# Online Weight Management: Can people byte their way to success?

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## Introduction

Overweight and obesity are vital public health issues. Their high prevalence, together with limited resources available within the NHS, highlights the need for accessible, innovative and effective approaches to weight management. Research is indicating that the Internet offers promise in delivering such approaches, and is increasingly being used to deliver interventions for health related behaviour change, including weight management.[1, 2] In the UK, the vast majority of easily accessible Internet-delivered weight loss programmes are commercial. So it is important that we, as health professionals, are aware of the evidence, and have a good understanding of how to decide if they have the potential to help our patients.

## The arrival of online weight management

In 2008, 24.5 per cent of adults in England were obese, and 61 per cent overweight or obese.[3] Obesity is associated with an increased risk of a wide range of health problems, including Type 2 diabetes, cardiovascular disease, certain cancers, osteoarthritis, infertility, back pain, liver and respiratory disorders and psycho-social problems.[4, 5] Obesity not only has serious implications for individuals' health and wellbeing, but for the NHS and the wider economy.

Weight management interventions that combine a reduced calorie intake, healthier food choices, physical activity and behaviour therapy have been identified as the most effective in promoting weight loss and maintenance.[4, 5] Achieving modest weight loss of at least 4kg or 5-10 per cent body weight has been associated with clinically important cardiovascular and metabolic benefits.[4, 5]

The Internet is increasingly being used as a medium to deliver interventions for health related behaviour change, including weight management.[1, 2] An estimated 58.4 per cent of the population in Europe currently have access to the Internet, with the UK being the third biggest user where 73 per cent of households have Internet access and 30.1 million adults use the Internet every day, or almost every day.[6] There is growth in the use of the Internet for diet and exercise information, and the vast majority of Internet users report the importance of being able to access health information at a time convenient to them.[7] However, health behaviour change is complex and the challenge lies in the development of interactive programmes that translate evidence-based behavioural interventions in a way that engages users.

The Internet's potential role has been acknowledged by The National Institute for Clinical Excellence (NICE) guidelines on obesity, which concluded that '*Internet programmes accompanied by greater ongoing support in person, by email, or post, may be more effective than those without*'.[4] More recently, the Scottish Intercollegiate Guidelines Network clinical guideline on the treatment of obesity stated that '*Delivery of evidence-based weight management programmes through the Internet should be considered as part of a range of options for patients with obesity*'.[5]

Internet-delivered weight loss and weight maintenance programmes also have the potential to be less intensive than face-to-face interventions, as well as reach a wider audience. So what does the evidence say about web-based weight management? And is it something we can recommend to our patients?

## What the evidence says

Arem and Irwin[1] recently reviewed published randomised trials examining the effect of Internet-delivered weight management programmes on weight loss. Nine studies of differing design met their criteria (all randomised/randomised controlled trials (RCTs)), adult overweight or obese populations, primary endpoint of weight loss or weight maintenance, website or web-based programming as a primary focus of the intervention) with study duration ranging from 3-18 months. Seven studies investigated weight loss, with interventions recommending increased physical activity and a structured calorie-restricted dietary approach plus behavioural strategies. Two studies assessed the effect of Internet-delivered weight loss maintenance programmes after weight loss treatment (not delivered by the Internet).

Based on intention to treat (ITT) analysis, weight loss ranged from no significant weight loss to 4.9kg (5.8%), and from 1.3 kg (1.5%) to 7.6kg (9.2%) for completers. Associations were found between how frequently subjects logged in and weight loss – suggesting that regular involvement with web features may lead to a greater amount of weight loss. Providing feedback, even if automated, also appeared beneficial, with one study finding that provision of automated, tailored online weight loss information was more effective than online provision of weight loss information alone (2.8kg [3%] versus 1.1kg for completers after 6 months).

Study design and outcomes varied amongst the seven weight loss studies making generalisation of the results difficult. On average, weight loss was less than the clinically beneficial five per cent. However, greater percentages of those in the intervention groups consistently achieved a clinically relevant five per cent weight loss than those in the education groups.[1] Heterogeneity of study design also limited conclusions on the effectiveness of web-based interventions on weight loss in another systematic review and meta-analysis, despite four of seven studies being deemed 'effective' based on percentage weight loss.[8]

The weight loss maintenance studies found that Internet-delivered programmes were at least as effective as self-directed or face-to-face support over 12-18 months; helping subjects to maintain a clinically important 5.7-5.8 per cent average weight loss (ITT analysis). Again there were links between regularly using web resources (such as completing weight logs and diet and exercise diaries), and better weight outcomes.

