

Weight loss from three commercial providers of NHS primary care slimming on referral in North Somerset: service evaluation

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ABSTRACT

Background The aim of this study was to analyse the effect of provider, gender and obesity class on outcomes of National Health Service (NHS) slimming on referral.

Methods Service evaluation in 12 UK general practices. Obese patients aged ≥ 16 were referred for 12 sessions to one of three commercial providers. Outcomes at 12 weeks were attendance, BMI, total and percentage weight loss, 5% and 5 kg weight loss and comparison across providers. Linear and multiple regression analyses were used, adjusting for confounders.

Results One thousand four hundred and forty patients were referred; 1047 receiving vouchers and 880 attending at least one session. The mean weight change was -4.8 kg (95% CI: -5.1 to -4.5) and the percentage bodyweight loss was -4.6% (standard deviation: 3.7). Weight Watchers patients lost more weight [-1.15 kg (95% confidence interval, CI: -1.25 , -1.04), $P < 0.001$] and were more likely to lose 5% bodyweight [odds ratio: 1.81 (95% CI: 1.78, 1.83), $P < 0.001$] than those attending the provider with the least weight loss.

Conclusions NHS slimming on referral can successfully achieve short-term weight loss. Patients attending Weight Watchers were most likely to lose weight than those attending other providers.

Introduction

The prevalence of obesity in England has increased in recent decades, so overweight is now the norm for adults¹ and the trend has remained upward. A recent projection is more optimistic, suggesting a levelling off of obesity.² National data show higher obesity prevalence in women is particularly related to deprivation and low income.³

The first steps in managing obesity are in primary care and the community. An uncontrolled trial of the Counterweight primary care programme showed promising results,^{4–6} but a cluster randomized trial of a training programme to improve obesity management in general practice did not result in improved weight loss in patients.⁷ A systematic review of the long-term effects of obesity found that orlistat was beneficial for the treatment of obese adults.⁸ A recent randomized controlled trial (RCT) found that commercial providers achieved significantly greater weight loss than primary care and pharmacy programmes.⁹

NICE guidance encourages National Health Service (NHS) organizations to work with commercial weight management providers that use best practice¹⁰ and studies show that attendance at a commercial provider can lead to clinically useful weight loss.^{9,11–16} Although there are a number of commercial providers offering NHS referral schemes, there is a lack of published information about the potential differences in outcomes between providers of these schemes.

A general practice (GP) slimming on referral pilot was established in North Somerset to increase weight loss in obese patients. The pilot was evaluated to inform commissioners on a roll-out of slimming on referral. The aim of this study is to determine whether there is a difference in

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weight loss and cost outcomes between different providers and whether obesity class affects weight loss.

Methods

This study is an observational, non-randomized evaluation of a pilot NHS slimming on referral scheme in 12 GP surgeries in England. GPs and practice nurses referred eligible obese patients to the scheme. Patients were offered 12 free weekly sessions at one of three commercial providers: Weight Watchers, Slimming World or Rosemary Conley Diet and Fitness Clubs (Rosemary Conley).

All providers used group sessions lasting 60–90 min allowing for brief one-to-one support during weighing. Patients received information plus optional support via telephone or websites. Weight Watchers and Rosemary Conley aim for a set weight loss while Slimming World sets individual weight loss goals. All providers encourage a balanced diet and increased physical activity and Rosemary Conley includes an optional 45 min exercise class (see online Supplementary data).

Clinicians decided locally which patients would be offered a referral to the scheme. Patients received information about all providers and had free choice of provider and sessions. Patients indicated their choice of provider on a consent form returned to NHS North Somerset. This was matched to the clinical referral form and the patient sent pre-paid vouchers for their chosen provider.

Eligibility criteria were developed in conjunction with primary care clinicians and included obese patients [body mass index (BMI) ≥ 30] with either a raised waist measurement (>94 cm for men or >80 cm for women), or one or more co-morbidities, or another reason stated by the clinician. Patients were also required to be aged over 16, ready to lose weight and must not have attended a slimming club in the previous 6 months. Some patients with BMI <30 were referred by clinicians under the ‘or another reason stated by the clinician’ option in the eligibility criteria. All patients were included in the evaluation.

