4	5	6
(iv) Eating less in general	1	2	3	4	5	6
(v) Physical activity	1	2	3	4	5	6
(vi) General social and psychological issues (e.g. social support, cues to certain behaviours, family circumstances)	1	2	3	4	5	6
b) Provision of diet sheets	1	2	3	4	5	6
c) Provision of recipes	1	2	3	4	5	6
d) Referral on to self-help group	1	2	3	4	5	6
e) Referral on to other health professional/s	1	2	3	4	5	6
f) Any other *(please describe below)*	1	2	3	4	5	6

_____

_____

9. Please indicate the extent to which you agree or disagree with the following statements:

	1 **Strongly Disagree**	2	3	4	5	6 **Strongly Agree**

a) I would regularly record the weight (or other measure of body fat) of each obese person I saw.

1 2 3 4 5 6

b) I would keep myself informed about research on the effectiveness of different treatments for obese people.

1 2 3 4 5 6

c) I would tailor my treatment approach to fit in with what the obese client wanted.

1 2 3 4 5 6

d) I would be confident in counselling obese clients about weight loss.

1 2 3 4 5 6

9. (Continued) Please indicate the extent to which you agree or disagree with the following statements:

	1	2	3	4	5	6
	Strongly Disagree					**Strongly Agree**

---

e) I would make sure I spent time developing a good relationship with my obese clients.

1 2 3 4 5 6

f) I believe dietitians should be involved in obesity management.

1 2 3 4 5 6

g) The best way for me to treat obese clients would be as part of a multidisciplinary team.

1 2 3 4 5 6

h) I would prefer it if other health professions were responsible for treating obese clients ***instead of*** dietitians.

1 2 3 4 5 6

Comments:

Thank you for completing this questionnaire. Please return it in the enclosed envelope as soon as possible.

Appendix 6.1.1: Results of principal components analysis with oblique rotation: dietitians' attitudes towards overweight people

	Communality	Factor	Eigenvalues	% of variance	Cumulative %
Sec2qu1	0.61	1	4.95	24.8	24.8
Sec2qu2	0.60	2	2.27	11.4	36.1
Sec2qu3	0.54	3	1.38	6.92	43.0

Pattern matrix of attitude ratings, dietitians:

	Factor 1	Factor 2	Factor 3
Sec2qu1 (are as happy as)	0.10	**0.65**	0.00
*Sec2qu2 (feel not as good as others)	**0.32**	**0.56**	-0.08
*Sec2qu3 (are more self conscious)	0.28	**0.56**	-0.15
Sec2qu8 (are not dissatisfied with selves)	-0.08	**0.72**	0.27
Sec2qu9 (are just as self confident as others)	0.04	**0.70**	0.09
Sec2qu13 (very few are ashamed)	-0.18	**0.59**	0.28
Sec2qu7 (are usually sociable)	-0.12	0.28	-0.05
*Sec2qu4 (cannot be as successful as other workers)	**0.38**	0.05	0.28
*Sec2qu6 (are usually untidy)	**0.45**	-0.09	0.17
*Sec2qu10 (people feel uncomfortable to associate with)	**0.49**	0.10	0.26
*Sec2qu11 (are often less aggressive)	**0.72**	0.10	-0.19
*Sec2qu12 (have different personalities)	**0.72**	0.14	-0.06
*Sec2qu12 (have different personalities)	**0.72**	0.14	-0.06
*Sec2qu14 (resent others)	**0.53**	-0.13	0.04
*Sec2qu14 (resent others)	**0.53**	-0.13	0.04
*Sec2qu15 (are more emotional)	**0.74**	0.02	-0.07
*Sec2qu15 (are more emotional)	**0.74**	0.02	-0.07
*Sec2qu16 (should not expect to lead normal lives)	**0.41**	-0.22	**0.35**
*Sec2qu16 (should not expect to lead normal lives)	**0.41**	-0.22	**0.35**
*Sec2qu19 (tend to have family problems)	**0.48**	0.11	0.30
*Sec2qu19 (tend to have family problems)	**0.48**	0.11	0.30
Sec2qu17 (are just as healthy)	-0.22	0.12	**0.73**
Sec2qu18 (are just as sexually attractive as normal weight people)	0.20	0.05	**0.69**
Sec2qu18 (are just as sexually attractive as normal weight people)	0.20	0.05	**0.69**

