Case Report

Cognitive Behavior Therapy Procedure Prior To Bariatric Surgery

Paul L1, Heiden CVD2,3, Biter LU4 and Hoek HW1,5,6
1PsyQ International Mental Health Services, Parnassia Psychiatric Institute, The Hague, The Netherlands
2PsyQ International Mental Health Services, Parnassia Psychiatric Institute, Rotterdam, The Netherlands
3Department of Psychology, Education and Child Studies, Erasmus University Rotterdam, Rotterdam, The Netherlands
4Department of Bariatric surgery, Sint Franciscus Hospital, Rotterdam, The Netherlands
5Department of Psychiatry, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands
6Department of Epidemiology, Columbia University, Mailman School of Public Health, New York (NY), USA

Keywords: Obesity; Bariatric surgery; Cognitive behavior therapy; Psychological treatment

Introduction

Bariatric surgery is an effective treatment for morbid obesity. However, 20-30% of the patients experience premature weight stabilization or weight regain [1,2]. Among other factors, dysfunctional eating behaviors such as emotional eating, binge eating and loss of control over eating, have been indicated as negative psychological factors for treatment outcome [3,4]. As such, behavioral life style interventions seem important to achieve optimal weight loss results [5].

A preoperative cognitive behavior therapy (CBT) protocol has been developed, which is based on cognitive behavioral treatment protocols developed for eating disorders [6] and obesity [7] and modified for bariatric surgery patients. In this protocol patients receive 10 sessions of CBT focused on nutritional and activity management (session 1-4), cognitive restructuring and self-control (session 5-8) and relapse prevention strategies and preparation for the period after surgery (session 9-10). See Table 1 for an overview of the interventions in the 10 sessions. In this paper, this intervention and its possible effects will be described.

The 10 session CBT protocol in Table 1 and its possible effects will be demonstrated by using a case illustration. A randomized clinical trial with long-term follow-up examining the added value of preoperative CBT for bariatric surgery patients is currently being conducted [8]. The CBT treatment described in the case illustration was carried out within this context. This bariatric surgery patient gave written informed consent for this paper and will be called Ellen.

### Table 1: Overview of the interventions in the 10 sessions

| Session | Description of topics and techniques | Homework |
|---------|-------------------------------------|----------|
| 1. Information and motivation | Treatment rationale-obesity as behavioral problem, weight course, cost-benefit analysis of overeating/underactivity and lifestyle change, obstructive factors. | Reading information about obesity, composing or complementing cost-benefit analysis. |
| 2. Motivation and nutritional management | Fat or guilt-contributing and influencable factors in development of obesity, nutritional management-anamnesis and normalisation eating pattern, self-monitoring eating diary, Favorable circumstances development eating pattern. | Composing list influencable factors, composing list benefits and motivation lifestyle change, eating diary. |
| 3. Nutritional and activity management I | Advise daily physical activity History of physical activity, obstructive factors Self-monitoring - physical activity diary, week goal eating. | Composing list physical activities: Eating diary, physical activity diary, week goal. |
| 4. Nutritional and activity management II | Week goal eating and activity mindful eating. | Practicing mindful eating, eating diary, physical activity diary, week goals. |
| 5. Cognitive restructuring I: Introduction | Psycho-education CBT- maladaptive thinking leads to affect and behavior types of eating behavior (restRAINT, emotional, external), relation various cues and eating, alternative coping strategies (e.g. asking for support, taking a rest), week goal eating and activity. | Reading information cognitive therapy, registering situations in which the problem behavior did not occur, eating diary. Also... |
Case Report

Ellen, a 44-year old woman with severe obesity (BMI>40) was admitted for bariatric surgery in a Dutch hospital, after being medically and psychologically screened. She received the CBT pre-surgically. Treatment started with presenting a rationale defining obesity as a behavioral problem resulting from a disturbed balance of energy intake (overeating) and energy use (under activity). A weight graph was drawn to identify factors related to the course of weight changes.