Statistical methods

All referrals received by NHS North Somerset between December 2007 and May 2010 were included in the analysis. Providers weighed patients at each session and recorded attendance. This was a service evaluation; therefore, ethics approval was not needed. Written consent from patients was obtained to allow use, storage and transfer of personal data for providers and NHS North Somerset.

Referral information received from practices was combined with weight loss information from providers. Weight

measures for the first visit (usually before intervention started) were used as baseline. If patients did not attend all sessions, their last available weight was used. Patients were not followed-up beyond 12 sessions. Where patients were referred more than once, only the first referral was included. Due to data recording changes at Rosemary Conley some end dates for referrals before 2009 had to be imputed based on attendance records and start dates and some data were missing. Where data were missing the total number of records used for the analysis is specified in the relevant tables. The data analysis was performed using SPSS/PASW v. 18.0.2 and STATA version 10.0.

The outcomes of change in BMI, weight change and percentage weight loss were compared across the providers at 12 weeks adjusting for gender, age, baseline BMI, deprivation and clustering using linear regression analysis. Multiple logistic regression analysis was used to calculate an odds ratio for how much more likely patients were to lose 5 kg or 5% of weight in different providers, adjusting for the same confounders. The analysis was repeated for those who were obese (because a small number of patients had a BMI <30) and for completers (patients attending at least 80% sessions). The outcomes for all obese patients were compared by obesity class.

Value for money was assessed from a commissioner’s viewpoint by dividing overall voucher costs per provider by the absolute and relative weight losses for attenders. The cost of vouchers changed during the pilot; therefore, average costs across the period were used.

Results

Baseline profile

Figure 1 shows the basic demographic profile and outcomes of referred patients. Fewer men were referred ($n = 265$, 18.5%) and men were also less likely to engage (i.e. return their consent form and receive vouchers) than women [56.6% ($n = 115$) men and 77.5% ($n = 263$) women engaged, respectively]. There was little difference in the attendance rate or completion rate by gender. Patients attending Weight Watchers were more likely to complete their course than those attending other providers [56.0% ($n = 232$) Weight Watchers patients completed compared with 44.8% ($n = 64$) Rosemary Conley and 36.2% ($n = 181$) Slimming World patients].

Attenders were split almost evenly among obesity classes (Class I = BMI of 30.0–34.9; Class II = BMI of 35.0–39.9; Class III = BMI of ≥ 40). Patients in Class III were more likely to complete their sessions. In spite of the eligibility

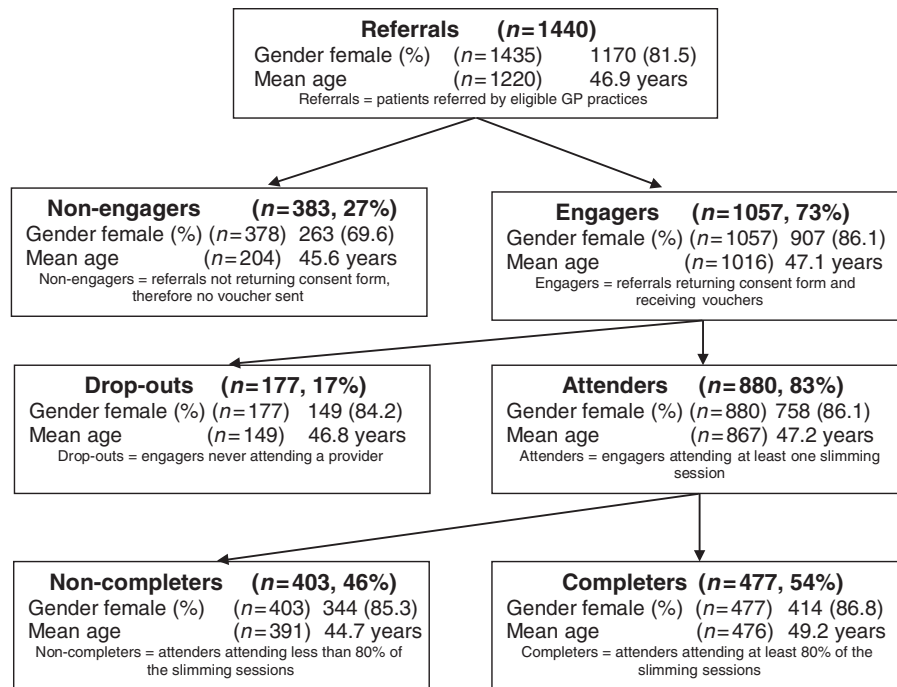


Fig. 1 Profile by attendance.

criteria, a small number of overweight patients attended ($n = 34$, 3.9%) and these patients were included in the analysis.

