Improving management of obesity in primary care: cluster randomised trial

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Abstract

Objective To evaluate a training programme intended to improve the management of obesity, delivered to general practice teams.
Design Cluster randomised trial.
Setting Northern and Yorkshire region of England
Participants 44 general practices invited consecutively attending obese adults to participate; 843 patients attended for collection of baseline data and were subsequently randomised.
Intervention 4.5 hour training programme promoting an obesity management model.
Main outcome measures Difference in weight between patients in intervention and control groups at 12 months (main outcome measure) and at 3 months and 18 months; change in practitioners' knowledge and behaviour in obesity management consultations.
Results Twelve months after training the patients in the intervention group were 1 (95% confidence interval −1.9 to 3.9) kg heavier than controls (P = 0.5). Some evidence indicated that practitioners' knowledge had improved. Some aspects of the management model, including recording weight, target weight, and dietary targets, occurred more frequently in intervention practices after the training, but in absolute terms levels of implementation were low.
Conclusion A training package promoting a brief, prescriptive approach to the treatment of obesity through lifestyle modification, intended to be incorporated into routine clinical practice, did not ultimately affect the weight of this motivated and at risk cohort of patients.

Introduction

Obesity is now a major public health problem across the world. In the United Kingdom, the role of primary care in managing obesity is linked to achieving targets for the national service framework for coronary heart disease.[1] A survey of general practitioners and practice nurses by the National Audit Office identified several factors that they felt would assist them in the treatment of obese patients, including more information on effective interventions, availability of better materials for advising patients, and better training for staff.[2] A systematic review of interventions to improve health professionals' management of obesity in 1999 found little rigorous research to inform evidence based practice.[3]

We have evaluated, in a cluster randomised trial, a training programme (the intervention) promoting the evidence based treatment of obesity, delivered to general practice teams (unit of randomisation). The primary outcome measure in this study was difference in patients' weight, but we also measured difference in practitioners' knowledge and behaviour in weight management consultations.

Methods

The method has been reported in detail elsewhere.[4] See bmj.com for figures showing the flow of practices and patients through the trial.

Recruitment

We recruited practices from four health authority areas in the Northern and Yorkshire region of England during a four month period. We invited all 161 practices in selected primary care groups to participate, of which we randomised 44 (without financial incentives): 12 in North Durham, 16 in Leeds, 10 in Newcastle, and 6 in Scarborough. All general practitioners and practice nurses in the 44 practices (a total of 245 staff) were eligible to participate. In a previous trial,[5] staff working in primary care but between practices (for example, district nurses and health visitors) were a source of contamination, so we asked for these staff to be excluded from the study.

The study protocol required practice staff to invite consecutively attending obese adults (body mass index ≥ 30 kg/m^2) aged 16 to 64 years to participate in the trial over a defined six month recruitment period. The recruitment strategy was extended to include assistance from study personnel and mail shots. Towards the end of the recruitment period, a researcher accessed the list of patients who had been recruited in the early stages and invited them to attend for collection of baseline data, so that all patients had been weighed within two months of randomisation. All practices were randomised simultaneously in June 2000.

Randomisation

Raab and Butcher did the randomisation, using the method they described in 2001, in which patient level

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characteristics (body mass index at recruitment, age, and sex) and practice level characteristics (practice size, socioeconomic status, and existence of dietetic service) were used to inform randomisation.[6]

Intervention

At the start of the intervention period, we provided all practices with a list of their patients who had entered the trial. The educational strategy was based on a previous nutrition training programme.[5] We delivered three 90 minute sessions, intended to be delivered at intervals of no less than one week and no more than two weeks apart, to the 22 intervention practices. We asked all general practitioners and practice nurses to attend all three sessions. Four dietitians were trained in the standardised delivery of the training and then delivered the programme to small group, multidisciplinary general practice teams. The programme promoted a model approach to obesity treatment, which incorporated best evidence and was perceived to be brief enough that primary care staff could deliver it to their patients. The training covered information on the clinical benefit of weight loss and effective treatment options, including reduction of dietary energy intake, increased physical activity, and pharmaceutical intervention.