In the second CBT session information was provided concerning healthy food and eating habits, and her current eating pattern was discussed. This made clear that her eating pattern was very irregular, and that her daily food intake contained insufficient nutrients. Self-monitoring through keeping an eating diary was introduced. Further homework consisted of taking four medium mealtimes (two meals and two snacks) during the day at the dinner table.

Discussing homework in the third session made clear that Ellen felt more energetic by eating regular meals. The importance of regular moderate intense physical exercise was stressed in the reminder of this session, as well as being active throughout the day by changing small daily routines such as taking the stairs instead of the elevator. As part of a gradual build-up of physical activity the goal for next week was set at walking three times a week for 5-10 minutes.

The fourth session was focused on further lifestyle changes regarding eating and physical exercise, and setting goals for the remaining change needed. Ellen told that she started to get used to regular mealtimes during the day. Further, having dinner at the table and walking together with her husband contributed to more conversation and quality time. This motivated them to start swimming together. Healthy eating habits like mindful eating, chewing well, eating six small to medium mealtimes a day and eating at a slower pace were discussed.

In sessions five to seven cognitive restructuring was introduced by using the ABC model to analyze activating event (A), beliefs and thoughts (B), and emotions and actions of problematic situations (consequences, C).

Using an ABC analysis, a birthday party situation was analyzed in which she overate. The analysis revealed that the abundant food on the table made her feel hungry (A), leading to the thought “I have to keep my diet, but this looks so good I can’t resist” (B). As a consequence, she overate and enjoyed this for a short moment, but felt depressed, weak and guilty afterwards (C). Alternative thoughts and behaviors were discussed using Socratic questions such as: “Is this thought true?” and “What's your goal and does this thought help you reaching this?” Based on her answers, she formulated the alternative thought: “I can take one thing as a snack as part of my regular eating pattern and stop after that”.

As a behavior experiment, she was asked to take one chocolate and eat it
Focus of the eighth session was enhancing self-control by stimulus control, stimulus response prevention and response consequences. The stimulus control interventions she worked on were planning mealtimes ahead, buying groceries with a shopping list and slow eating at the dinner table. Stimulus response prevention activities she developed were walking, asking her husband for help, expressing emotions, assertive behavior, and reading in her therapy workbook to remind her of helping thoughts and positive achievements. As a response consequence doing household chores for 15 minutes was selected as a negative consequence following overeating.

In session 9 a relapse prevention plan was composed bringing together (future) trigger situations, such as conflict situations, negative emotions, or parties and coping strategies to handle these situations, e.g. asking for support and planning of mealtimes.

When evaluating treatment in the 10th and final session, Ellen reported being very surprised she had managed to change her eating behavior after so many years of dieting. Overeating and emotional eating did not take place anymore, and she had normalized her eating behavior. Further, she thought her emotion regulation skills and assertive behavior had improved. She also stated to be happy she had found different ways of physical activity she enjoyed.

Further, important life style behaviors in the period after surgery were discussed in this session, such as continuous regular eating and exercise, chewing very well, adhere to guidelines of the surgeon and dietician and monthly weighing.

### Results

Results are summarized in Table 2. At pretreatment, scores on the Eating Disorders Examination-Questionnaire (EDE-Q) were elevated for all subscales, indicating eating disorder pathology [8]. At post treatment, dietary restraint and eating concerns were no longer present, whereas shape concerns and weight concerns showed a relevant decrease. At 1 year follow-up after gastric bypass surgery, eating concerns and dietary restraint were still in remission, whereas shape concerns were no longer present as well. Weight concerns had stabilized in the year following surgery.

| Questionnaire | Subscale         | Pretreatment | Post treatment | 1 year follow-up |
|---------------|------------------|--------------|----------------|------------------|
| EDE-Q         | Restrained eating| 3.6          | 0              | 0                |
|               | Eating concern   | 2            | 0              | 0.2              |
|               | Shape concern    | 5.1          | 3              | 3                |
|               | Weight concern   | 3.6          | 2              | 0                |
|               | Total            | 4            | 1.6            | 0.8              |
| DEBQ          | Emotional eating | 2.9          | 2              | 1.5              |
|               | External eating  | 3.1          | 2              | 1.4              |
|               | Restrained eating| 3.8          | 2.2            | 1.6              |
| QIDS          | Total            | 13           | 1              | 3                |
| Weight        | Kgs. (BMI)       | 111.0 (44)   | 106.4 (42)     | 67.5 (27)        |

Table 2: Pretreatment, post treatment and 1 year follow-up results for EDE-Q, DEBQ, QIDS and weight in kgs. (BMI).