Table 1 shows the numbers of patients choosing each of the providers. Rosemary Conley was the least popular choice. Slimming World attracted a higher proportion of men (16.8% attenders compared with an average of 11.4% for other providers). There were no differences between providers in the baseline mean start weight, start BMI or age of attenders. There were differences by obesity class, with Slimming World and Rosemary Conley having a similar proportion of attenders in each of the three classes, whilst Weight Watchers had a higher proportion of attenders in Class I [36.0% ($n = 122$) compared with Slimming World's 32.2% ($n = 127$) and Rosemary Conley's 32.3 ($n = 40$)] and Class III [31.6% ($n = 107$) compared with 27.1% ($n = 107$) for Slimming World and 27.4% ($n = 34$) for Rosemary Conley]. The analysis of outcome data showed considerable difference between the providers.

Overall outcomes

Outcomes by provider and overall are shown in Table 1. The mean weight change was -4.8 kg (CI: 95%: -5.1 to -4.5) and the mean percentage bodyweight loss was -4.6% [standard deviation (SD): 3.7]. Completion of $\geq 80\%$ of sessions had a positive effect on target achievement of either 5 kg weight loss or 5% loss in bodyweight,

with 63.5% ($n = 303$) of completers achieving target compared with 21.1% ($n = 85$) of non-completers. Completers also showed a markedly higher weight loss than non-completers (-6.4 kg and -6.1% compared with -2.8 kg and -2.7%) (Table 2).

Obesity class and gender

There was evidence that patients in obesity classes II and III had greater changes in BMI and weight compared with Class I, with the greatest difference being for those in Class III (Table 3). Patients in Class III lost -0.67 units of BMI and -1.72 kg more than those in Class I. However, there was no evidence of a difference in the percentage weight loss across the classes.

Results show that patients in Classes II and III were more likely to lose at least 5 kg of weight than those in Class I, again with it being more likely for those in Class III, but there was no evidence of a difference in 5% weight loss across the groups.

In general, there were no differences in outcomes by gender, although men were more likely to lose 5 kg than women.

Comparison of outcomes by provider

Patients attending Weight Watchers showed greatest changes in both kilograms and percentage bodyweight lost and also had the highest proportion of patients achieving a loss of 5 kg or 5% bodyweight.

Table 1 Baseline profile, attendance and outcome by provider (attenders, $n = 880$)

	<i>Slimming World</i>	<i>Weight Watchers</i>	<i>Rosemary Conley</i>	<i>Overall</i>
Number engaged (% of total engaged)	500 (39.8)	414 (33.0)	143 (11.4)	1057
Number attended (%)	398 (79.6)	339 (81.2)	143 (100.0)	880 (83.3)
Number completed (%)	181 (36.2)	232 (56.0)	64 (44.8)	477 (54.2)
Mean start weight (SD)	104.7 (19.8)	104.3 (19.8)	100.6 (16.8)	104.0 (19.4)
Mean start BMI (SD)	37.7 (5.8)	37.9 (6.2)	37.6 (5.7)	37.8 (6.0)
Mean age (SD)	47.7 (14.5)	46.8 (15.0)	46.7 (13.5)	47.2 (14.6)
Overweight (BMI: 25–29.9) (%) ^a	17 (4.3)	10 (2.9)	7 (5.6)	34 (4.0)
Obesity class I (BMI: 30–34.9) (%) ^a	127 (32.2)	122 (36.0)	40 (32.3)	289 (33.7)
Obesity class II (BMI: 35–39.9) (%) ^a	144 (36.5)	100 (29.5)	43 (34.7)	287 (33.4)
Obesity class III (BMI ≥ 40) (%) ^a	107 (27.1)	107 (31.6)	34 (27.4)	248 (28.9)
Gender (% female)	331 (83.2)	300 (88.5)	127 (88.8)	758 (86.1)
Mean sessions attended	8.3	9.6	9.0	8.9
Mean weight change (kg) (95% CI)	−4.2 (−4.6 to −3.9)	−5.4 (−5.8 to −4.9)	−5.0 (−5.7 to −4.3)	−4.8 (−5.1 to −4.5)
Mean weight change (%) (SD)	−4.0 (3.3)	−5.1 (3.9)	−4.9 (3.7)	−4.6 (3.7)
Number losing 5 kg or more (%)	159 (37.8)	172 (50.7)	57 (39.9)	388 (44.1)
Number losing 5% bodyweight or more (%)	143 (35.9)	171 (50.4)	54 (37.8)	368 (41.8)
Mean change in BMI units (95% CI)	−1.5 (−1.7 to −1.4)	−2.0 (−2.1 to −1.8)	−1.9 (−2.1 to −1.6)	−1.7 (−1.8 to −1.7)
Cost per kg weight lost	£16.46	£12.70	£15.84	£14.72
Cost per % weight change	£17.24	£13.28	£16.09	£15.33

