Peer reviewed article

Cognitive-behavioural treatment for weight loss in primary care: a prospective study

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Summary

Questions under study: Cognitive-behavioural treatment (CBT) is effective for weight loss in obese patients, but such programmes are difficult to implement in primary care. We assessed whether implementation of a community-based CBT weight loss programme for adults in routine care is feasible and prospectively assessed patient outcome.

Patients and methods: The weight loss programme was provided by a network of Swiss general practitioners in cooperation with a community centre for health education. We chose a five-step strategy focusing on structure of care rather than primarily addressing individual physician behaviour. A multidisciplinary core group of trained CBT instructors acted as the central element of the programme. Overweight and obese adults from the community (BMI >25 kg/m^2) were included. We used a patient perspective to report the impact on delivery of care and assessed weight change of consecutive participants prospectively with a follow-up of 12 months.

Results: Twenty-eight courses, with 16 group meetings each, were initiated over a period of 3 years. 44 of 110 network physicians referred patients to the programme. 147 of 191 study participants were monitored for one year (attrition rate: 23%). Median weight loss after 12 months for 147 completers was 4 kg (IQR: 1–7 kg; intention-to-treat analysis for 191 participants: 2 kg, IQR: 0–5 kg).

Conclusions: The programme produced a clinically meaningful weight loss in our participants, with a relatively low attrition rate. Implementation of an easily accessible CBT programme for weight loss in daily routine primary care is feasible.

Key words: obesity; behaviour therapy; primary health care; quality of health care

Introduction

Lifestyle modification programmes such as cognitive-behavioural treatment (CBT) are effective for weight loss in obese patients [1]. Alternative weight loss options include drug therapy or, for selected patients, bariatric surgery. Cognitive-behavioural treatment offers a therapeutic option with another sustainable perspective, since it aims at changing nutrition patterns. In a recent systematic review CBT resulted in moderate weight loss of 3–5 kg after 1 year, but the studies were often performed in specialised centres with selected patients [1], and it has been argued that these findings cannot be translated directly into general practice. In fact, CBT programmes for weight loss are in general provided by specialised tertiary care centres.

Obese patients, however, who often suffer from comorbidities, are normally treated by their family physician within the community setting [2]. Cognitive-behavioural treatment should ideally be located within this setting, to provide continuity of care, but family doctors are not trained to implement CBT programmes [3]. Educational approaches to overcome this limitation by addressing the knowledge, attitudes and behaviour of health professionals are not consistently effective [4]. In contrast, changes in the organisation of care have proved to be a potent measure in improving quality of patient management if the structure of care is a limiting factor [5].

We assessed whether implementation of a community-based CBT weight loss programme for adults in routine care is feasible, and evaluated patient outcome prospectively.

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Methods

Design

Prospective case series

Setting

We conducted the study in an urban network of primary care providers in Zürich, Switzerland (Zürcher Ärztegemeinschaft zmed) in cooperation with a local community centre for adult health education (Schule für Haushalt- und Lebensgestaltung, SHL, Zürich). In general, the network physicians administer treatment to their own patients in their private practice. The centre for adult health education covers a broad spectrum of health issues such as courses for nutrition counselling and healthy lifestyle. Members of the community have direct access to this centre. Prior to the study no formal cooperation existed between the physician network and the local centre for health education.

Change strategy for organisation of care

The Cochrane Effective Practice and Organisation of Care (EPOC) group describes the following approaches to improvement of clinical practice [6]: professional (such as continuing medical education), organisational (changes in the structure or delivery of health care), financial (such as changes in reimbursement), quality assurance, informatics and regulatory interventions (such as changes in medical liability). On the basis of theoretical models [5, 7, 8] we chose a change strategy focusing on structure of care (organisational intervention) rather than primarily addressing individual physician behaviour.

We chose a five-step approach (figure 1). First, we performed a modified Delphi study to evaluate relevant fields for improvement of patient management within the physician network. Improvement of care for obese patients was judged highly relevant [3].

