Weight management programme for type 2 diabetes patients on insulin

Chris Cheyette

ARTICLE POINTS

1 Studies have reported an average 6 kg weight gain in patients with type 2 diabetes following the first year of taking insulin.

2 The NHS needs cost-effective strategies to help manage obesity.

3 This programme was successful in achieving weight loss, HbA_{1c} reduction and perceived benefits in the majority of patients.

4 Planning obesity services is complex. Consideration should be given to long-term maintenance with appropriate support networks/follow-up built into the programme.

KEY WORDS

- **Weight management programme**
- **Obesity**
- **Insulin**
- **Weight loss**
- **Support**

Introduction

Effective weight management programmes for patients with type 2 diabetes are vital to help tackle the escalating rise in obesity. Patients with type 2 diabetes who are started on insulin are known to gain weight. This article will discuss a pilot project that was set up to evaluate a weight management programme specifically targeted at this group of patients. Outcomes of weight loss, HbA_{1c} reduction and patient-reported benefits of taking part will be discussed. Finally, recommendations for future development of a weight management programme will be considered.

Patients converted to insulin will in the short-term gain improved glycaemic control. One of the side-effects of this is usually weight gain, which poses increased health risks (Laville M et al, 2000). Direct evidence shows that insulin therapy can reduce the risk of macrovascular events by improving glycaemic control and diabetes associated dyslipidaemias (Boyne et al, 1999). However, these beneficial effects may be significantly compromised by excessive weight gain (Boyne et al, 1999). Most studies report an average 6 kg weight gain in patients with type 2 diabetes following the first year of taking insulin (UKPDS, 1998; Laville et al, 2000).

The prevalence of patients newly diagnosed with type 2 diabetes who are overweight or obese is known to be at least 90% (Davies et al, 2003). The rising levels of obesity present society and healthcare providers with major challenges. Treatments to help patients lose weight are being developed by many individual centres, but at present there appears to be no consensus about the best way to provide patients with both the educational and behavioural techniques to lead to long lasting and achievable weight loss. The recent Cochrane review on obesity discusses the current evidence available for different approaches to caring for patients who are overweight and obese. In its introduction, the review states that 'the approach to obesity management in the NHS is patchy, and that work is needed to develop and implement effective strategies to prevent and treat obesity at policy and provider level' (Harvey et al, 2002). The review also strongly points to the need for cost-effective management of obesity and that dietitian-led treatments may be well worth further investigation.

Weight management

The Royal College of Physicians guidelines (RCP, 1998) state that a weight loss of 10% is associated with positive health benefits, such as reduction in fasting blood glucose, cholesterol, blood pressure and mortality. A clinical review by Noël et al (2002) states that for motivated patients a gradual and modest weight loss of 5–10% should be aimed for and that this should be achieved by caloric restriction, increased physical activity and behaviour therapy.

The National Weight Control Registry established by Klem et al (1997) in the US is a valuable resource which gives us a clear view of how people who have successfully lost weight have been able to maintain that loss. Important components to highlight are self-monitoring, physical activity and caloric restriction, especially from fat.