^aBMI measured at start of slimming attempt.

Table 2 Outcome by attendance

	<i>Attenders (n = 880)</i>		<i>Non-completers (n = 403)</i>		<i>Completers (n = 477)</i>	
	n	Value	n	Value	n	Value
Mean start weight (kg)	863	104.0	386	103.4	477	104.4
Mean start BMI	858	37.8	384	37.4	474	38.1
Mean number sessions attended	845	8.9	369	5.5	476	11.5
Overweight (BMI 25–29.9) (%) ^a	858	34 (4.0)	384	20 (5.2)	474	14 (3.0)
Obesity class I (BMI: 30–34.9) (%) ^a	858	289 (33.7)	384	125 (32.6)	474	164 (34.6)
Obesity class II (BMI: 35–39.9) (%) ^a	858	287 (33.4)	384	142 (37.0)	474	145 (30.6)
Obesity class III (BMI: ≥ 40) (%) ^a	858	248 (28.9)	384	97 (25.3)	474	151 (31.9)
Achieved 5 kg weight loss (%)	880	388 (44.1)	403	85 (21.1)	477	303 (63.5)
Achieved 5% weight loss (%)	880	368 (41.8)	403	75 (18.6)	477	293 (61.4)
Mean kg weight change	859	−4.8	383	−2.8	476	−6.4
Mean % weight change	859	−4.6	383	−2.7	476	−6.1

^aBMI measured at start of slimming attempt.

Outcomes for providers were compared using linear regression analysis; in each comparison Weight Watchers and Rosemary Conley were compared with Slimming World (see Table 3). The results show patients attending Weight Watchers and Rosemary Conley had greater changes in BMI, kilograms lost and percentage bodyweight loss than those attending Slimming World. On average, Weight Watchers

patients lost −0.41 units of BMI, −1.15 kg of weight and −1.09% of weight more than those attending Slimming World. The changes were greater for Weight Watchers than Rosemary Conley, but they were not statistically different.

Patients attending Weight Watchers or Rosemary Conley were more likely to achieve 5 kg or 5% weight loss than those attending Slimming World. On average, Weight

Table 3 Linear and logistic regression of outcomes comparing providers and obesity class