Second, we constituted an action team that took leadership for change. The action team comprised members of the management board of the physician network, a delegate of the community centre and members of a unit for patient oriented research (Horten Centre, University Hospital of Zürich). This group coordinated project steps and was responsible for communication.

Third, we formed an interdisciplinary core group of CBT instructors. Five experienced health care professionals (family doctors with specific interest in obesity issues; nurses with experience in adult education and nutrition counselling) attended a training course at a tertiary care centre specialised in cognitive-behavioural interventions for obese persons [9]. This core group guided all the CBT sessions.

Fourth, the action team briefed all network physicians on the CBT programme with newsletters designed to heighten awareness and motivate them to enrol patients. The community was informed by newspaper announcements.

Fifth, we instituted measures for reinforcement of organisational change: regular meetings of the instructors (to encourage standardisation of the CBT programme and to enhance the efficiency of organisational issues); a hotline service (to answer network physicians' questions); running charts with two-weekly feedback of data quality (to ensure reliability of data collection); and presentation of intermediate results at internal meetings twice a year.

Patients included

We included all eligible overweight or obese adults (body mass index: >25 kg/m²; age ≥18 years), who consented to a cognitive-behavioural-oriented weight loss programme. We excluded persons with relevant mental or cognitive disorders (such as major depression), relevant eating disorders (such as extreme forms of binge eating) and status after surgery for morbid obesity. Patients gave written informed consent and the local ethics committee approved the study protocol.

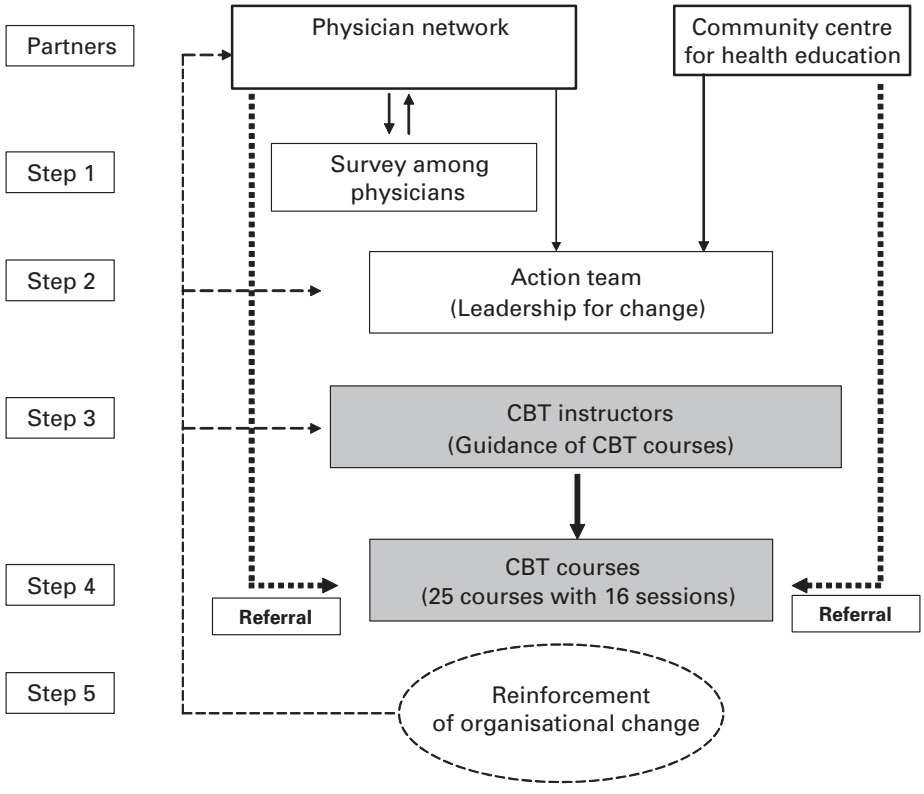

Figure 1

Change in structure of care for obese persons.
CBT: Cognitive-behavioural treatment
Stepwise approach with evaluation of physician needs (Step 1), constitution of a strategic action team (Step 2), training of CBT instructors (Step 3), referral to CBT courses (Step 4), and measures for reinforcement of change (Step 5).

