

Knowledge, attitude and behaviour change in participants attending an eight-week weight reduction programme

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Keywords: weight reduction, behaviour change

The importance of continuous evaluation and improvement of weight reduction programmes has been clearly established in the literature. This study aimed to evaluate the knowledge, attitude and behaviour change in participants attending an eight-week weight reduction programme. Data was obtained from pre- and post-intervention self-administered questionnaires. The findings indicated that the participants' weight loss was statistically significant and that knowledge on healthy eating and healthy lifestyle improved in the post-intervention period. Attitudes and behaviours changed positively. Whilst the weight reduction programme is effective in empowering people to change their eating habits and lifestyle, there are key aspects where it can be changed to improve its achievements.

Introduction

Obesity is a condition in which body fat stores are enlarged to an extent which is detrimental to health and is generally defined by a Body Mass Index (BMI) of over 30 kilograms per metre squared (kg/m²).¹ Obesity is characterized by the gradual accumulation of excess body weight due to a positive energy balance resulting from excess caloric intake or decreased energy expenditure.² Globally there are over one

billion overweight adults, three hundred million of whom are obese.³ Various studies, including the First National Health Interview Survey of 2002, have shown that obesity is high and prevalent in Malta.^{4,5}

The rising obesity epidemic is a result of recent dramatic changes in society and in communities' behavioural patterns. Abundance, good taste and display of food entice people to over eat.² Watching television and listening to a story stimulate

a greater intake of low-nutrient, energy-dense, sweet foods besides decreasing physical activity.^{6,7} Overeating may be induced by boredom, stress, anxiety and frustration.^{2,6} Familial eating patterns and attitudes towards obesity also determine the chances of becoming obese.² The increased consumption of foods high in sugar and saturated fats, combined with reduced physical activity, has led to high rates of obesity.³

Management of obesity

Interventions to prevent obesity and its complications - non-communicable diseases, health problems, psychosocial disadvantages^{2,3} - should address obesity in an integrated manner, inclusive of the causative behavioural, cultural, social and genetic factors.^{8,9} Weight management programmes have moved from the traditional advice on eating and exercise to actively helping patients achieve and maintain an ideal weight through dietary behaviour change.¹⁰ The promotion of healthy behaviours to encourage, motivate and enable individuals to lose weight by eating healthily and doing regular physical activity is also emphasized by the World Health Organization (WHO).³

Knowledge, attitude and behaviour

The provision of knowledge does not necessarily lead to healthy lifestyles. The adoption of health-enhancing behaviour is often limited by physical, social, economic and cultural factors.¹¹ However, education with consultation and creation of motivation can lead to weight reduction and improved health status.^{12,13}

"Dieting" is perceived by most people as a short-term hardship. A weight reduction programme is successful and long-lasting, only if a permanent change in attitudes and behaviours occurs. Unless food habits change and exercise is continuous, the perpetual cycle of weight loss followed by weight gain is inevitable.^{2,14} The Prochaska and DiClemente model of behaviour change (Figure 1^{6,16}) implies that people change their behaviour through a gradual dynamic process.¹⁵ Thus, in weight control it is realistic to promote the action and maintenance stages.

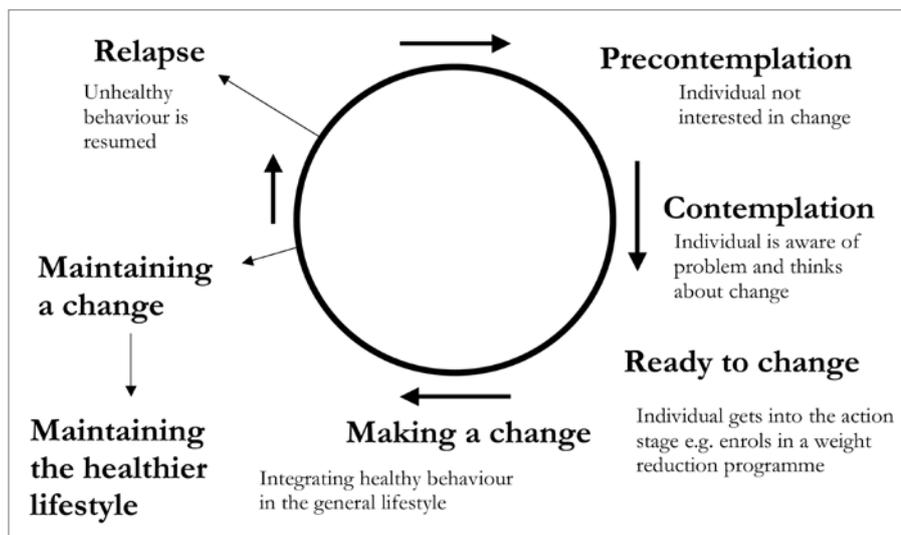


Figure 1: The stages of change model

Aims and objectives

Evaluation research is essential to find out how well a programme, treatment, practice or policy is working.¹⁷ There is often a need to pose questions such as “How are we doing?”, “Are we accomplishing goals?” or “Is there a more effective way to do things?” This study aimed to evaluate how an eight-week weight reduction programme benefits overweight (BMI >25) and obese participants. It explored the motivations and expectations of participants, and the slimming strategies adopted. It assessed eating behaviour and the effects of knowledge on behaviour change, and tried to understand how the programme improves health and eating behaviour.