*Sec2qu20 (one of the worst things to happen)	0.24	-0.03	**0.50**
*Sec2qu5 (most people would not want to marry)	**0.40**	0.14	**0.46**

Factor 1 = Self-esteem

Factor 2 = Social difficulties

Factor 3 = Attractiveness/Personal appeal

* = item reverse scored

Appendix 6.1.2: Results of principal components analysis with oblique rotation: dietitians' perceptions of responsibility of overweight people

	communality	factor	eigenvalues	% of variance	Cumulative %
Sec2qu21	0.75	1	4.00	36.3	36.3
Sec2qu22	0.70	2	1.61	14.6	51.0

Pattern matrix of responsibility ratings, dietitians:

	Factor 1	Factor 2
Sec2qu21 (should make efforts to understand the causes)	**0.83**	-0.14
Sec2qu22 (should motivate themselves to lose weight)	**0.78**	0.04
Sec2qu23 (should seek professional advice and help)	**0.70**	0.16
Sec2qu24 (should recognise there is a problem)	**0.86**	0.00
Sec2qu25 (should recognise a risk to their health)	**0.87**	-0.12
Sec2qu26 (should recognise they may influence close others)	**0.50**	0.14
*Sec2qu27 (should be left to be happy)	0.18	**0.58**
Sec2qu28 (should recognise the negative effect on others)	0.22	**0.40**
*Sec2qu29 (should not be subjected to social pressures)	0.02	**0.77**
*Sec2qu30 (should be accepted by others)	-0.16	**0.84**
*Sec2qu31 (should not be held responsible)	-0.02	0.24

Factor 1 = Responsibility to act

Factor 2 = Acceptance

* = item reverse scored

Appendix 6.2: Results of stepwise linear multiple regression analyses: 'Is practice influenced by beliefs and attitudes?'

The equation for the linear regression analysis states that:

$$y = a + Bx + e$$

Where y is the dependent variable, *a* is a constant, B is the coefficient of the independent variable, x is the independent variable, and e is a disturbance or error term. Estimation of the equation is performed using the method of linear least squares. Thus, in **Table 6.2.1**, a negative B for the total attitude score indicates an inverse relationship with the number of scheduled appointments. In a hypothetical sense, if a dietitian's total attitude score was zero, this would be associated with an average 8.47 appointments being scheduled after the first appointment. Alternatively, if a dietitian's minimum score was 20 (the minimum possible score), the associated number of scheduled appointments would be: 8.47-(0.06x20) = 7.27. Every one-unit increase in the total attitude score would be associated with 0.06 fewer appointments being scheduled. The adjusted R^2 (similar to a correlation coefficient) is a measure of the strength of this association.

Table 6.2.1: For overweight: After your first appointment, how many additional appointments do/would you offer?

R^2	Adjusted R^2	F value	Significance of F value
0.12	0.10	$7.95_{(1,61)}$	P < 0.01

	B	T	P
Constant	8.47	4.80	< 0.001
Total attitude score	-0.06	-2.82	< 0.01

Table 6.2.2: For overweight: Advice or guidance on the proportion of fat in the diet

R^2	Adjusted R^2	F value	Significance of F value
0.09	0.08	$8.90_{(1,89)}$	p < 0.01

	B	t	P
Constant	3.96	11.1	< 0.001
Genetic factors	0.30	2.98	< 0.01

Table 6.2.3: For overweight: Advice or guidance on eating less in general

R^2	Adjusted R^2	F value	Significance of F value
0.11	0.10	10.38 $_{(1, 88)}$	$p < 0.01$

	B	T	P
Constant	3.39	11.4	< 0.001
Metabolic defects	0.33	3.22	< 0.01

Table 6.2.4: For overweight: Advice or guidance on physical activity

R^2	Adjusted R^2	F value	Significance of F value
0.09	0.08	8.29 $_{(1, 89)}$	$p < 0.01$

	B	T	P
Constant	4.42	12.5	< 0.001
Repeated dieting	0.22	2.88	< 0.01

Table 6.2.5: For overweight: Advice or guidance on general social and psychological issues

R^2	Adjusted R^2	F value	Significance of F value
0.16	0.15	17.1 $_{(1, 88)}$	$p < 0.001$