Aims of project

The aim of this project was to set up, run and evaluate a dietitian-led weight

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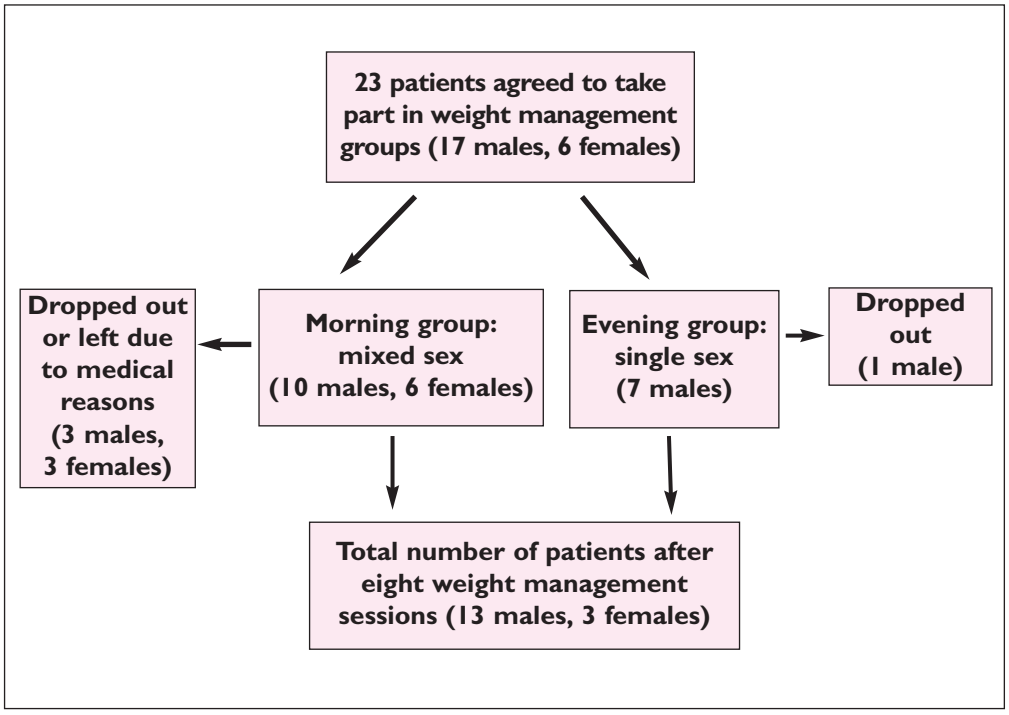

Figure 1. Flow diagram of patient distribution between groups

Weight management session outline

Session 1	*Introduction, energy balance, causes of being overweight, motivation to change and goal setting*
Session 2	*Portion sizes/shopping tips*
Session 3	*Understanding food labels*
Session 4	*Insulin adjustment (diabetes specialist nurse)*
Session 5	*Glycaemic index*
Session 6	*Physical activity and exercise (physiotherapist)*
Session 7	*Controlling eating behaviours*
Session 8	*Food choices when eating out, evaluation forms*

Figure 2. Outline of weight management session content

management programme for patients with type 2 diabetes who were taking insulin. The primary outcome from this project was weight. HbA_{1c} levels and patient-reported benefits of taking part were also measured. Sessions were held at the diabetes centre in a seminar room at Broomfield hospital in Chelmsford between January and May 2003.

The diabetes centre patient database was searched to identify all patients with type 2 diabetes with a BMI > 30 and a HbA_{1c} > 7% and who had been converted onto insulin in the past 4 years. A questionnaire and covering letter was then sent to a random selection of 100 of these patients to gauge interest in a weight management group. Half the questionnaires were returned. The sessions were designed according to the responses to the questionnaire and participants were invited to attend the group.

The weight management programme consisted of eight sessions taking place on a fortnightly basis and was attended by 23 patients divided into two groups; one group of males and females and one group of all males. *Figure 1* illustrates the breakdown of the groups.

The main purpose of the weight management sessions was to use behavioural techniques, along with education on a wide range of topics, to help patients work towards changing some of their eating, exercise and diabetes care behaviours. Emphasis was given to patient-led discussion, enabling people to share their experiences of managing their diabetes and their weight. The programme was delivered using goal

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4 Other members of the diabetes team were involved with some of the teaching sessions on insulin adjustment and physical activity.

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1 The mean average weight loss for males and females was 3.2kg and 1.8kg, respectively. Mean average weight loss for all participants was 2.9kg over the 16-week period.

2 The greatest weight loss was 7.7%. The average weight loss was just under 3%. Five patients lost less than 1% in weight and one patient gained just under 2% in weight.

3 Mean average HbA_{1c} reduction for males and females was 0.86% and 1.8%, respectively. The total mean average reduction in HbA_{1c} for all participants was 1.07%.

4 Group participant feedback was very positive, with most patients agreeing or strongly agreeing that their diabetes control, knowledge, confidence and eating behaviours had improved.