Methodology

The eight-week weight reduction programme organised by the Division of Health within the Ministry of Health, the Elderly and Community Care, focuses on the concept of a healthy diet and the role of physical activity, while also addressing body image, control, coping mechanisms, self-confidence and relapse.

The programme is known as “Weight Reduction Programme: Lose Weight, Stay Healthy!”. Each of the 8 interactive 2 hour sessions includes the weighing of the participant, and words of encouragement, motivation and empowerment, as well as the distribution of handouts on nutritional information. Different specific themes are

covered every week:

1. Orientation and introduction
2. Eating sensibly – The concept of a ‘Healthy Diet’
3. The role of physical activity in achieving and maintaining weight loss
4. Understanding obesity and its effects on health
5. Body image
6. Coping mechanisms, self-confidence and relapse
7. Past failures in achieving weight loss
8. Group experience

The targeted programmes for the study were facilitated by the same qualified and registered nutritionist in spring of 2005 in 2 health centres and included 2 afternoon courses in each centre; 2 courses started at 4pm and 2 at 6pm. One nutritionist was involved in the study so that the findings would not be generalised, and the limited time available for the study – part of the 2 year course work for a post-qualification diploma - did not allow for more health centres or programmes to be included. The number of expected participants was 43. Inclusion criteria were attendance of the first and last sessions and attendance of at least 6 sessions.

A tool containing 24 structured-response and open-ended questions was designed, piloted and implemented in line with the approval given by the Ethics Committee.^{18,19}

The questions were divided in 13 different categories:

1. Demographics
2. Physical measurements
3. Motivations and expectations
4. Health, body image and lifestyle
5. History of slimming diets
6. Weight and diet status
7. Hobbies and exercise
8. Daily diet
9. Healthy eating
10. Healthy cooking
11. Barriers to a healthy diet
12. Behaviour during meals
13. Self-confidence and coping mechanisms

The nutritionist gave the designed questionnaire and a letter requesting voluntary participation, to the participants during the introductory session for the pre-intervention data collection. Those who wished to participate signed an informed consent form. A code number was given to each participant to ensure anonymity. The post-intervention data was collected after the last session. A stamped self-addressed envelope was given to the participants, and the nutritionist phoned them once to remind them to answer the questionnaire and post it.

Demographic data was collected. The questionnaire included Likert scales which aimed to assess the attitudes and beliefs of the participants. Multiple choice questions were used to assess the diet and lifestyle status as well as the knowledge and behaviour of the study group. A few open-ended questions explored the participants’ diet history, motivations, and expectations.

The data analysis was carried out manually. Closed questions were analysed quantitatively. The percentage number of participants was identified for each parameter. Open-ended questions were processed using content analysis.^{17,20} Due to the lack of reproducibility of the Likert scale, the results were analysed with respect to response patterns rather than total scores.²⁰ The Paired sample t-test was used to analyse weight data, using SPSS 10.0.

Analysis of demographic and open-ended questions, was carried out for all the participants who eventually attended the programme. However, analysis of questions

which provided data on the change that occurred from pre- to post-intervention, was carried out only for those who qualified for all the inclusion criteria of the study.

Results

Seven of the targeted 43 participants did not turn up, 5 were drop outs (drop out rate of 0.14), 2 did not attend the minimum of 6 sessions and 3 did not return the post-intervention questionnaire. Thus, only 26 fulfilled the selection criteria for participation in the pre- and post-intervention study.

Participants were males (11%) and females (89%) with an age ranging from 24 to 65 years. Fifty-eight percent were housewives while 28% worked. Only 14% of the attendees had an education level lower than secondary; 53% had a secondary education level, 25% post-secondary and 8% tertiary.

Main motivations for attending the programme were excess weight (53%) and wanting to improve health and feel better (47%). The most popular strategies adopted in trying to lose weight were calorie-counting, reducing fats and attending beauty salons. Seeking health professional advice was amongst the least common strategies. Participants expected guidance and advice (36%), knowledge on healthy eating and a healthy lifestyle (31%), and support (31%) from the programme.