	B	T	p
Constant	3.29	7.25	< 0.001
Repeated dieting	0.40	4.14	< 0.001

Table 6.2.6: For overweight: Provision of diet sheets

R^2	Adjusted R^2	F value	Significance of F value
0.20	0.19	11.1 $_{(2, 87)}$	$p < 0.001$

	B	t	P
Constant	5.10	7.42	< 0.001
Lack of willpower	0.34	3.36	= 0.001
Repeated dieting	-0.36	-3.21	< 0.01

Table 6.2.7: For overweight: Referral on to other health professionals

R^2	Adjusted R^2	F value	Significance of F value
0.07	0.06	6.99 $_{(1, 89)}$	p = 0.01

	B	t	p
Constant	2.35	8.93	< 0.001
Metabolic defects	0.24	2.65	= 0.01

Table 6.2.8: For overweight: I (would) regularly record the weight of each person I see

R^2	Adjusted R^2	F value	Significance of F value
0.16	0.15	16.8 $_{(1, 87)}$	p < 0.001

	B	t	p
Constant	4.05	11.7	< 0.001
Lack of willpower	0.33	4.09	< 0.001

Table 6.2.9: For overweight: I (would) keep myself informed of research into effectiveness of different treatments

R^2	Adjusted R^2	F value	Significance of F value
0.09	0.08	8.74 $_{(1, 89)}$	p < 0.01

	B	t	p
Constant	3.55	8.16	< 0.001
Repeated dieting	0.28	2.96	< 0.01

Table 6.2.10: For overweight: I (would) tailor my treatment approach to fit in with what the client wants

R^2	Adjusted R^2	F value	Significance of F value
0.07	0.06	6.94 $_{(1, 87)}$	p = 0.01

	B	t	p
Constant	3.33	5.05	< 0.001
Physical inactivity	0.32	2.64	= 0.01

Table 6.2.11: For overweight: I would be/ am confident in counselling clients on weight loss

R^2	Adjusted R^2	F value	Significance of F value
0.08	0.06	$7.14_{(1, 88)}$	$p < 0.01$

	B	t	p
Constant	3.68	8.53	< 0.001
Repeated dieting	0.25	2.67	< 0.01

Table 6.2.12: For obesity: After your first appointment, how many additional appointments do/would you offer?

R^2	Adjusted R^2	F value	Significance of F value
0.13	0.11	$7.90_{(1, 54)}$	$p < 0.01$

	B	t	p
Constant	7.78	6.05	< 0.001
Lack of willpower	-0.93	-2.81	< 0.01

Table 6.2.13: For obesity: Advice or guidance on calorie controlled food intake

R^2	Adjusted R^2	F value	Significance of F value
0.10	0.09	$8.99_{(1, 80)}$	$p < 0.01$

	B	T	p
Constant	1.47	2.84	< 0.01
Lack of willpower	0.39	3.00	< 0.01

Table 6.2.14: For obesity: Advice or guidance on eating or avoiding specific foods

R^2	Adjusted R^2	F value	Significance of F value
0.09	0.08	$8.24_{(1, 82)}$	$p < 0.01$

	B	t	p
Constant	2.84	5.83	< 0.001
Lack of willpower	0.35	2.87	< 0.01

Table 6.2.15: For obesity: Advice or guidance on eating less in general

R^2	Adjusted R^2	F value	Significance of F value
0.18	0.16	$9.13_{(2, 81)}$	$p < 0.001$

	B	t	P
Constant	4.60	7.17	< 0.001
Personality	0.46	4.01	< 0.001
Interpersonal factors	-0.41	-2.89	< 0.01

Table 6.2.16: For obesity: Advice or guidance on general social and psychological issues

R^2	Adjusted R^2	F value	Significance of F value
0.08	0.07	$7.14_{(1, 80)}$	$p < 0.01$

	B	t	p
Constant	6.40	13.2	< 0.001
Acceptance factor	-0.08	-2.67	< 0.01

Table 6.2.17: For obesity: I (would) regularly record the weight of each person I see

R^2	Adjusted R^2	F value	Significance of F value
0.28	0.26	$10.6_{(3, 81)}$	$p < 0.001$