	Linear regression of BMI and weight outcomes			Logistic regression for weight outcomes	
	Change in BMI (95% CI), P value	Weight change in kg (95% CI), P value	% weight loss (95% CI), P value	5 kg weight loss OR (95% CI), P value	5% weight loss OR, (95% CI), P value
Provider ^{a,b}					
Slimming World	Reference	Reference	Reference	Reference	Reference
Weight Watchers	-0.41 (-0.43, -0.39), P < 0.001	-1.15 (-1.25, -1.04), P < 0.001	-1.09 (-1.16, -1.01), P < 0.001	1.54 (1.51, 1.58), P < 0.001	1.81 (1.78, 1.83), P < 0.001
Rosemary Conley	-0.38 (-0.40, -0.36), P < 0.001	-0.91 (-1.01, -0.81), P = 0.001	-0.94 (-1.00, -0.87), P < 0.001	1.34 (1.32, 1.37), P < 0.001	1.47 (1.41, 1.44), P < 0.001
Obesity class ^c					
Obesity class I	Reference	Reference	Reference	Reference	Reference
Obesity class II	-0.17 (-0.34, -0.006), P = 0.05	-0.36 (-0.79, 0.07), P = 0.07	0.15 (-0.25, 0.54), P = 0.25	1.29 (1.11, 1.50), P = 0.001	0.98 (0.89, 1.08), P = 0.74
Obesity class III	-0.67 (-1.15, 1.86), P = 0.03	-1.72 (-2.80, 0.65), P = 0.02	-0.17 (-1.32, 0.98), P = 0.59	1.90 (1.68, 2.15), P < 0.001	1.06 (0.92, 1.22), P = 0.46
Gender ^d					
Males	Reference	Reference	Reference	Reference	Reference
Females	0.26 (-0.37, 0.88), P = 0.22	1.67 (-0.66, 4.01), P = 0.09	0.48 (-1.09, 2.04), P = 0.32	0.66 (0.46, 0.96), P = 0.03	0.87 (0.54, 1.41), P = 0.58

^aLinear regression for all patients who attended adjusted for gender, age, baseline BMI, deprivation and clustering ($n = 806$).

^bLogistic regression for all patients who attended adjusted for gender, age, baseline BMI, deprivation and clustering ($n = 810$).

^cFor all patients who attended adjusted for gender, age, provider, deprivation and clustering ($n = 791$).

^dFor all patients who attended adjusted for age, baseline BMI, deprivation and clustering ($n = 806$).

Watchers patients were 54% more likely to lose 5 kg of weight and 81% more likely to lose 5% of weight than those attending Slimming World. There was evidence that this was greater in Weight Watchers than Rosemary Conley.

The analysis was repeated for obese patients (excluding those with a BMI <30) but this did not affect the results. The analysis was also repeated for completers. Similar patterns were seen for a difference by provider for completers, with the greatest change seen for Weight Watchers.

The analysis of cost data showed that across all measures Weight Watchers provided the best value for money (see Table 1), showing, for example (using an average voucher cost), a cost per percentage bodyweight lost of £13.28 compared with £17.24 for Slimming World and £16.09 for Rosemary Conley.

Discussion

Main finding of this study

Patients attending NHS slimming on referral can successfully achieve short-term weight loss. Patients attending Weight

Watchers and Rosemary Conley had greater changes in BMI, weight loss and percentage weight loss than those attending Slimming World. Changes were greater for Weight Watchers than Rosemary Conley, although not statistically different. Our results show patients attending Weight Watchers and Rosemary Conley were also more likely to achieve 5 kg or 5% weight loss than those attending Slimming World and this was more likely in Weight Watchers than Rosemary Conley. The study found Weight Watchers provided a greater value for money than other providers with lower costs per kilogram lost, per percentage bodyweight lost and per BMI point change.

Results from the study show that patients in obesity classes II and III were more likely to lose at least 5 kg of weight than those in Class I. Therefore, patients with a greater start BMI had more success in losing weight; though this is unsurprising because their start weight was higher. However, there were no differences in the proportion of weight loss by start BMI. It is likely the success of patients with higher BMIs in losing weight was at least partly due to the fact that more of them completed $\geq 80\%$ sessions.

The study showed that men were more likely to lose 5 kg of weight than women, again this is likely to be related to men having on average a higher weight at baseline.

Of the three providers, Rosemary Conley was the least popular choice. It is not possible to tell how much of this was purely patient choice and how much the influence of the referrer's advice. Market share and public awareness of the providers are also likely to have had an effect.

The fact that patients attending Weight Watchers showed the greatest change in weight and were more likely to achieve a loss of 5 kg or 5% bodyweight is likely to be due to their higher completion rate.