The weight status of the 26 participants changed from pre- to post-intervention (Figure 2). Average weight was reduced from 91.7kg to 85.3kg ($p < 0.05$). Before the programme the BMI ranged from 25.33kg/m² to 51.63kg/m² while after the programme it ranged from 24kg/m² to 46.68kg/m². The change from an initial mean BMI of 37kg/m² to a final mean BMI of 34kg/m² was also significant ($p < 0.05$).

Embarrassment about weight and body looks decreased. Participants achieved a positive attitude with respect to weight, body looks, clothes, going out and performing other activities. Findings also showed a significant increase in physical activity from 27% to 81% with participants walking, running, swimming, cycling or doing aerobics. Following the programme 35% of the participants exercised more than 3 times weekly and 39% exercised daily,

while exercising time was 30 to 60 minutes (50%) or more (31%).

The initial statement "I eat what I want when I want to eat it" (65%) changed to "somewhat less" or "a little less food"

than they would like to eat (73%). Daily eating frequency increased to more than 3 times daily (77%) while tendency to take second helpings decreased from 58% to 12%. The consumption of unhealthy snacks

Table 1: Participants' attitude to cues for eating pre- and post-intervention (n=26)

<i>Cues for eating</i>	<i>Percentage number of participants</i>	
	<i>Pre-intervention</i>	<i>Post-intervention</i>
Hunger	54	69
Time to eat	65	81
Boredom	58	39
Anger	50	31
Stress	58	50
Delicious taste	73	50
Other people eating	35	12
Food is going to be wasted	46	19

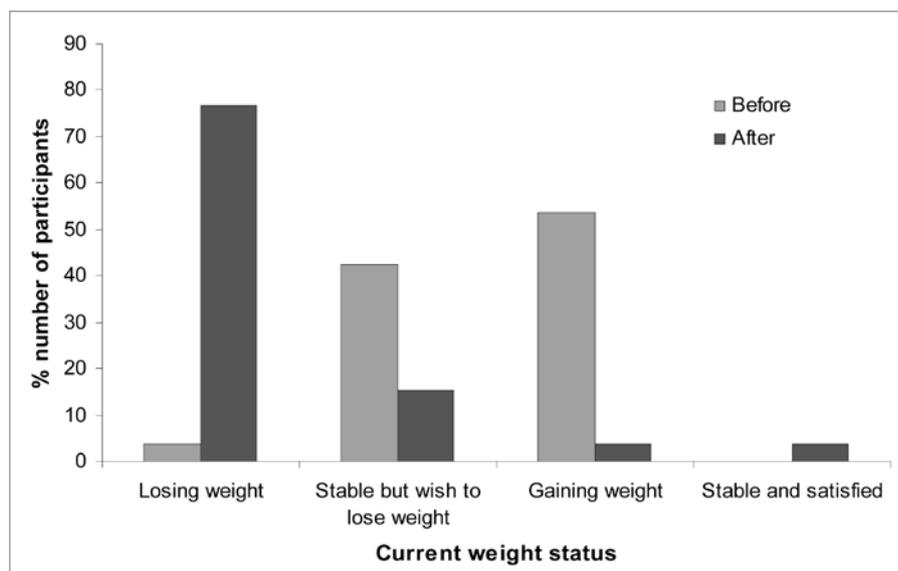


Figure 2: Description of the current weight status pre- and post-intervention (n=26)

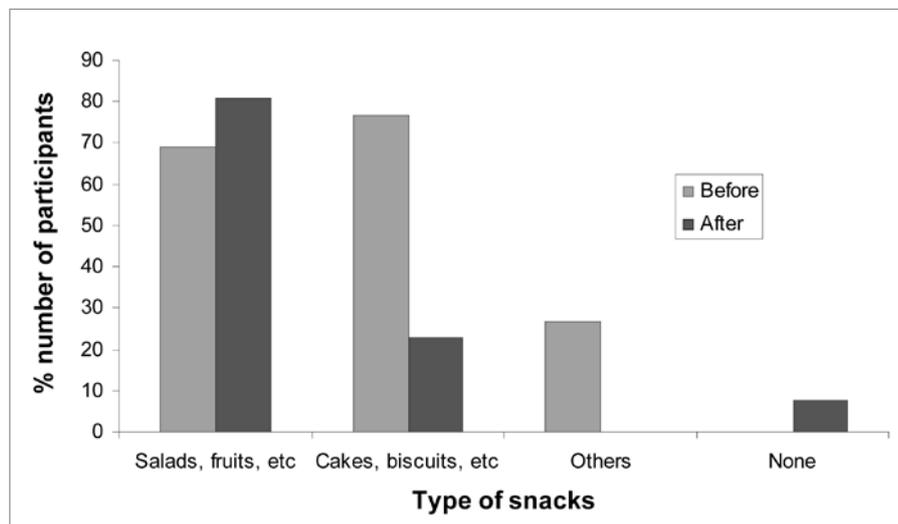


Figure 3: Participants' description of snacks taken pre- and post-intervention (n=26)

decreased (Figure 3) thus increasing the probability of weight loss¹⁴. An increase in awareness of healthier alternatives to full fat milk, yoghurt and cheese, as well as a decrease in fat intake was observed. There was a positive attitude to the consumption of vegetables before (73%) and after the programme (81%). The latter increased the popularity for micro-waving and decreased frying practices. Frying was classified as the worst cooking method pre- (85%) and post-intervention (96%).