The dutch eating behavior questionnaire (DEBQ) showed a gradual decline over time for all three subscales: emotional eating, external eating and restrained eating. At 1 year follow-up scores were reduced by half compared to pre-treatment measurement.

Scores on the quick inventory of depressive symptomatology-self-report (QIDS-SR) indicated moderate depressive symptoms pre-treatment, but at both post treatment and 1 year follow-up assessments, no symptoms of depression remained.

Although lifestyle change, not weight loss, was the main goal of the treatment, she lost 4.6 kg. Her posttreatment weight was 106.4 kg (length 1.59 m and BMI 42), whereas she weighed 111 kg (BMI 44) at pretreatment. One year after bariatric surgery her weight was 67.5 kg (BMI 27).

### Conclusion

This case description shows that the preoperative CBT protocol contributed to positive and enduring effects in reducing risk factors for premature weight stabilization or regain after bariatric surgery, such as emotional eating and loss of control over eating. This was achieved by supporting the patient in gradual life style changes, such as adopting adaptive eating behaviors and increasing physical activity. A care manager, collaborating with the patient, general practitioner and specialist could also play a role in maintaining these life style changes in the long run [9].

A recent review of studies and literature on CBT and predictors of weight loss shows CBT is effective in reducing disordered eating behaviors and affective symptoms in pre and postoperative patients [10]. Whether this also prevents relapse and weight regain is currently under investigation [8], but it is expected that adding on CBT can contribute to optimizing weight loss results as well as psychological functioning and adjustment after bariatric surgery.

### Conflict of Interest

The authors declare that they have no conflict of interest.
Ethical Statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent Statement

Informed consent was obtained from the individual whose case is illustrated in this article.

References

1. Adams TD, Davidson LE, Litwin SE, Kolotkin RL, LaMonte MJ, et al. (2012) Health benefits of gastric bypass surgery after 6 years. JAMA 308: 1122-1131.
2. Courcoulas AP, Christian NJ, Belle SH, Berk PD, Flum DR, et al. (2013) Weight change and health outcomes at 3 years after bariatric surgery among individuals with severe obesity. JAMA 310: 2416-2425.
3. Sheets CS, Peat CM, Berg KC, White EK, Bocchieri-Ricciardi L, et al. (2015) Post-operative psychosocial predictors of outcome in bariatric surgery. Obes Surg 25: 330-345.
4. Wimmelmann CL, Dela F, Mortensen EL (2014) Psychological predictors of weight loss after bariatric surgery: A review of the recent research. Obes Res Clin Pract 8: e299-e313.
5. Rudolph A, Hilbert A (2013) Post-operative behavioural management in bariatric surgery: a systematic review and meta-analysis of randomized controlled trials. Obes Rev 14: 292-302.
6. Fairburn CG (2017) Eating disorders and obesity: A comprehensive handbook. 3rd ed. New York: Guilford Press. pp: 284-289.
7. Butryn ML, Wadden TA. (2017) Behavioral treatment of obesity. 3rd ed. New York: Guilford Press. pp: 512-518.
8. Paul L, van Rongen S, van Hoeken D, Deen M, Klaassen R, et al. (2015) Does cognitive behavioral therapy strengthen the effect of bariatric surgery for obesity? Design and methods of a randomized and controlled study. Contemp Clin Trials 42: 252-256.
9. Ciccone MM, Aquilino A, Cortese F, Scicchitano P, Sassara M, et al. (2010) Feasibility and effectiveness of a disease and care management model in the primary health care system for patients with heart failure and diabetes (Project Leonardo). Vasc Health Risk Manag 6: 297-305.
10. Paul L, van der Heiden C, Hoek HW (2017) Cognitive behavioral therapy and predictors of weight loss in bariatric surgery patients. Curr Opin Psychiatry.