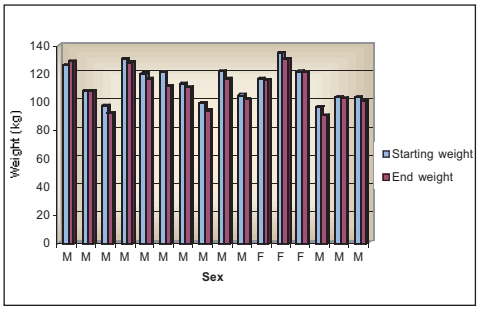

Figure 3. Individual weight change after weight management programme

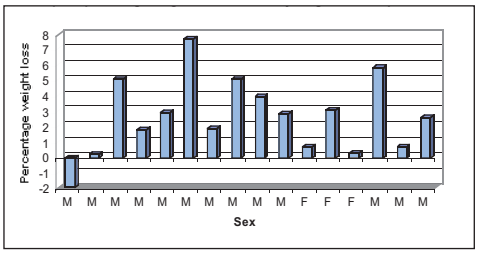

Figure 4. Percentage weight loss of total bodyweight for each patient

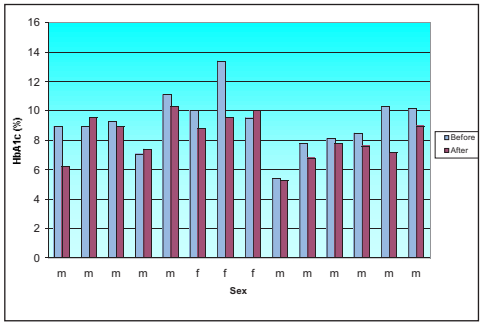

Figure 5. Individual HbA_{1c} results before and after weight management session

setting, food diaries, relapse prevention, achievements and motivational approaches. Other members of the diabetes team were involved with some of the teaching sessions on insulin adjustment and physical activity.

A brief outline of the topics covered in each session is detailed in *Figure 2*. It is beyond the scope of this article to go into detail of each session, but it is important to note that although each session had stated learning outcomes, these were achieved within the needs of the group and the learning environment remained informal and where possible fun. Each session lasted between 1–1.5 h.

Results

Of the 16 patients who started in the morning group, four dropped out before the final session and one was admitted to hospital for a below knee amputation. One other patient has been excluded from the results as he was started on a special low calorie diet for medical reasons and therefore the weight loss for this patient would bias the results. The evening group had one patient drop out. Therefore the total number of patients included in the results is 16.

Figure 3 shows the weight at the start and end of the weight management programme for each individual patient, broken down by sex. The mean average weight loss for males and females was 3.2 kg and 1.8 kg, respectively. Mean average weight loss for all participants was 2.9 kg over the 16-week period.

Figure 4 shows the total percentage weight loss for each patient. The greatest weight loss was 7.7%. The average weight loss was just under 3%. Five patients lost less than 1% in weight and one patient gained just under 2% in weight.

Figure 5 shows HbA_{1c} results before and after the weight management sessions. Two patients did not have their HbA_{1c} taken so results are given for 14 of the 16 participants. Mean average HbA_{1c} reduction for males and females was 0.86% and 1.8%, respectively. The total mean average reduction in HbA_{1c} for all participants was 1.07%.

Participant feedback

Comments from the participants are shown in *Table 1*. Some patients did not answer all the questions and one patient did not answer any. Group participant feedback was very positive, with most patients agreeing or strongly agreeing that their diabetes control, knowledge, confidence and eating behaviours had improved. It is also interesting to note that only one patient felt that they would gain weight after completing the programme. 71% of patients also reported they were doing more physical activity than before.

Some of the individual comments are listed below to give a general feeling of

Table 1. Feedback from the participants

Question	Strongly disagree	Disagree	Agree	Strongly agree
I have found that my diabetes control has improved	1(7%)	2(13%)	9(60%)	3(20%)
My knowledge of diabetes has improved	0(0%)	1(7%)	8(53%)	6(40%)
I feel more confident about adjusting my insulin	0(0%)	0(0%)	9(64%)	5(36%)
My quality of life has improved	1(7%)	4(27%)	7(46%)	3(20%)
I feel more confident in myself	1(7%)	1(7%)	6(43%)	6(43%)
I feel I am eating more healthily	0(0%)	1(7%)	9(60%)	5(33%)
I am doing more physical activity	0(0%)	4(28.5%)	6(43%)	4(28.5%)
I am confident I will lose further weight	0(0%)	3(20%)	8(53%)	4(27%)
I feel other aspects of my life have improved	0(0%)	4(26%)	10(67%)	1(7%)
I feel I will gain further weight	3(20%)	11(73%)	1(7%)	0(0%)

patient perceptions.