Cognitive-behavioural treatment

General practitioners briefed qualifying subjects on the weight loss programme during consultations and encouraged suitable persons to participate. We instructed physicians to screen potentially eligible persons against the inclusion criteria. Inclusion as well as exclusion criteria were part of the written manual distributed to all network physicians. Consenting eligible patients entered the study.

Overweight and obese community members became aware of the programme through advertisements or by word of mouth. Participants could either contact their family physician or enrol directly in the programme by contacting the study registration at the community centre. In general, persons recruited from the community preferred the latter approach. Participants received a short screening questionnaire, were interviewed about nutrition habits and a medical history was taken.

Our CBT intervention, the BASEL programme (**B**ehandlungsprogramm **A**dipositas mit den **S**chwerpunkten **E**rnährungsverhalten und **L**ebensstiländerung [9]), was derived from the American LEARN-programme [10]. The programme covers standard behavioural strategies – including self-observation with food and activity diary, problem-solving skills, stimulus control and relapse prevention training – to modify eating patterns. Cognitive treatment elements teach patients to correct negative thoughts if they fail to achieve their goals. Increased physical activity is encouraged, but exercise sessions are not part of the programme. Sixteen structured sessions are held in small groups of 8–10 persons over 90 minutes once a week. The last (16th) group meeting is held at 4–6 months. We invited the groups to meet again at 12 months for weight re-measurement. A course fee (€165) was charged for the programme which was partly reimbursed by health insurance for persons with obesity-related comorbidities or a BMI of at least 30 kg/m^2.

Data collection and follow-up

Patient weight loss was studied to assess the effect of implementing the CBT programme. In a before-after approach we collected data in a prospective case series of consecutive participants up to 1 year of follow-up. Weight change was the primary outcome. In addition, we assessed self-reported physical activity [11] and quality of life (Medical Outcome Study, MOS, 36-item short-form health survey [12]). To improve quality of instructor-based measurements we performed regular training sessions and distributed written manuals. Self-reported weight estimates were not accepted for our prospective data collection. As recruitment for the one-year meeting was sometimes time-consuming, we started with written invitations in 2004. For participants who did not join these meetings a study nurse carried out home visits with weight measurement after receiving consent. We stopped this approach in 2005 due to limited resources.

Statistical analysis

To describe the data we used medians (with interquartile ranges, IQR, 25^{th} to 75^{th} percentile) for continuous variables and proportions for categorical data.

We report data for weight change after 1 year using two approaches. In the completers analysis we included all participants with weight data after 1 year of follow-up. In the conservative intention-to-treat (ITT) analysis we replaced missing values at 1 year by baseline weight, thus carrying forward baseline weight.

Data analysis was done with SPSS for Windows, version 12.0.1 (SPSS Inc., Chicago, Illinois).

Results

Process of organisational change

We distributed the results of the Delphi study through the physician network to promote discussion on options for weight management in daily routine. Introduction of an easily accessible CBT programme for weight loss was given highest priority. The preparation period lasted eight months (July 2002 to February 2003) and included planning and communication of the programme by the action team, training of instructors, pilot groups and design of evaluation. Restriction of data collection to a minimum, to make measurements feasible for daily routine, was a challenging task.

From March 2003 to March 2006 28 CBT courses with 261 participants took place. Courses were held either in a physician practice (n = 11 groups) or in the community centre (n = 17 groups). Participants were referred by 44 of the 110 family doctors of the physician network. CBT instructors judged their experiences during the group sessions as very helpful for future patient management. Issues discussed in the regular team meetings concerned educational aspects during CBT sessions (such as measures to enhance participant commitment), additional support for participants after the regular programme (e.g. offering contact to self-help groups) and organisational issues. At participants' request we offered up to three additional support meetings with the instructor from 9–12 months of follow-up.