The model of obesity management entailed practitioners seeing patients regularly (about every two weeks) until they had lost 10% of their original body weight and then less regularly (about every one to two months) for maintenance of weight over a sustained period. Current and target weight and dietary and activity targets were to be recorded in the patients' records to facilitate continuity of support across practice teams. Prescription of a moderate energy deficit diet was advocated, as recommended by the Scottish Intercollegiate Guidelines Network.[7] A "ready reckoner" was produced to allow practitioners to estimate a patient's daily energy requirement and then to calculate a daily 500 kcal (2.5 MJ) deficit. Diet sheets and supporting written resources facilitated the dietary prescription to patients. At the end of the three training sessions, practices devised individualised weight management protocols based on the model and were encouraged to implement this with patients recruited to the study. Control practices were asked to provide usual care to their patients.

Outcome measures

The primary outcome measure was difference in mean weight of patients between intervention and control practices 12 months after the intervention. We also measured difference in weight at three months and 18 months post-intervention. We measured knowledge of obesity management and self reported behaviour in obesity management consultations for all practice staff before and after the intervention. We gathered this information by using a questionnaire designed by us and field tested with staff from non-participating practices.

Process assessment

Practices had no trial specific responsibility to see patients once the training intervention had been delivered. We used process assessment to provide insight into the implementation of the weight management protocol devised during training. Researchers extracted information from the medical records of those patients still participating in the trial, in both arms, one year after the intervention. These data included whether patients had been seen about their weight and whether weight, diet, and exercise targets had been recorded as advocated in the intervention.

Sample size and analysis

We calculated that we would need 660 patients in each arm to detect a clinically important difference in weight, equivalent to 22 practices recruiting 30 patients each. We collated all data on a purposefully designed database by using Microsoft Access software. We analysed change in both continuous and categorical outcome variables by using STATA to account for both within cluster and between cluster variation. We did analyses on an intention to treat basis, where possible.

Blinding

Patients were not aware of the intervention status of their practice, and researchers collecting outcome measurements from patients were blind to the intervention status of the practices, both before and after the intervention. Double blinding was not possible in this trial, as practice staff were inevitably aware of whether or not they had been trained.

Table 1 Difference in weight and body mass index between patients from intervention and control practices

	Intervention	Control	Difference (intervention–control) (95% CI)	P value
Weight (kg)				
Three months after training (n=664)	100.4	99.8	+0.6 (–2.1 to 3.2)	0.7
12 months after training (n=565)	100.3	99.3	+1.0 (–1.9 to 3.9)	0.5
18 months after training (n=531)	100.8	99.5	+1.3 (–1.8 to 4.4)	0.4
Body mass index (kg/m^2)				
Three months after training (n=663*)	36.8	36.9	–0.2 (–1.2 to 0.8)	0.7
12 months after training (n=564*)	36.9	36.8	0 (–1.0 to 1.0)	0.96
18 months after training (n=530*)	37.1	36.9	0.1 (–1.0 to 1.1)	0.9

*Height missing from data for one patient.

Table 2 Change in practitioners' knowledge of obesity management

Question (correct response)	Odds ratio (95% CI) of providing correct response (intervention *v* control)	P value
By 1997, the prevalence of obesity in England was? (17% men, 20% women)	2.0 (1.1 to 3.5)	0.02
What rate of weight loss would you recommend for obese adults? (0.5-1 kg a week)	1.5 (0.5 to 3.9)	0.4
The recommended energy deficit for long term weight loss is? (500 kcal)	3.0 (1.6 to 5.8)	0.001
Which of the following meals has the highest fat content? (Minced meat pie, chips, and peas)	0.56 (0.3 to 1.02)	0.06
Adults trying to lose weight should be advised to eat less starchy food? (False)	1.3 (0.5 to 2.9)	0.6

Results

All 44 practices completed the trial. Training was delivered between June and November 2000. In total, 991 patients gave consent, of whom 843 (85%) attended for collection of baseline data and were subsequently randomised. Mean body mass index at baseline was 37 for patients in the intervention group (25% male) and 36.9 for patients in the control group (27% male). Table 1 shows the difference in patients' weight after the training. Twelve months after the training the patients in the intervention group were 1 (95% confidence interval – 1.9 to 3.9) kg heavier than the controls (P = 0.5).

