Effective UK Weight Management Services for adults

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Abstract

A number of evidence-based weight management interventions are now available with different models, and serving different patient/client groups. While positive outcomes are key to the decision making process, so too is the information around how these outcomes were achieved, in what population, how transferable the outcomes would be to the population a service would be aiming to cover and at what cost to the service-provider and or the individual. This paper examines all the UK interventions with recent peer-reviewed evidence of their effectiveness in "realistic" settings and cost-effectiveness, in the context of NICE and SIGN guidelines. It concludes that the evidence-based approaches allow intervention at different stages in the disease-process of obesity which are effective in different settings. Self-referral to commercial agencies, by individuals with relatively low BMI and few medical complications is a reasonable first step. For more severely obese individuals (e.g. BMI >35kg/m^2) requiring more medically complicated care, evidence is largely lacking for these services, but the community-based Counterweight Programme is effective and cost-effective in maintaining weight loss >5kg up to 2 years for 30-40% of attenders. For more complicated and resistant obesity, referral to a secondary care-based service can generate short-term weight loss, but 12 months data are unavailable.

Introduction

The needs of patients and taxpayers are best served if diseases are managed using evidence-based and cost-effective methods, Evidence-based clinical guidelines for obesity and weight management are now well established by The Scottish Intercollegiate Guideline Network (SIGN) (1996 and 2010) in Scotland, The National Institute of Health and Clinical Excellence (NICE) in England (2006) and in many other countries[1,2,3]. United Kingdom (UK) guidelines have noted that many of the studies on interventions were conducted outside the UK, were of short duration, with little or no follow-up, and were poorly reported. NICE has called for studies of interventions with a minimum of 12 months follow up. Recognising the scale and epidemic nature of obesity, its costs to society, the somewhat chaotic management existing within the UK National Health Service (NHS), and the failure hitherto of any population-based prevention strategy, these Guideline documents have highlighted the need to create effective treatment services in parallel with effective preventive interventions.

There are several emerging issues for primary care and community-based clinical weight management in the United Kingdom (UK). Firstly, the Department of Health "Call to Action on Obesity" in England set a target to reduce the proportion of adults with excess weight by 2020[4]. Noting that since prevention has hitherto failed, with the majority, two-thirds of UK adults now overweight or obese, effective treatment programmes will be increasingly important. Care is currently purchased at local, PCT level in England, moving to local commissioning boards in 2013, and in 2011 the Scottish Government also decided to devolve budgetary responsibility to Health Boards to put in place appropriate weight management interventions. While different local solutions are possible, the choice of intervention must evaluate the disease-burden and costs of rising obesity, particularly of severe obesity (e.g. BMI >40, >50, >60) rising most rapidly and the proven effectiveness of interventions in meeting targets such as those set out in the Department of Health Call to Action, in relation to available local funding.

The present paper reviews recent peer-reviewed evidence on diet and lifestyle-based weight management programmes widely available for use in the UK in primary care/ community settings, in relation to the points made by NICE (2006) outlined above. While the need for new and different

therapies is recognised, guidelines stress the primary role of primary care/ community-based interventions because of sheer numbers of potential patients. This paper excludes studies of adjunctive treatments with pharmacotherapy, liquid-diet programmes, meal-replacement therapies and secondary care programmes such as bariatric surgery.

Historically, most published research in weight management has been on pharmaceutical trials or research-centre based interventions. More recently there have been publications from large-scale primary care/ community-based weight management services for adults, in what can be considered realistic settings or within routine care. The results published have varied somewhat, leading to commentaries which have tried to rank them[5]. That ranking process has not always recognised that the interventions as reported were developed for different reasons, and applied to different populations in different settings. Thus simple comparisons of reported "top-line" results can be misleading. We have attempted to evaluate the recently published programmes in terms of their contexts as well as weight change outcomes, in order to clarify their different roles within improved overall weight management services.

Aim: this review evaluates published evidence on UK primary care/ community-based weight management intervention assessed in 'realistic' settings, focusing on effectiveness and cost-effectiveness of available interventions, the different population served/covered by different interventions, and the limitations of the available interventions.