The intensity of our information campaign had to be adapted as necessary. Six newsletters were distributed within the physician network over 18 months. In addition, the programme was introduced at the annual network meeting and by informal contacts among network members. Newspaper announcements for the community appeared twice a year throughout the study period. However, referrals to the CBT groups decreased as active information on the programme within the network was reduced. Thus, at the end of the three-year period we reinforced our information measures.

Data feedback loops were judged very helpful. CBT instructors used them for patient counselling as reliable information on achievable weight loss and for organisational issues. For the action team they served as a management tool. Networking with other community services for weight management (patient self-help groups, nutritional psychologists, Swiss obesity foundation) emerged during the public information meetings and increased the spectrum of formal and informal partners for patient care.

Figure 2
Study flow.

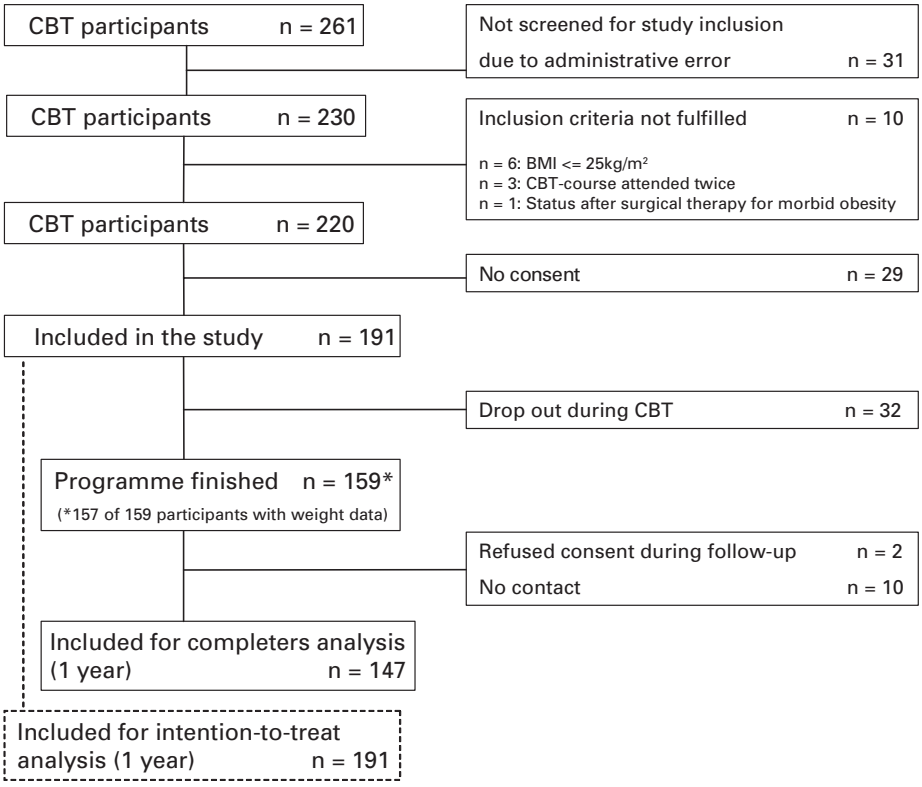

Table 1
Baseline characteristics of participants.*

		All participants† (n = 191)	Physician practices (n = 91)	Community centre (n =100)	Completers‡ (n=147)	Dropouts (n=44)
Age	Years, median (Interquartile range, IQR)	54 (45–63)	54 (42–65)	52 (45–63)	54 (46-64)	50 (41-60)
Sex	Female	157 (82)	68 (75)	89 (89)	120 (82)	37 (84)
Weight history	Body weight at baseline, median (IQR), kg	90 (81–102)	96 (87–110)	86 (78–96)	90 (81-100)	95 (81-110)
	Body weight 1 year before baseline, median (IQR), kg	87 (78–98)	92 (83–106)	84 (75–94)	86 (77-96)	92 (79-109)
	BMI at baseline, median (IQR), m^2/kg	33 (30–37)	35 (32–39)	31 (28–35)	33 (30-36)	34 (31-38)