	B	t	P
Constant	8.07	6.82	< 0.001
Eating too much of the wrong foods	0.35	2.92	< 0.01
Mood changes leading to overeating	-0.31	-2.89	< 0.01
Social difficulties factor	-0.07	-3.88	< 0.001

Table 6.2.18: For obesity: I (would) make sure I spend time developing a good relationship with my clients

R^2	Adjusted R^2	F value	Significance of F value
0.08	0.07	$7.36_{(1, 83)}$	$p < 0.01$

	B	T	p
Constant	6.50	11.2	< 0.001
Acceptance factor	-0.10	-2.71	< 0.01

Table 6.2.19: For obesity: I would prefer it if other health professionals were responsible for treating instead of dietitians

R^2	Adjusted R^2	F value	Significance of F value
0.17	0.15	8.27 $_{(2, 82)}$	p = 0.01

	B	t	p
Constant	2.65	3.90	< 0.001
Mood changes leading to over eating	-0.37	-3.08	< 0.01
Lack of willpower	0.27	2.73	< 0.01

Appendix 6.3: Results of stepwise linear multiple regression analyses: 'Are attitudes influenced by beliefs?'

In **Table 6.3.1**, a negative B for the total responsibility score indicates an inverse relationship with the total attitude score. In a hypothetical sense, if a dietitian's total responsibility score was zero, this would be associated with an average attitude score of 103. Every one-unit increase in the total responsibility score would be associated with a reduction of 0.53 in the total attitude score.

Table 6.3.1: For overweight: Total attitude score

R^2	Adjusted R^2	F value	Significance of F value
0.19	0.18	$21.1_{(1, 89)}$	$p < 0.001$

	B	t	p
Constant	103	22.0	< 0.001
Total responsibility score	-0.53	-4.59	< 0.001

Table 6.3.2: For overweight: Social difficulties factor

R^2	Adjusted R^2	F value	Significance of F value
0.15	0.14	$15.7_{(1, 89)}$	$p < 0.001$

	B	t	P
Constant	54.6	19.0	< 0.001
Total responsibility score	-0.28	-3.97	< 0.001

Table 6.3.3: For overweight: Attractiveness factor

R^2	Adjusted R^2	F value	Significance of F value
0.25	0.24	$29.9_{(1, 89)}$	$p < 0.001$

	B	t	P
Constant	23.8	15.8	< 0.001
Total responsibility score	-0.20	-5.47	< 0.001

Table 6.3.4: For obesity: Total attitude score

R^2	Adjusted R^2	F value	Significance of F value
0.16	0.15	$16.0_{(1, 83)}$	$p < 0.001$

	B	t	P
Constant	106	14.3	< 0.001
Total responsibility score	-0.68	-4.00	< 0.001

Table 6.3.5: For obesity: Social difficulties factor

R^2	Adjusted R^2	F value	Significance of F value
0.10	0.09	$9.22_{(1, 83)}$	$p < 0.01$

	B	T	P
Constant	54.1	13.2	< 0.001
Total responsibility score	-0.28	-3.03	< 0.01

Table 6.3.6: For obesity: Attractiveness factor

R^2	Adjusted R^2	F value	Significance of F value
0.27	0.26	$30.5_{(1, 83)}$	$P < 0.001$