An increase in the participants' control of cues which previously led to excessive eating was observed (Table 1). Distracting stimuli like the television or other activities during mealtimes were only slightly decreased. Participants learnt to eat slowly and chew longer, both factors ideal to increase enjoyment of food and aid digestion.¹⁰

Participants managed to achieve a certain level of self-confidence and control over their diet and lifestyle (70%). However, only 42% of the subjects were confident of keeping their weight stable. The need for knowledge on healthy eating and keeping a healthy lifestyle remained (73%), and only 30% stated that they did not need any more help.

Discussion

Demographics indicate that people attending a weight reduction programme are generally obese adults of a female gender with a mean BMI of 37kg/m²; having attended a secondary level of education and who are mainly housewives. Studies have actually shown that there are more females than males who are overweight or obese in Malta.^{4,5} No local studies or statistics were traced which could explore links between social class, occupation and BMI across the population.

Weight loss was successfully achieved by the weight reduction programme, but the latter goes beyond the modification of physical measurements. Health concerns and illness provide a catalyst for dietary change.²¹ People have little motivation to change their diets even when they intend to do so. But they do expect a lot from a weight reduction programme. Knowledge of these expectations should be acted upon to reduce dropout rates and participant

Practice Points

- In weight control, the action and maintenance stages of the Stages of Change Model (Figure 1) should be promoted and supported.
- A weight reduction programme is successful and long-lasting only if attitudes and behaviours change permanently.
- Weight loss and maintenance are determined by positive changes in eating habits e.g. small meals evenly spaced throughout the day.
- The general advice to achieve and maintain a healthy lifestyle is 30 minutes of brisk walking 5 days weekly.
- Long-term support for motivation and maintenance of healthy behaviours is needed by those seeking permanent weight control.

dissatisfaction. Dropouts should be offered alternatives to group therapy according to their expectations e.g. literature, videos, one-to-one sessions etc. The strategy adopted by the nutritionist includes counting food portions. Since, calorie-counting was found to be quite popular, and possibly motivating, among the participants, it might be helpful to take into consideration calorie-counting for those willing to count calories.

The knowledge and empowerment given to attendees caused an overall decrease in the usual consumption of food. Traditionally patients are advised to have small meals evenly spaced out throughout the day.¹ The importance of breakfast, lunch and dinner was conveyed well. Eating behaviours also changed. Weight loss and maintenance are determined by such positive changes in eating habits.^{10,14} Participants were quite knowledgeable on healthy cooking methods and highly aware of the risks to health from frying practices. Distractions during meals can decrease the enjoyment of the food and cause over-eating.⁷ The programme would benefit by addressing more the importance of identifying and eliminating such distractions.

The general advice for obese individuals is 30 minutes of brisk walking 5 days weekly.¹ Similarly to other behaviour modification programmes for weight management, physical activity levels increased drastically.¹⁰ However, the inclusion of gymnasium training in the programme might be even more supportive towards behaviour change.

The issue of body image is successfully addressed. More significant

changes in feelings may be achieved by a psychologist contributing to the programme applying behaviour and mental processes involving cognition, emotion and motivation.⁶ An increase in flexible control of eating behaviour is necessary to ensure maintenance success. Behaviour modification programmes give subjects confidence that they can maintain dietary changes for life.¹⁰ However, attendees were not empowered enough to independently take care of their weight status and health by the end of the programme. Eight weeks might not be long enough to empower participants to take full control of themselves. Ongoing support is sought by participants who seek to share and refresh elements of the programme, obtain additional guidance about weight management and sustain their motivation.¹⁵

Limitations

The main limitations of the study had to do with the size of the study and the restricted time. Also, in such studies, underreporting is very common and is more likely among heavy rather than normal-weight individuals, females than males, and people with a low level of education.⁶ Such underreporting may have affected the results obtained. However, despite these limitations, the study achieved an insight into the knowledge and behaviour of obese people and how these are changed by the weight reduction programme.

Conclusion

This study showed how an eight-week weight reduction programme benefits overweight and obese participants, in terms of weight loss ($p < 0.05$) as well as

knowledge, attitudes and behaviour change. The empowerment of the attendees enabled them to change their behaviours and attitudes and thus improve their health and lifestyle. Key aspects which may need to be

addressed more within the programme in order to improve further its achievements, were identified. Eight weeks may not be long enough to ensure a permanent behaviour change.

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