	BMI 1 year before baseline, median (IQR), m^2/kg	31 (29–35)	33 (30–37)	30 (28–33)	31 (28-34)	33 (30-36)
Waist circumference	Women, median (IQR), cm	104 (96–110)	106 (97–116)	102 (95–109)	103 (95-109)	106 (97-118)
	Men, median (IQR), cm	119 (109–127)	119 (109–127)	112 (108-134)	118 (108-127)	119 (109-131)
Clinical features§	Smoking, current	24 (13)	11 (12)	13 (13)	16 (11)	8 (18)
	Hypertension	70 (37)	43 (47)	27 (27)	58 (40)	12 (27)
	Coronary heart disease (CHD)	6 (3)	5 (6)	1 (1)	5 (3)	1 (2)
	Vascular disease (not CHD)	1 (0.5)	1 (1)	–	1 (0.5)	–
	Diabetes mellitus	20 (11)	18 (20)	2 (2)	16 (11)	4 (9)
	Musculoskeletal pain	72 (38)	42 (46)	30 (30)	55 (37)	17 (39)
	Other comorbidities	37 (19)	25 (28)	12 (12)	27 (18)	10 (23)
Social background	Living in family / with a partner	117 (61)	57 (63)	60 (60)	94 (64)	23 (52)
	Education: college, graduate degree	53 (28)	24 (26)	29 (29)	41 (28)	12 (27)

*n (%), if not stated otherwise; † Included in intention-to-treat (ITT) analysis; ‡ Included in completers' analysis;
§ Figures do not add up to 100% as some participants had more than one concurrent disease.

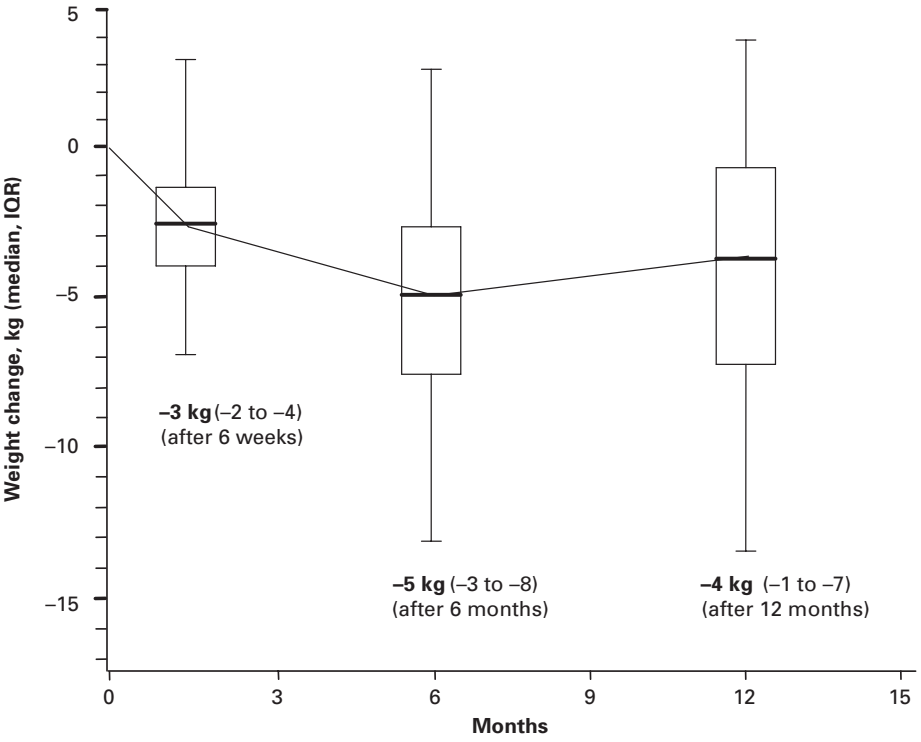

Figure 3

Weight change during follow up. Box plots for weight change are shown at different time points: Six weeks after start of the CBT (data for 154 participants), after 6 months (end of the CBT; data for 157 participants), and after 12 months (data for 147 participants). Median body weight (IQR) at baseline: 90 kg (81 to 102 kg; data for 191 participants); relative change in median body weight (compared to baseline): 3.3% after 6 weeks, 5.6% after 6 months, 4.4% after 12 months. IQR: interquartile range; CBT: cognitive-behavioural treatment.