Methods and data sources

The literature was searched to reach the totality of relevant evidence within the very restricted nature of this paper, which focuses on studies conducted within the UK only, in realistic settings and with at least 12-months follow-up data. A modified systematic approach was therefore used where a PUBMED search was conducted on 26 March 2012 using the following search terms: 'obesity', 'adults', 'UK', 'intervention', 'programme' and with publication date after January 2005. The cut off for papers published after January

2005 was used to include current research which would not have featured in the NICE Guidelines on Obesity from 2006[2] but should reflect programmes which adhere to national guidance around weight management as provided in SIGN 1996[1]. We are not aware of any older publications on available, evidence-based programmes. The search was not restricted to randomised controlled trial evidence, recognising that programmes which incorporate evaluation by closed-loop audit and Continuous Improvement Methodology can be equally valid for service development. Twenty nine papers were identified of which n=1 was rejected as being qualitative research only, n=3 were rejected as reviews, n=5 rejected as focused on children, n=4 rejected as presenting trial design only, n=1 rejected as included meal replacement therapy, n=1 rejected as focused only on physical activity outcomes, n=3 rejected as secondary analyses focused on the burden of obesity, and n=6 rejected because weight change data were not included or the focus of the study. Of the remaining 5 papers only 2 presented 12-month outcomes, despite the recommendation by NICE in 2006 to focus on trials with results at a minimum of 12-months. Recognising the difficulties of generating reliable 12-month interventional data, we also included the Lighten-Up study giving three suitable publications: Counterweight, Weight Watchers, and Lighten-Up[6,7,8] and we have commented on shorter term studies in the discussion.

Results

All the publications included demonstrate that clinically beneficial weight change can be achieved for a valuable proportion of patients, through a variety of programme components and with variable resource implications. The programmes which have been reviewed involved groups of obese patients with rather different characteristics, and thus serve somewhat different purposes so direct comparison of "top line" weight change results would be misleading. Key data are presented in Tables 1 and 2.

Counterweight: Care is delivered by existing non-specialist staff, such as practice nurses or health care assistants/ support workers, after brief training and then on-the-job mentoring by Counterweight specialist staff. Patients do not pay for the service. This intervention represents a first level of NHS intervention, in primary care, or local pharmacies: 12-month weight-change results are identical whether the programme

is delivered by practice nurses or pharmacy staff[9]. Baseline mean BMI of the patients enrolled is high, at 37kg/m^2 and 14% have diabetes which is known to impede weight loss on conventional diets (table 1). A high proportion of Counterweight subjects have other obesity-related clinical problems including limitations on physical activity, and many are from high-deprivation backgrounds. The patients are mainly enrolled through general practice referral. Retention in the programme is maintained at 3, 12 & 24 months at around half of those entering, with similar weight losses (median ~3kg loss) and similar % exceeding 5% loss ~25-30% at each of these times. An important aspect of the Counterweight patient-population is the high prevalence of associated co-morbid conditions, whose management tends to compete for attention by both staff and patients. The sustained results of Counterweight depend on availability of a small core of Counterweight Specialist staff, to train and mentor non-specialists in programme delivery, adequately resourced non-specialist staff to deliver the programme and on the ongoing central data collection and analysis, with regular feedback of results to Health Boards, GP practices and other programme delivery services. The flexibility of one to one or group delivery allows the patient and staff to decide which option best suits.

Weight Watchers: A commercial community-based organisation run by non-health-professionals and delivered in groups, which might be regarded as the first option for an obese person seeking help outside medical services. Twelve month data (table 1) are reported on 230 individuals (from 3 countries: UK, Australia and Germany) referred from Primary Care, who, unlike usual care Weight Watchers clients, did not pay for the service. Mean baseline BMI is lower than for other published programmes at 31 kg/m^2. Outcomes are positive with 61% remaining on the programme for 12 months and lose a mean 6.6kg. The socioeconomic profile of the subjects, which can affect success, is not provided, so these good results may not apply to all patients in all areas e.g. may be less positive in areas of high social deprivation. With the lower BMI, few patients had T2DM, which impedes weight loss with conventional diets[6]. An important detail, when considering outcomes, is the number of contacts available to individuals for the Weight Watchers RCT UK trial; 36 free Weight Watchers group sessions in 12 months. The resource available to reflect this level of intervention needs to be considered along with individuals' ability or willingness to pay for intervention.

Lighten Up: This study compared results from obese patients recruited from Primary Care through invitation letters sent by the patients general practitioner and randomised to one of 3 commercial club programmes (Weight Watchers, Slimming World and Rosemary Conley), or managed through NHS, in General Practice or pharmacies. Due to the complexity of this study (8 arms in total) we have summarised the data in Table 2.