	B	T	P
Constant	25.3	12.2	< 0.001
Total responsibility score	-0.26	-5.52	< 0.001

Appendix 7.1: Studies excluded from the systematic review

Study	Reason for exclusion a) Intervention about improving health professional practice or the delivery of health care - overweight or obesity explicitly mentioned b) Study design and minimum methodological criteria c) Objective outcome measures d) Meets one of the review comparisons Studies needed to be scored as 'DONE' for all of the above to be included in the review
Abrahms and Allen 1974	a) Not done - Patient financial incentive
Agras et al 1990	a) Not done - Patient targeted b) Done – RCT
Alefaio 1997 (unpublished)	a) Done b) Not done - Seminar followed by survey.
Atkinson et al 1984	a) Not done - Patient programme b) Not done - Audit of patients
Bakx et al 1997	a) Not done - Not specifically overweight or obesity, patient targeted. b) RCT
Basler et al 1985 (German language paper)	a) Not done - Patient targeted b) Done – CBA
Cadman and Wiles 1996	a) Done b) Not done - Pre-post design c) Not done - Self report data
Cairella and Godi 1990 (Italian paper)	a) Not done - Survey of use of obesity guidelines b) Not done – Survey
Cameron et al 1990	a) Not done - Patient financial incentive
Carter et al 1977	a) Not done - Patient targeted (frequency/dosage) b) Done – RCT
Castro and Rachlin 1980	a) Not done - Patient financial incentive
Charlwood and Gibbons 1986	a) Not done - Patient targeted b) Not done - Pre-post study.
Coates et al 1982	a) Not done - Patient financial incentive
Craig (unpublished)	a) Not done - Not an intervention study b) Not done – Survey
DeLucia et al 1988	a) Not done - Patient targeted b) Done – RCT
Dutra-de-Oliveira and Marchini 1997	a) Not done - Not an intervention study b) Not done - Description of a service.
Epstein et al 1980	a) Not done - Patient financial incentive
Erfurt et al 1990	a) Not done - Patient targeted.
Erfurt et al 1992	a) Not done - Work site intervention, not health professionals b) RCT (four sites randomised)
Family Heart Study 1994	a) Not done - Patient targeted b) Done – RCT
Ferrer Lorente et al 1997 (Spanish paper, English abstract)	a) Done - Professional substitution b) Not done – Retrospective comparison
Ferguson 1976	a) Not done - Patient targeted b) Not done
Forster et al 1985	a) Not done - Patient financial incentive
Fullard et al 1987	a) Not done - Not specifically overweight or obesity b) Not done - controlled study, but overlap of pre and post intervention data collection.

Appendix 7.1 (cont.): Studies excluded from the systematic review

Study	Reason for exclusion a) Intervention about improving health professional practice or the delivery of health care - overweight or obesity explicitly mentioned b) Study design and minimum methodological criteria c) Objective outcome measures d) Meets one of the review comparisons Studies needed to be scored as 'DONE' for all of the above to be included in the review
Glanz 1997	a) Not done - Not an intervention study, not specifically overweight or obesity b) Not done - discussion paper
Hall 1972	a) Not done - Patient financial incentive
Hall et al 1977	a) Not done - Patient financial incentive
Harris and Bruner 1971	a) Not done - Patient financial incentive
Heber et al 1994	a) Not done - Patient targeted
Hochstrasser et al 1981	a) Done b) Not done - RCT about training dietitians, but patients rather than professionals are randomised, and not possible to determine if there are baseline differences among dietitians.
Hunter et al 1997	a) Not done - Not intervention study b) Not done - Discussion paper
Ikezono et al 1992	a) Not done - Patient targeted b) Not done - Before and after study
Ikezono et al 1994	a) Not done - Patient targeted b) Not done - Before and after study
Ikezono et al (unpublished)	a) Not done - Patient targeted b) Not done - Before and after study
Imperial Cancer Research Fund 1995	a) Not done - Patient targeted, frequency/dosage, not specifically overweight or obesity. b) Done - RCT
Jeffery et al 1978	a) Not done - Patient financial incentive b) Not done - CBA but inappropriate choice of control group (people who declined the financial intervention)
Jeffery and Gerber 1982	a) Done - Different settings b) Not done - Simple comparative
Jeffery, Bjorson-Benson, Rosenthal, Kurth, Dunn 1984	a) Not done - Patient financial incentive
Jeffery et al 1990	a) Not done - Patient financial incentive
Jeffery et al 1993 Jeffery and Wing 1995 (follow-up study)	a) Not done - Patient financial incentive b) Done - RCT c) Done weight
Jeffery et al 1983, Jeffery, Bjorson-Benson, Rosenthal, Lindquist, Johnson 1984 (follow-up study)	a) Not done - Patient financial incentive b) Done - RCT c) Done - Weight loss d) Not done - No financial *vs.* control comparison
Jeffery, Forster, Schmid 1989	a) Not done - Patient financial incentive b) Not done
Jeffery and French 1997	a) Not done - Not specifically overweight or obesity (at outset) b) Done - RCT
Jeffery, Wing and Stunkard 1978	a) Not done - Patient targeted b) Not done