Table 2

Quality of life measures (Medical Outcome Study 36-item short-form health survey; SF 36) at baseline and after 12 months.

	Baseline (n = 191)	12 months (n = 144)
Domain	Median (IQR[a])	Median (IQR[a])
Physical functioning[b]	85 (70–95)	90 (75–100)
Role physical[b]	100 (50–100)	100 (75–100)
Bodily pain[b]	72 (41–100)	75 (51–100)
General health[b]	72 (57–82)	77 (59–87)
Vitality[b]	55 (45–70)	60 (45–70)
Social functioning[b]	88 (63–88)	75 (63–88)
Role emotional[b]	100 (67–100)	100.0 (67–100)
Mental health[b]	72 (60–84)	72 (60–84)
Physical component score (PCS)[c]	49 (41–55)	53 (45–57)
Mental component score (MCS)[c]	50 (40–56)	49 (42–54)

[a] IQR: Interquartile range;
[b] Scales range from 0–100 with higher values indicating higher quality of life for each SF-36 subscale;
[c] Scales of the Physical component score (PCS) and the Mental component score (MCS) are calibrated to 50 score points with higher values indicating higher quality of life in the component scores.

Impact on patient outcome

We included 191 of 261 CBT participants in our prospective assessment of patient outcome (figure 2). Baseline characteristics of participants (82% women; median BMI 33 kg/m^2) are summarised in table 1. Comorbidities were present in some two thirds of persons with musculoskeletal pain (38%), hypertension (37%) and diabetes mellitus (11%) as the most frequent disorders. Participants joining the groups in the physician practices had more comorbidities and a higher bodyweight at baseline.

17% of participants (32/191) did not complete the six months' programme (most often stated reasons for dropping out were "no longer motivated"; "expectations not fulfilled"; "constraints in my family"; and "feeling depressed"). By completion of the eighth group session some two third of participants had dropped out. Between six and twelve months another twelve persons were lost to follow-up. Finally, the attrition rate by one year was 23% (44/191). Dropout rates were similar for physician practices (21%) and the community centre (25%). Completers were slightly older and had a slightly lower BMI at baseline compared to people who dropped out of the programme (table 1).

Median weight loss after the last CBT session (6 months) compared to baseline was 5 kg (IQR 3–8 kg; 157 participants with weight data; figure 3). During the following 6 months we observed a slight weight regain. Median weight loss after 12 months for 147 completers was 4 kg (IQR 1–7 kg; intention-to-treat analysis for 191 participants: 2 kg, IQR 0–5 kg). Median weight loss after 1 year was similar for the two settings (physician prac-

tices 4 kg [IQR 1–9 kg] for 72 completers; ITT analysis 2 kg [IQR 0–8 kg]); community centre 4 kg [IQR 2–6 kg] for 75 completers; ITT analysis 2 kg [IQR 0–5 kg]).

Waist circumference decreased by a median of 6 cm (IQR 4–10 cm) for men and 3 cm (IQR 0–7 cm) for women. Self-reported physical activity of moderate intensity (such as brisk walking or gardening) and vigorous activity (such as jogging or cycling) did not increase during the programme (median 3 days, IQR 2–4 and median 2 days, IQR 1–3 respectively). Quality of life scores improved mainly in the physical SF-36 subscales but changes were modest (table 2).

Discussion

We successfully introduced a CBT programme for weight loss into routine care using a stepwise approach primarily addressing the structure of obesity care. Median weight loss after 12 months for 147 completers was 4 kg (IQR 1–7 kg; intention-to-treat analysis for 191 participants: 2 kg, IQR 0–5 kg). 23% of participants dropped out of the programme.