In the Lighten Up Study, numbers with 12month data (excluding self-reported data) are very limited ranging from 32/70 (45%) in the pharmacy arm to 67/ 100 (67%) in the Weight Watchers arm. Of note when considering wider application to routine care is that only 8.3% of the obese subjects approached agreed to take part in the study. Of the 1011 recruited to the study 12m follow up is reported for 522 (52%) but only 416 (41%) had follow up weights measured: the remaining 106 providing self-reported weights. This study (albeit with limited numbers) confirms the effectiveness of commercial organisations for at least some subjects with a lower BMI. However a critical detail, missing from the published data, is information on the proportion of the people allocated to a commercial slimming group arm of the trial who continued attendance (by paying to attend additional sessions) with the allocated group beyond the study sessions. This detail is needed to see the actual number of attendances required to result in the reported weight change.

While poor attendance appears to impair outcomes for the primary care programmes, there is limited detail about the attendance at commercial slimming groups. Retention rates were low in both general practice and pharmacy arms of the Lighten Up study (see table 2): the factors affecting retention rates are worthy of further scrutiny. Baseline data indicated a reasonable percentage of men entered the programme which is encouraging, but it is not clear if patient retention was equal between the sexes. Further detail of the exact programmes would be of value, in particular how the general practice staff were trained or mentored and whether or how programme integrities were assessed.

Services with only short-term published data

NICE recommended in 2006 that 12-month outcomes were essential in weight management intervention outcomes. Programmes which achieve only short-term weight loss are unlikely to provide good value for money. A number of Programmes available in UK primary care/ community settings have published short term outcomes. While of interest, the results and clinical benefits of these interventions must be treated with caution while longer term peer reviewed data is awaited.

The GCWMS: We have included published data from the Glasgow & Clyde Weight Management Service (GCWMS) which serves almost a quarter of the population of Scotland[10]. We have discussed this in depth because of its scale, and because there is no other published example of a routine service which caters for severe and complicated obesity in a specialist service or what is frequently referred to as "Tier 3".

This intervention involves direct patient contact, in groups of non-paying NHS patients, with a range of highly qualified specialist staff; in central specialist care setting. It represents a second level of NHS obesity management. GCWMS serves patients with a high prevalence of poor socioeconomic backgrounds, and high mean BMI with 52% >40kg/m^2. It thus addresses a more advanced stage of obesity which is strikingly more prevalent in more deprived socio-economic and geographical groups[11]: the proportion of T2DM (around 1 in 6) is similar to that in Counterweight[6]. At this stage only 16 week data are available, and baseline weight, BMI and age distributions are not clearly provided. The 12 week outcomes show that 36% of the attending population lost >5kg. This result needs to be interpreted in light of the much higher baseline BMI, so loss of 5kg does not equal 5%. Also many studies, such as Counterweight, have demonstrated that greater absolute weight loss is achieved by those with higher BMI[6]. The GCWMS goal of >5kg weight loss may not be sufficient for functional improvement in patients with BMI >40 kg/m^2, and falls short of the target of 15% loss more recently set by SIGN guideline 115 (2010)[1]. The lack of 12 month data so far does not allow any conclusions to be drawn about weight loss maintenance, or for any direct comparison with the other programmes.

Slimming World: published 12-week data on 34,271 individuals: 89% female. Mean BMI = 36.8kg/m^2. 56% completed the programme. Mean weight change at 12 weeks = 5.5kg (5.5%) loss. No 12m data are available for review to assess maintenance[12].

Internet Based Delivery: 70 patients of 103 entered into the intervention programme (71 (69%) female) achieved loss of 3.5kg loss at 6months. Entry criteria was BMI>28kg/m^2. Weight change was self reported so outcomes need to be interpreted with caution. No 12month data are available for review to assess maintenance[13].

Weight-management interventions in primary care: a pilot randomised controlled trial: Reported data on 123 adults: 80.3% women, BMI>27kg/m^2, 103 (84%) provided data at 12 weeks. Mean difference in weight in structured support compared to usual care groups was -2.63 kg. 34% in structured groups lost >5% compared with 20% in usual care groups. No 12month are data available to assess maintenance[14].

Discussion

This brief review of the evidence-based programmes available for adults in UK indicates that they all generate valuable weight loss, and those with 12 month data are also able to maintain that loss for a reasonable proportion of patients. However, the different programmes serve different aspects of weight management at different stages of patient need. A direct comparison between the weight-change results of the programmes is not appropriate without considering their settings and the patient groups enrolled. The methods of outcome ascertainment also varied. There is thus no single 'best option' amongst the evidence-based programme, for weight management in primary care/ community settings. Given the scale of the obesity epidemic and range of degrees to which individuals are affected by obesity, care-providers will need a menu of options for optimal weight management in adults. Future studies are needed to identify the most cost-effective approaches for heterogeneous populations requiring weight management at different stages, and randomised trials may not provide the best or most needed evidence[15,16].