What is already known on this topic

An RCT of four commercial weight loss programmes in the UK showed that clinically useful weight loss can be achieved in adults following commercial programmes with little input from a health professional.¹¹

Primary care schemes to refer patients to commercial providers have been utilized by more than half English PCTs.^{12,13} A recent RCT⁹ comparing seven weight reduction programmes provided in primary care and the community for 12 weeks, including the three providers in our study, with a control group showed commercial providers achieved significantly greater weight loss than primary care and pharmacy programmes. A randomized study on primary care referrals to either standard care or Weight Watchers in Australia, Germany and the UK found that over 12 months those attending Weight Watchers lost twice as much weight.¹⁷

Outcomes in our study were broadly similar to results shown in audits of patients referred by the NHS to two of the providers (Weight Watchers and Slimming World).^{12,13} However, weight loss outcomes in our study were slightly better than those in the audits. For example, the average percentage weight loss in our study was -4.6% compared with -3.6% for Weight Watchers and -4.0% for Slimming World. Further, 42% of North Somerset patients starting a course achieved the $\geq 5\%$ weight loss expected to have clinical benefits,⁹ compared with 38% and 36% in the Weight Watchers and Slimming World audits, respectively, although two smaller Slimming World studies showed higher percentages achieving 5% weight loss.^{16,18} A similar pattern was seen when comparing outcomes for completers: North Somerset patients were more likely to achieve $\geq 5\%$ loss (61% achieved target compared with 57% for Weight Watchers and 55% for Slimming World) and an average percent loss for North Somerset completers was -6.1% compared with -5.6% and -5.5% for Weight Watchers and Slimming World completers, respectively.

A recent evaluation of an NHS commissioned commercial weight loss programme in Dorset¹⁹ using two of the providers in our study (Slimming World and Weight Watchers) showed similar results for weight loss, the proportion of patients achieving 5% weight loss and average percent loss for completers, all of which were slightly higher than those seen in the provider audits. However, the Dorset study did not find a significant difference between providers in the percentage of patients achieving 5% weight loss.

The mean start BMI of patients in our study was greater than that in the larger audits or the Dorset study (37.8 compared with 35.1 in Weight Watchers, 36.8 in Slimming World and 36.8 in Dorset). Our study showed patients with a higher start BMI were more likely to lose weight and had a greater weight change, so this may explain some of the differences. Both larger audits also found that a higher start BMI led to a greater weight loss although, in both cases, the absolute difference was small.

In spite of the fact that obesity prevalence in men and women is similar, only 18.5% ($n = 265$) of referrals to the North Somerset scheme were for men. This is, however, higher than the proportion of men seen in both the Weight Watchers and Slimming World audits (10.5% and 10.7%, respectively). In order to ensure equity of access, further research is needed to increase referral rates for men and to establish why men do not engage with these widely available NHS funded slimming on referral schemes.

What this study adds

Our study demonstrated that referrals from primary care practitioners into a pragmatically delivered weight management scheme led to a clinically significant loss of 5 kg in bodyweight for almost half of the people who attended. Results showed that although the baseline profile of patients attending the three providers was similar, there were differences by provider in the weight loss outcomes of change in BMI, kilograms lost and percentage bodyweight lost. These differences were great enough to show that one provider, Weight Watchers, demonstrated better value for money than the other two.

Limitations of this study

There are a number of limitations to this study. The biggest is that the intervention was not a randomized trial and did not include a control group. A further limitation is long-term outcome data are not available, this would be useful to show whether the weight change is maintained. Cost-effectiveness data are not available, and the analysis of cost per percentage bodyweight lost is not based on data from an RCT. Further research is needed to assess the long-term

clinical outcomes and the cost-effectiveness of PCT referral to commercial weight management providers.

The study does not offer insight into why patients did not engage, attend or complete, neither is information available on how practices decided to make referrals or how they promoted the scheme to patients. We are investigating this further.

In most cases, height was self-reported rather than measured. However, height would not change during the programme and self-reported height would not affect the primary outcome which was weight loss.

The pilot took place in a relatively small geographical area meaning only a small number of group leaders from any provider was involved. This may explain the greater weight loss seen in our study compared with the larger audits. It is possible that the group leader has a significant effect on weight loss outcomes, although we cannot tell from this study what the extent of the effect might be.

Conclusion

Patients referred by a primary care practitioner to an NHS funded scheme delivered by commercial providers successfully achieved short-term weight loss of 5 kg or 5% in body-weight. There was a difference in weight loss outcomes by provider and patients attending Weight Watchers lost more weight than those attending the other providers. An RCT is required to provide further evidence of differences between providers, long-term weight loss and cost-effectiveness.

Supplementary data

Supplementary data are available at the *Journal of Public Health* online.

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