Table 3 Difference in process outcomes between patients from intervention and control practices after training. Values are numbers (percentages) responding "Yes" unless stated otherwise

Question	Intervention	Control	Odds ratio (95% CI)	P value
Has patient been seen since end of intervention? (n=668)	317 (94)	318 (96)	0.6 (0.3 to 1.3)	0.23
Median No of times (n=626)	8	6	1.3 (1.0 to 1.6)*	0.05
Is there evidence that weight has been discussed? (n=650)	186 (57)	129 (40)	2.0 (1.3 to 3.2)	0.003
Has weight been recorded? (n=650)	197 (61)	137 (42)	2.0 (1.3 to 3.3)	0.004
Has a target weight been recorded? (n=643)	46 (14)	9 (3)	13.6 (4.2 to 44.3)	<0.001
Have dietary targets been recorded? (n=648)	48 (15)	14 (4)	4.5 (1.2 to 16.7)	0.02
Have exercise targets been recorded? (n=648)	46 (14)	25 (8)	1.9 (0.7 to 5.0)	0.2

*Estimate and confidence interval for attendance rate ratio.

Two hundred and thirty one (95%) practitioners completed the questionnaire at baseline, and 192 (83%) of these completed the post-intervention assessment. Table 2 shows the difference in knowledge levels between control and intervention practitioners after the training. The odds ratio of providing the correct response was higher for trained practices for all but one of the five questions, but only two of these reached statistical significance.

We collected process information from the medical records of 670 patients. Table 3 shows the difference in activities between intervention and control practices one year after the training intervention. Patients in trained practices consulted, on average, on two more occasions than patients in control practices in the year after the delivery of the training. Trained practices were more likely to discuss weight (odds ratio 2.0, $P = 0.003$), and the records of patients from trained practices more likely to include weight (odds ratio 2.0, $P = 0.004$), target weight (13.6, $P \leq 0.001$), and dietary targets (4.5, $P = 0.02$).

What is already known on this topic

Most obesity management in the United Kingdom takes place in primary care, but the approach is not coordinated or consistent

Evidence shows that lifestyle modification can be effective in the treatment of obesity

The Department of Health expects primary care to deliver weight management to obese patients

What this study adds

A brief training programme delivered to primary care improved practitioners' knowledge and behaviour but did not result in improved weight loss in obese patients

Implementation of the brief, prescriptive weight management model promoted in the training was low

This raises questions about the feasibility of primary care practitioners incorporating weight management into routine clinical care

Discussion

Our findings indicate that a training package promoting a brief and prescriptive approach to the treatment of obesity by using lifestyle modification, and intended to assist primary care staff incorporating such treatment into routine care, did not ultimately affect the weight of this motivated and at risk cohort of patients.

The training was well received and was based on an acceptable model applied in a previous study.[5] Practitioners' knowledge of the principles of obesity management improved, and trained practitioners were more likely to implement weight management strategies promoted in the training, but in absolute terms the level of implementation was low. Target weights were recorded for only 14% of participating patients in trained practices in the year after delivery of the training. Patients in trained practices attended only eight consultations on average in the year after the intervention. Treatment according to protocol would entail fortnightly follow up until 10% of initial body weight was lost, potentially some 20 or more consultations in the year. The low level of implementation of the obesity management model means that we cannot draw conclusions about its effectiveness.