Health Economic analysis

Counterweight remains the only service to have published a full Health Economics analysis of cost per Quality Adjusted Life Year, which showed very high cost-effectiveness for its conventional diet and lifestyle-based programme [17]. A cost in the region of £100 per patient was achieved by providing training for non-specialist staff, who then deliver the structured programme to patients. The weight change achieved would be considered clinically important, and cost-effective at a population level with potential to delay clinical problems aggravated by obesity, and thus cost avoidance.

In the Counterweight Health Economic analysis a conservative estimate of the likely clinical benefits from the relatively modest weight losses achieved and maintained was made, using the NICE predictive model: the model only considers the impact of weight change on three clinical areas, although robust evidence exists around the impact of weight on many more clinical problems. In the long term it is clear that the NHS would generate substantial cost-savings if weight management solutions with robust evidence of effectiveness at 12 months ~~such as Counterweight~~ were established sustainably to ensure access to appropriate weight management intervention with 100% coverage across the UK (long-term cost avoidance would be greater than the short-term set-up and implementation costs).[17] It is possible that a cost-effectiveness analysis of Weight Watchers, Rosemary Conley, Slimming World and GCWMS might produce similar results, although setting up specialist facilities such as GCWMS would entail much greater initial costs and evidence from Weight Watchers does point to a much greater reliance on attendance at the group sessions which would either need to be paid for by the public purse or by the individual attending.

The challenges we face are firstly to improve the success rates of existing services, for example through Continuous Improvement Methodology, and secondly to provide a new and effective service for patients who fail in first-line treatment. Continuous Improvement Methodology ensures a dynamic approach to provision of care, by incorporating evaluation and feedback from patients and clinicians as well as embedding relevant external advancements in care based on up to date research. The model fits with others such as the Evidence-Based Quality Assessment (EBQA) proposed by the Evidence-Based

Medicine Working Group (1992). EBQA consists of four steps to improve physician adherence to guidelines: (1) setting priorities (2) setting guidelines (3) measuring performance and (4) improving performance. Each phase of the Counterweight Programme Continuous Improvement Methodology fits with one of these four steps in the EBQA model[18].

Most analyses indicate that keeping patients engaged in a programme, and attending an optimal number of planned appointments is key to greater success [6,8]. Interventions need to meet the wishes and expectations of patients, as well as of referring doctors and those actually delivering and those funding the intervention.

Central to overcoming the obesity epidemic is a need to de-mystify obesity and weight loss, and to penalise agencies which purport to offer effective products or services without externally validated evidence that is in the public domain. Quoting average weight-losses based only on "completers" or "attenders" data, for example, can be helpful but only when put in context by also providing retention rates. Anecdotal data must be treated with great caution. While individual case studies can provide a personal and perhaps eye-catching story, but usually to reflect 'best-case scenarios'. Data on outcomes with no detail of loss to follow up may be hiding poor retention and wasted resources. Even with the best service, 20-40% of patients will discontinue, over 12 months and they generate costs. Services which are promoted on the basis of data from "completers" only should be disregarded.

Conclusion

The published evidence suggests that a range of interventions are effective for weight management at different stages in the patient/client pathway, with 10-20% of entered patients able to maintain >5kg weight loss at 12 months. Self-referral to commercial agencies, by individuals with relatively low BMI and few medical complications is a reasonable first step. For more severely obese individuals (e.g. BMI >35kg/m^2) requiring more medically complicated care, evidence is largely lacking for these services, but the community-based Counterweight Programme is effective and cost-effective in maintaining weight loss

>5kg up to 2 years for 30-35% of attenders. For more complicated and resistant obesity, referral to a secondary care-based service can generate short-term weight loss, but 12 months and longer data are unavailable. Newer services are in development and the primary-care based Counterweight Low Energy Liquid Diet programme has shown >15kg weight loss, maintained at 12 months for 33% of all patients and 44% of those followed up at 12months[19]. These options should all be considered, with available pharmacotherapy when indicated, before referral for bariatric surgery.

Conflicts of Interest statement

Louise McCombie is an employee and shareholder of Counterweight Ltd.

Acknowledgements and author contributions

LMcC carried out the modified systematic review. ML, DH & LMcC subsequently prepared the final manuscript.