The authors concluded that while more research is needed overall, online weight loss maintenance interventions (after an active weight loss component) involving dynamic, tailored material and self-reporting show the most promise for helping people to lose clinically significant amounts of weight. In addition, as general trends show a weight increase over time, even maintenance of current weight is a positive outcome as it may delay or prevent health risks associated with weight gain.[1]

A separate 12-week RCT in a primary care setting[9] found that, compared to usual care, patients who had access to a comprehensive website that used a moderate-intensity weight loss approach, plus two face-to-face and two telephone sessions with a health coach, lost a significant 2.28kg (3.05kg for completers) vs a gain of 0.28kg. Greatest weight loss (4.16kg) was found among those with a higher frequency of website logins.

Twelve-month weight loss outcomes of a male only randomised Internet-based intervention ('SHED-IT', weight loss intervention lasted three months, feedback provided via online self-monitoring entries) were not significantly different for the Internet group compared to the information only group (5.3kg vs 3.1kg, ITT). However, those in the Internet group who kept to the self-monitoring requirements of the study (daily diet and exercise diaries and weekly weight logs) lost significantly more weight after six months (9.1kg vs 2.7kg) and maintained greater weight loss at 12 months than non-compliers (8.8kg vs 1.9kg), and the information only group (3kg).[10]

## Behaviour change

Dietitians, practising nurses and other healthcare professionals are now aware that behaviour change strategies are a cornerstone of effective weight management interventions.[4, 11] They aim to help people develop a set of skills to achieve a healthier weight, by making planned and sustained changes to their eating and activity habits. Strategies include: self-monitoring (food, activity, weight), stimulus control (controlling eating cues or triggers), nutrition education, healthy cooking skills, building more activity into daily life, problem solving, relapse prevention and ensuring social support.[2, 11] It is no surprise, therefore, that Internet-delivered interventions that include more behaviour change strategies are associated with more effective health behaviour change.[2]

## Self-monitoring

A systematic review of interventions designed to promote healthy eating behaviours and increased physical activity[12] found that those using self-monitoring plus at least one of four other key self regulatory techniques (setting a goal, specifying the goal, receiving feedback and/or reviewing the goal), were more effective than interventions that didn't. In line with this, a consistent finding of Internet-delivered weight loss and maintenance studies has been an association between regular use of online self-monitoring tools and better weight loss outcomes.[1, 10, 13] There is also some evidence that Internet-based programmes may produce greater self-monitoring than face to face programmes,[14] which may be related to ease of self-monitoring through online tools.[7]

The Weight Loss Maintenance Trial[15] compared two long-term (2.5 years) behavioural weight-maintenance interventions (personal contact or Internet), with a no-treatment control after an initial six-month face-to-face, group weight loss programme. Participants defined as 'consistent website users' (based on number of weight and exercise entries, as well as minutes on the website, and sessions with additional use of website features after weight entry), were more likely to be successful at maintaining long-term weight loss (at least 4kg below their initial weight).

## Structured eating plans

Making healthier food choices and reducing calorie intake in our food-filled environment can be challenging. It requires planning, nutrition knowledge, portion control, label reading skills and calorie awareness. Strategies that simplify the process and provide more structure have been shown to be helpful. For example, goal setting with a specific plan of how to achieve the goal, calorie controlled meal plans and shopping lists.[11]

Successful online programmes have included a structured approach to modifying energy balance (reducing calorie intake and increasing physical activity), together with cognitive-behavioural strategies such as self-monitoring, and feedback and support.[16]

## Feedback/coaching

Receiving feedback on progress is an important part of behaviour change interventions,[12] including those delivered via the Internet.[5, 17] But human feedback makes Internet interventions more costly. Tate et al[18] found that providing automated computer-tailored feedback in an Internet weight loss program was as effective as human email counselling at three months (5.3kg vs 6.1kg weight loss) and both groups had significantly greater weight losses compared with no counselling/behavioural feedback (–2.8kg). After six months, weight loss was less for participants receiving computer-automated feedback compared to those who had human email counselling, but 34 per cent of participants in the former group still achieved a five per cent or greater weight loss (52% for the human email counselling group).

A review investigating which characteristics of Internet-based interventions best promote health behaviour change found that small, but significant, effects on behaviour were observed for interventions that provided automated tailored feedback – e.g. comparison to norms or goals, reinforcing messages, or coping messages, or an enriched information environment e.g. supplementary content and links, testimonials, videos, or games.[2]

## Social support and buddying

Social support has been identified as a major supportive tool for continued behaviour change.[4, 19]

In a study of overweight and obese adults using an Internet-based weight-control programme for 12 months, social-support features e.g. web chats and participant profiles, were related to weight maintenance at 12 months, while feedback website features (e.g. progress charts) were the best predictors of initial six-month weight loss.[14]

Comparable levels of perceived social support for face-to-face and online weight maintenance programs have also been found, suggesting that effective social support can be achieved via interactive features online.[20]

A separate review[2] found that interventions providing access to an advisor to request advice tended to have small-to-medium effects on behaviour, while smaller effects on behaviour were observed for interventions that provided scheduled contact with an advisor or peer-to-peer access such as buddy systems, discussions boards, forums, or live chat.