The training programme was realistic in terms of the type of training that might be delivered to primary care teams by NHS dietitians. Obesity management is complex, and a four and a half hour training programme can only scratch the surface of important issues. Even so, several general practitioners from these motivated practices expressed misgivings about the need to devote so much time to the subject, and indeed more in-depth training for practice teams is unlikely to be feasible, set against competing educational priorities in general practice.

Several previously recognised characteristics of obesity treatment trials were evident in our study.[8] Samples are usually biased towards women, and our sample was predominately female. In addition, our sample was skewed towards more extreme obesity. Retention of participants in obesity trials is also recognised as problematic.[8] Despite the observed loss to follow up of patients, the study maintained 80% power owing to a negligible within practice correlation coefficient for the main outcome variable.

Conclusion

This training programme resulted in only limited implementation of an approach to obesity management and did not achieve improved patient weight loss. A more in-depth training programme might be more successful at changing practitioners' behaviour but is unlikely to be generalisable to most general practices in the United Kingdom. Other strategies to manage obesity in primary care urgently need to be considered and evaluated. These might include motivated and

dedicated obesity specialists placed at the level of the primary care trust, use of leisure services, and use of the commercial weight loss sector.

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Clinical course of acute infection of the upper respiratory tract in children: cohort study

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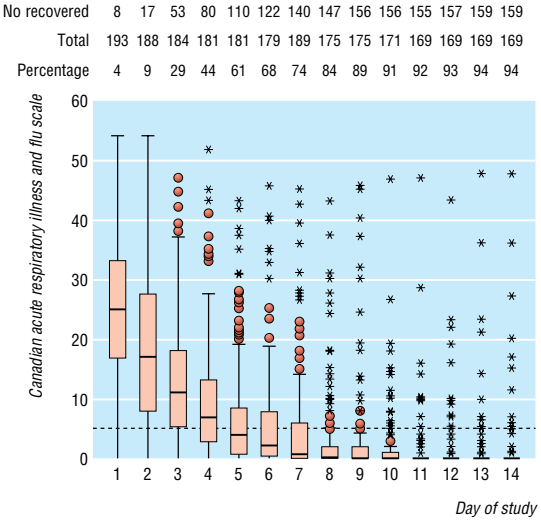
Promoting self care for children with acute viral illness is an opportunity for relieving pressure on primary care. Carers may return for a second consultation and expect antibiotic treatment if they are not given a clear idea of what to expect or if their child fails to recover as predicted.[1] We therefore set out to describe the clinical course of suspected acute viral infection of the upper respiratory tract in children who consult their general practitioner. We wanted to help clinicians to better predict the course of the condition.

Participants, methods, and results

We did a secondary analysis of a cohort from a randomised controlled trial.[2] All carers gave written consent, and older children signed a consent form when recruiting clinicians felt this was appropriate. Fifty five general practitioners in south Wales opportunistically recruited children aged between 6 months and 12 years during routine consultations into a trial of treatment for suspected acute viral infection of the upper respiratory tract. This was an acute illness affecting the upper respiratory tract probably caused, in the clinician's opinion, by a virus. Clinicians excluded children to whom they prescribed antibiotics at the initial consultation. Clinicians compared intranasal treatment with sodium cromoglicate with intranasal saline in a triple blinded manner. Because children treated with intranasal sodium cromoglicate effectively had the same clinical and statistical outcomes as children treated with intranasal saline, we examined data about the clinical course of the condition for the children as a single cohort.



Children's illness over two weeks after consulting their general practitioner with suspected acute viral infection of the upper respiratory tract. Whiskers show largest and smallest non-outlying values; circles show children that are more than 1.5 interquartile ranges from the 25th or 75th centiles (outliers); asterisks show children more than 3 interquartile ranges from the 25th and 75th centiles (extremes); broken line shows score of ≤5 (recovered)

Of the 290 recruited children, 137 (47%) were boys, the mean age was 5.2 (SD 3.39), and mean duration of illness at the time of consultation was 3.3 (2.18) days. Caregivers completed a daily diary of symptoms for up to 14 days which incorporated the 18 item Canadian