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Table 1 - Primary Care Counterweight & Weight Watchers

	Counterweight	**Weight Watchers**
Programme Summary	Formed in 2000. Delivery by primary care and pharmacy support staff. Training and mentoring provided by trained Counterweight detitians/nutritionists.	Formed in 1963. Coverage in 30 countries. Group delivery, by non-health-professional counsellor
Modalities	Diet and physical activity lifestyle changes underpinned by behavioural therapy	Diet, behaviour & exercise advice. On line support
Target/ success criteria	>5% weight loss and maintenance at 12m	BMI normalisation
Visits/attendances	9 visits over 12 months (publication outcomes mean contacts = 8 in 12m)	Weekly (RCT cites 36 visits in 12m)
Published	2008	2011
Study type	Realistic single sample ITT analysis	RCT
Patients recruited (intervention) % completing 3 months % completing 12 months	1906 55% 45%	377 (UK only data ~120) - 61%
Baseline characteristics: a) Age (mean) b) Sex (% female) c) Mean BMI kg/m^2 d) % BMI>40 e) % diabetic f) Socioeconomic s g) Exclusions	 a) 49 b) 75% c) 37 d) 25% e)14% f) 36% from high deprivation g) none stated	 a) 46 b) 88% c) 31 d) 0 (upper BMI = 35kg/$m^{2)}$ e) 6% f) not stated g) multiple
3m weight change (completers) a) Mean loss (kg) b) % with >5%/5kg	 a) 3.34kg b) 26%	 a) - b)-
12m weight change (completers) a) Mean loss (kg) b) % with >5%/5kg c) ITT >5%	 a) 3.0kg b) 31% c) 13.9	 a) 6.6kg b)60% c)46%

Table 2. Lighten Up Study Arms (100 patients offered randomisation to each arm)

	Weight Watchers	**Slimming World**	**Rosemary Conley**	**NHs Size Down**	**General Practice**	**Pharmacy**	**Choice**	**Minimal Intervention Comparator**
Patients accepting recruitment option	91	87	84	74	88	73	95	67
% complete @ 3m*	66	63	64	57	21	42	68	43
% complete @12m*	74	57	67	74	41	44	65	86
Base char (alloc'd): a) Age (mean) b) Sex (% F) c) Mean BMI kg/m^2 d) % BMI>40 e) % diabetic f) Mean IMD g) Exclusions	a) 50.7 b) 72 c) 33.9 d) 8 e) NS f) 31 g) NS	a) 48.8 b) 65 c) 33.8 d) 5 e) NS f) 33.3 g) NS	a) 49.8 b) 69 c) 33.3 d) 4 e) NS f) 35.8 g) NS	a) 48.7 b) 64 c) 33.8 d) 5 e) NS f) 32.5 g) NS	a) 50.5 b) 77 c) 33.1 d) 2 e) NS f) 32.2 g) NS	a) 48.9 b) 81 c) 33.4 d) 3 e) NS f) 35.1 g) NS	a) 47.4 b) 70 c) 33.4 d) 4 e) NS f) 31.7 g) NS	a) 49.7 b) 75 c) 33.9 d) 6 e) NS f) 30.5 g) NS
3m weight change (completers) Mean loss (kg) % with >5% (ITT)	5.15 46.0	4.25 35.0	5.29 42.0	3.22 18.0	2.17 15.7	2.8 21.4	3.81 35.0	2.96 22.0
12m weight change (completers) Mean loss (kg) % with >5% (ITT)	4.4 31.0	3.1 21.0	3.3 26.0	3.7 21.0	1.3 15.7	1.2 14.3	2.9 28.0	1.1 17.0

*****only actual weights at follow up rather than self reported

Table 3: Selecting Weight Management Solutions

When deciding on suitable solutions for weight management, published programmes should be considered with the following points derived from SIGN 2010 and NICE 2006.

1.	The representativeness of the study population, or specific sector swerved
2.	Only robust measures of outcome should be accepted i.e. measured not self-reported
3.	Weight loss results can be assessed at 3-6 months, but need to be supported by effective weight maintenance with 12-24 month data
4.	Consider differences in baseline characteristics in particular data on sex distribution, social deprivation, and prevalence of co-morbidities.
5.	Programme uptake and retention should be considered, presenting ITT data.
6.	The degree of programme flexibility and availability of patient choice
7.	Practical details of interventions are required to enable there repetition.
8.	Economic analysis and long term health outcomes, or projected outcomes
9.	Appropriateness of stated weight loss targets to patient characteristics, e.g. presence of medical complications