Appendix 7.1 (cont.): Studies excluded from the systematic review

Study	Reason for exclusion a) Intervention about improving health professional practice or the delivery of health care - overweight or obesity explicitly mentioned b) Study design and minimum methodological criteria c) Objective outcome measures d) Meets one of the review comparisons Studies needed to be scored as 'DONE' for all of the above to be included in the review
Jeffrey 1974	a) Not done - Patient financial incentive
Kausman et al (1998 unpublished)	a) Not done - Patient targeted b) Not done - Before and after study
Kennedy 1987	a) Done b) Not done - Pre-post study
Kirkman et al 1994	a) Not done - Patient targeted b) Done - RCT
Kramer et al 1986	a) Not done - Patient financial incentive
Kyle 1993	a) Not done - Not specifically overweight or obesity b) Not done - Pre-post study c) Not done - Self report data
Lazarus 1997	a) Not done - Not specifically overweight or obesity b) Not done - Pre-post study
Lean and Anderson 1988	a) Not done - Not an intervention study b) Not done - Editorial
Little 1983	a) Not done - Not an intervention study b) Not done - Description of a school service.
Lloyd 1984	a) Not done - Not an intervention study b) Not done - Survey
Mahoney 1974	a) Not done - Patient financial incentive
Mann 1972	a) Not done - Patient financial incentive
Marston et al 1977	a) Not done - Patient targeted b) Done - RCT
Massari et al 1995 (French, English abstract)	a) Not done - Patient targeted (dosage) b) Done - RCT
Mazzuca et al 1986	a) Not done - Not specifically overweight or obesity b) Done - RCT
McEwen et al 1972	a) Not done - Patient targeted b) Not done - Pre-post study
McPhee et al 1991	a) Not done - Not specifically overweight or obesity b) Done - RCT
McReynolds 1976 (appears to be same study as McReynolds et al 1976)	a) Not done - Patient targeted b) Done - RCT c) Not done - No data presented
McReynolds et al 1976 (appears to be same study as McReynolds 1976)	a) Not done - Patient targeted b) Done - RCT
Menezes 1980	a) Not done - Patient targeted b) Not done - Descriptive c) Not done - No data presented
Metzler 1975 (German language paper)	a) Not done - Patient targeted b) Not done
Ockene et al 1995	a) Not done - Not specifically overweight or obesity b) Done - RCT

Appendix 7.1 (cont.): Studies excluded from the systematic review

Study	Reason for exclusion a) Intervention about improving health professional practice or the delivery of health care - overweight or obesity explicitly mentioned b) Study design and minimum methodological criteria c) Objective outcome measures d) Meets one of the review comparisons Studies needed to be scored as 'DONE' for all of the above to be included in the review
Paulsen et al 1976	a) Not done - Patient targeted b) Done - CBA
Perri, McAdoo et al 1984	a) Not done - Patient targeted b) Done - RCT
Perri, McAdoo et al 1986	a) Not done - Patient targeted, dosage b) Done - RCT
Perri, Shapiro et al 1984	a) Not done - Patient targeted, dosage b) Done - RCT
Perri et al 1988	a) Not done - Patient targeted, dosage b) Done - RCT
Pimblett 1996 (unpublished)	a) Not done - Not specifically overweight or obesity b) Not done - Simple comparative study c) Not done - Practice nurse knowledge and response to hypothetical case study
Roderick et al 1997	a) Not done - Not specifically overweight or obesity
Rozensky and Bellack 1976	a) Not done - Patient financial incentive
Schubmann et al 1997	a) Not done - Patient targeted intervention
Schubmann et al 1998	a) Not done - Letter to editor
Sothern et al 1993	a) Not done - Patient targeted b) Not done - Pre-post study
Sperduto and O'Brien 1983	a) Not done - Patient financial incentive
Stamps et al 1983	a) Not done - Not an intervention study b) Not done - Practice audit
Stanton 1976	a) Not done - Patient financial incentive
Stein 1974	a) Not done - Not specifically overweight or obesity b) Done - CCT (quasi random - alternation)
Tobias 1972 (unpublished thesis)	a) Not done - Patient targeted intervention b) Done - RCT
Tucker et al 1991	a) Not done - Patient targeted b) Done - RCT
Vila Corcoles et al 1993 (Spanish paper, English abstract)	a) Not done - Patient targeted, frequency/dosage b) Done - RCT
Vincent et al 1976	a) Not done - Patient financial incentive
Vinicor et al 1987	a) Not done - Not specifically overweight or obesity b) Done - RCT
Weingarten et al 1989	a) Not done - Not specifically overweight or obesity b) Done - RCT
Wiese et al 1992	a) Not done - Students outside EPOC scope b) Done - RCT c) Not done - knowledge and attitudes only
Wiesemann et al 1997	a) Not done - Patient targeted, not specifically overweight or obesity b) Not done - No comparison group, not enough data points for ITS