'The programme ran very well, would like to carry on – it has improved my standard of living.'

'Found all sessions useful mainly because of the other people in the group sharing their same problems.'

'I know so much more about diabetes, the sessions have been excellent and extremely informative.'

'These sessions have been most useful, most of all they keep you in touch with the clinic and its staff .'

Discussion

The results from the programme show that all but one patient lost weight. The weight loss ranged from 0.2–9.3kg with the majority of patients losing between 3–5% of their total body weight. This is a very encouraging result considering this weight loss was seen in a 3 month period. Most patients also reported that it was the first time since starting insulin that they had either not gained or had managed to maintain their weight. A fall was also seen in most patients' HbA_{1c} levels indicating improved blood glucose control.

Although the results from this project were encouraging, it is important to highlight the limitations. Only a relatively small number of patients were involved and there was no control group. The evaluation form was not a validated tool and therefore reporter bias must be considered.

A major outcome of the programme was the overwhelming positive feedback from patients. Due to this, the groups have since met and expressed interest in meeting on a regular basis for the foreseeable future. This will allow them to continue to lend each other support and to keep in contact with one another to further their knowledge. One of the difficulties of running weight management

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1 Weight loss and maintenance is a lifelong process but how strategies can be incorporated to aid patients needs further review and highlights the complexity of managing obesity services.

2 Support from other members of the diabetes team no doubt helped with the success of the programme, giving patients greater knowledge and skill.

3 The DSNs were available to help with any questions and also were involved in insulin adjustment to help patients improve their glycaemic control.

4 The NHS must support and encourage new ways of addressing the epidemic of obesity and ensure that resources are targeted in a constructive way.

groups is deciding how long they should run for and when to stop. It is clear from this project that patients build up strong support relationships with each other.

Planning for a support network and having routine review sessions is an important area. Weight loss and maintenance is a lifelong process but how strategies can be incorporated to aid patients needs further review and highlights the complexity of managing obesity services. Wing and Tate (2000) advocate the need for long-term support and state that continuing to maintain contact with participants after the first 6 months slows weight regain. They also point to alternative approaches for continuing contact, such as email, internet and long-term social support from friends and family (Wing and Tate, 2000). A 4-year randomised study by Trento et al (2002) also showed that long-term group education could be cost-effective and beneficial at preventing deterioration of metabolic control and quality of life for patients with type 2 diabetes (Trento et al, 2002).

This project has also promoted the multidisciplinary approach to patient care. Support from other members of the diabetes team no doubt helped with the success of the programme, giving patients greater knowledge and skill. The DSNs were available to help with any questions and also were involved in insulin adjustment to help patients improve their glycaemic control. Multidisciplinary collaboration promotes a positive image of care and allows patients the best possible access to services.

Conclusion

This work has led to a successful application for a research and development grant to carry out a randomised control trial to investigate if similar or improved results are seen. This project only evaluated results after the programme had finished with no consideration for whether participants re-gained, maintained or lost further weight after the programme. Future work will assess progress at 6 and 12 month periods to assess if this method is a cost-effective strategy. A support network is also planned to aid patients after the sessions have been completed. Measurements of quality of life and well-being will be addressed using validated questionnaires to support the findings of this project.

It is hoped that this information will be disseminated to other centres to help to develop effective obesity management programmes. This research is supported by the recent recommendations of the Cochrane review, which highlights a need for effective strategies to prevent obesity in the NHS (Harvey et al, 2003).

The NHS must support and encourage new ways of addressing the epidemic of obesity and ensure that resources are targeted in a constructive way. ■

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