## Can healthcare professionals recommend Internet-delivered weight loss programmes?

In the UK, the vast majority of easily accessible Internet-delivered weight loss programmes are commercial, and their use relies on Internet access and computer literacy. So how can we decide if they have the potential to help our patients?

In recognition of limited NHS resources and the role of the wider community in weight management, NICE recommends that health professionals should consider and discuss the range of commercial and self-help weight management options (that meet best practice guidelines, see **Table One**) with patients, and help them decide what best suits their circumstances, and what they will be able to sustain in the long term.[4] This could include suitably developed Internet-delivered programmes.[5] Referring healthcare professionals should also continue to monitor their patients and provide support and care.[4]

A recent review of 42 studies identified five key principles that can point healthcare professionals in the right direction when selecting (or developing) Internet weight management programmes. These are: (i) recreate the human experience; (ii) personalise to the individual; (iii) create a dynamic experience; (iv) provide a supportive environment and; (v) build upon sound theory.[21]

The Internet also offers the potential to reach larger numbers of people who may not be able to, or want to, access face to face or more traditional weight loss or maintenance programmes.[22, 23, 24] Haugen et al[23] found no difference in satisfaction or weight losses between face-to-face or online weight maintenance programmes. In fact, the individuals in the online program rated it as more convenient than those in the face to face programme. As well as having the scope to reach more people, there is also the potential for greater cost effectiveness compared to face-to-face programmes, but to date there is very little research in this area.[7]

While some studies reveal high attrition rates[1] and underutilisation of educational and behaviour change website features,[23] others which involve dynamic and tailored features, along with regular automated reminders, have shown good retention,[16] and regular website usage has been associated with weight loss success.[7, 15] As technology and research improves, the ongoing challenge is to identify which specific components of weight management websites are more important and, as a result, develop more engaging and effective website features.[7, 8, 24]

Despite research highlighting the weight management potential of online interventions, commercial programmes to date have not lead to the same extent of weight loss identified in research-based Internet programmes[17, 25] This may be due to the commercial programmes investigated not containing the dynamic and interactive behaviour change features more recently associated with greater weight loss success (see **Table Two**).[7] However, how often people log on may be a more important factor overall. Gold et al[25] found that when weight loss results were adjusted for log-in frequency, weight loss for participants in a commercial programme was the same as for those in a research-based Internet programme (6.2kg over 12 months).

Also of note is that while online programmes with interactive behaviour change features do better than information provision alone, overall they have not achieved the same level of weight losses seen in face to face behavioural weight control programmes.[7] However, weight loss maintenance studies show more promise and have shown similarly beneficial weight loss outcomes when compared to face to face, self-directed or personal contact conditions for up to 18 months.[1, 14, 15]

Research is still in its infancy and larger studies are required to determine if Internet-delivered weight management interventions, especially more widely available commercial programmes, really can have a beneficial impact on weight and health. Good news is that a large RCT of a commercially available web-based weight management programme is currently underway.[24] Another exciting development has been positive behaviour change and weight loss results (4.8kg) from a year long pilot study which adapted the evidence-based Diabetes Prevention Programme (DPP) for delivery via the Internet.[26] Entitled the 'Virtual Lifestyle Management' service, the study's challenge is to bring the benefits of the intensive DPP to more patients, more cost-effectively.

## Conclusion

Further research to enhance the behaviour change and long term weight losses produced with online programmes whether commercial or research/NHS based is to be welcomed and encouraged. Meanwhile, exploring existing sources of support and reliable information available to your patients, such as evidence-based Internet programmes, could provide them with helpful tools and increase their chances of success.

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### Table One: NICE Best Practice Guidance for Commercial Programmes[4]

- Help people assess their weight and decide on a realistic healthy target (e.g. aim to lose 5–10% of original weight)
- Aim for a maximum weekly weight loss of 0.5–1 kg /1-2lbs
- Focus on long-term lifestyle changes rather than quick-fix
- Be multi-component, addressing both diet and activity, and offering a variety of approaches
- Use a balanced, healthy-eating approach
- Recommend regular physical activity (particularly activities that can be part of daily life), and offering practical, safe advice
- Include some behaviour-change techniques, such as keeping a diary, how to cope with 'lapses' and 'high-risk' situations
- Recommend and/or provide ongoing support

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### Table Two: Key Web Features Associated with Better Outcomes[7, 20]

- Personalised to the individual, e.g. goals, diet/activity advice
- Dynamic (regularly changing and updated) features
- Interactive features, e.g. quizzes, educational information
- Structured guidance to enable energy deficit
- Ability to self-monitor, e.g. weight, activity, food/calorie intake
- Some form of feedback – tailored: personal or automated
- Provide a supportive environment, e.g. access to an adviser/healthcare professional, discussion boards, buddy systems, forums, live chat

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