Appendix 7.1 (cont.): Studies excluded from the systematic review

Study	Reason for exclusion a) Intervention about improving health professional practice or the delivery of health care - overweight or obesity explicitly mentioned b) Study design and minimum methodological criteria c) Objective outcome measures d) Meets one of the review comparisons Studies needed to be scored as 'DONE' for all of the above to be included in the review
Wilson et al 1992	a) Not done - Not specifically overweight or obesity b) Not done - Simple comparative study (experimental *vs.* control)
Wing, Jeffery, Pronk et al 1996	a) Not done - Patient financial incentive b) Done - RCT
Wing, Jeffery, Burton et al 1996	a) Not done - Patient targeted b) Done - RCT
Wylie-Rosett et al 1994	a) Not done - Patient targeted b) Done - CBA

Presentations and publications relevant to the thesis

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell C. Improving health professionals' management and the organisation of care for overweight and obese people. The Cochrane Library, Update Software, Updated Quarterly. 1999; Issue 1.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell C. Improving health professionals' management of obesity: A systematic review. International Journal of Obesity [in press].

Bero L, Grilli R, Grimshaw JM, **Harvey E**, Oxman AD, Thomson MA. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote implementation of research findings by health care professionals. In: A Haines and A Donald (Eds.). Getting research findings into practice. BMJ Books: London; 1998.

Bero L, Grilli R, Grimshaw JM, **Harvey E**, Oxman AD, Thomson MA. Getting research findings into practice: Closing the gap between research and practice: an overview of systematic reviews of interventions to promote implementation of research findings by health care professionals. British Medical Journal 1998; 317:465-8.

McColl E, Jacoby A, Thomas L, Soutter J, Bamford C, Garratt A, **Harvey E**, Thomas R and Bond J (1998). Designing and using patient and staff questionnaires. In N Black, J Brazier, R Fitzpatrick and B Reeves (Eds.). Health services research methods: A guide to best practice. London: BMJ Books. Chapter 5, pp. 46-58, 1998.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell C. Improving health professionals' management of obesity (Cochrane review protocol). The Cochrane Library, Update Software, Updated Quarterly. 1998; Issue 2.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell CD. Effective professional practice: protocol for a systematic review of health professionals' management of obesity. Journal of Human Nutrition and Dietetics. 1998; 11(3):243-7.

Harvey EL, Glenny A-M, Kirk SFL, and Summerbell CD. Effective professional practice: protocol for a systematic review of health professionals' management of obesity. Presented at the Association for the Study of Obesity (ASO) and British Dietetics Association (BDA) Symposium: Dietitians and dietary treatments for obesity: A move towards evidence-based practice. 25 November 1997, St Bartholomew's Hospital, London.

Harvey EL, Hill AJ. GPs' perceptions of the causes, characteristics and responsibilities of overweight people. Poster presented at the British Psychological Society (BPS): Special Group in Health Psychology Conference, York, July 1996. Abstract published in BPS conference proceedings.

Glossary of terms

BMI – Body mass index: A means of determining someone's body weight level, calculated as a function of a their weight in kilograms (kg) divided by their height in metres-squared (m^2).

CP – Clinical psychologist

EHCB – Effective Health Care Bulletin: These are reports of systematic reviews of the evidence on different health care topics. The edition referred to in this thesis is EHCB:3:2: the second issue of the third volume, on the prevention and treatment of obesity. See References.

EPOC – The Effective Practice and Organisation of Care Group: A Collaborative Review Group of the Cochrane Collaboration, whose remit is to undertake systematic reviews of interventions to improve health professionals' practice or the delivery of health care services.

GP – General practitioner

HoN – The Health of the Nation, UK government White Paper. See References

NHLBI – The US National Heart, Lung and Blood Institute, which has recently produced a systematic review of the evidence for the identification, evaluation and treatment of overweight and obesity. See References.

OHN – Our Healthier Nation, UK government Green Paper. See References.

SES – Socio-economic status