Strengths and limitations of our approach

The study was conducted under the conditions of routine practice in primary care. Participants were recruited directly from family doctors or the community. Our change strategy was based on a clear concept. Team changes with revision of professional roles in multidisciplinary teams (collaboration of physicians, nurses and allied health professionals as CBT instructors), as well as cooperation with a community-based partner (integrated health service) were central elements and have shown improved professional performance in recent reviews [8, 13]. We assessed patient outcome prospectively and covered a considerable number of participants with a follow-up of 1 year. In addition, our programme showed a relatively low attrition rate comparable to clinical trials.

Our study has some limitations. First, selection phenomena may have occurred during patient recruitment and this may have implications for the generalisability of results. Second, we cannot rule out the possibility of unmeasured confounding concerning weight loss. The nature of our study was observational and we did not have a control group. Thus we cannot draw causal inferences between the CBT intervention and the observed weight loss. However, sometimes randomised controlled studies are difficult to implement in primary care in comparison to hospital settings. Furthermore, patients willing to be randomly assigned are unlikely to be generalisable to a larger population [14] and this may affect the external validity of results. To further strengthen quasi-experimental studies, future obesity research in primary care should rely on longitudinal weight data of obese persons collected in usual care for comparison. This would also make it possible to evaluate selection phenomena of participants [14]. Until now, however, such databases do not exist in our setting. Finally, there may be limitations on the transferability of CBT programmes as implemented in our study to other clinical settings. Implementation in a network structure and support of a research unit may not always be possible.

Context to existing evidence

The median weight loss of 4 kg after one year for completers in our study is in line with results of CBT interventions for weight loss reported in a recent systematic review [1]. However, research conducted in university and medical school settings suggests that CBT interventions carried out by specialised teams may even produce weight losses of 7–10 kg after one year [15, 16]. The median weight loss of 2 kg after one year in our ITT analysis is difficult to compare with other studies. Reporting of control for high attrition rates is often poor or studies use a less conservative "last observation carried forward" approach [1]. A recently published trial in a specialised centre applied very conservative ITT criteria adding weight over time for dropouts [17]. In this study a more intensive lifestyle modification (29 sessions over one year; attrition rate 17%) yielded a one year weight loss of 6.7 kg according to their ITT criteria.

A quarter of our completers showed a weight loss of at least 7 kg by 1 year of follow-up (or at least 5 kg with an ITT approach carrying baseline weight forward for dropouts). Such a modest weight loss is associated with measurable health benefits [18]. In contrast, our participants reported a median weight gain of 3 kg (IQR 0–7 kg; self-reported weight data available for 172/190 participants) in the year before joining the programme. Thus, our patients had gained weight rather than managed their overweight successfully.

Research data on obesity management in community services is scarce [19]. It is important to note that our case series data reflects routine care in a community setting over a period of three years. The weight change in our patients is comparable to the results of a recent Swiss trial which tested this programme for efficacy [20].

The Counterweight Project Team in the UK has also shown that a stepwise approach to improving management of obese adults in primary care is feasible with weight changes after 12 months similar to our study [21].

Implications for practice

In the light of our experience we judge the following factors critical for successful implementation of a similar programme in a primary care setting: We included the physicians in the change process and tailored the quality improvement programme to their needs (as evaluated with our baseline survey); an action team took leadership for change; the change strategy focused on structure of care; a research unit offered support for methodological and management issues; and networking with a community service for health education took place.

An improved communication strategy seems necessary to make even more doctors aware of this therapeutic option and to increase referral. Selection of participants according to prognostic factors for weight loss or attendance may be a valuable approach towards enhancing the efficiency of our programme. Also, embedding of the CBT programme in a toolbox with additional educational and quality assurance activities seems necessary [22]. This may further improve the network physicians' motivation and skills and promote sustainability of change. In addition, it will allow adjustment of care to the individual needs and preferences of the obese. We will examine this approach in a further ongoing study [23].

In conclusion, implementation of an easily accessible CBT programme to improve obesity management in primary care is feasible. The programme resulted in a clinically meaningful weight loss in daily routine and showed a relatively low attrition rate.

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