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Cognitive Behavior Therapy: Application of Intervention for Anorexia Nervosa

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Cognitive behavior therapy helps anorexia nervosa clients reduce their disorder by cognitive restructuring and learning new adaptive eating behavior. The aim of this study was to examine the effect of cognitive behavior therapy on anorexia sufferers. Single case experimental design was applied in this research with three anorexia nervosa sufferers as subjects. A scale that was adapted from The Eating Attitude Test (EAT), self monitoring, observation and interview was used to collect the data. Results reveal that cognitive behavior therapy affect the tendency of anorexia nervosa in female adolescents. The result of the study are discussed..

Keywords: cognitive behavior therapy, anorexia nervosa, adolescent

Terapi kognitif perilaku dapat membantu penderita *anorexia nervosa* mengatasi gangguan dengan restrukturisasi kognitif dan mempelajari perilaku yang lebih adaptif terkait dengan perilaku makan. Penelitian ini menguji pengaruh terapi kognitif perilaku terhadap penurunan kecenderungan *anorexia nervosa* pada remaja. Desain penelitian yang digunakan adalah desain eksperimen kasus tunggal dengan tiga subjek. Data diperoleh melalui skala adaptasi dari *The Eating Attitude Test* (EAT), pemantauan diri sendiri, observasi, dan wawancara. Hasil analisis menunjukkan ada pengaruh terapi kognitif perilaku terhadap kecenderungan *anorexia nervosa* pada remaja perempuan. Hasil penelitian didiskusikan lebih lanjut.

*Kata kunci***:** terapi kognitif perilaku, *anorexia nervosa*, remaja

I am beautiful. No matter what they say. The sentence may be a sentence that does not exist in the minds of people with anorexia nervosa. Others judge them to have a thin body and obviously their bodies are thin, but their view of themselves is not. They do not feel thin enough, so they are trying to lose weight by means of hunger. According to Rice (cited in Sukamto, 2006), this condition is included in an unhealthy or negative body image, which are marked by an inaccurate mental picture of the body and feelings, assessment, and a negative relationship with the body and not confident.

Body image is the mental image one has of his/her body that includes thoughts, feelings, judgments, sensations, awareness, and behavior associated with her/him (Rice, as in Sukamto, 2006). Body image is a subjective psychological concept and is actually not dependent on physical appearance. Someone who has lost weight may still have a negative body image (Rosen, as cited in Sukamto, 2006). More specifically Littleton and Ollendick (cited in Skemp-Arlt, Rees, Mikat, & Seebach, 2006) states that negative body image is defined as an individual's subjective feelings related to dissatisfaction with the physical body. Negative body image disturbance is one of the originators of anorexia nervosa (Davison, Neale, & Kring, 2004). People with anorexia nervosa have cognitive distortions about weight and eating behavior (Halmi, 1974).

Negative body image can be caused by various factors. One of them is a measure to assess women's beauty. Size of beauty that got much attention is the body shape. The ideal body shape according to the media is tall and thin (Sukamto, 2006). Standard thin body ideal are promoted through mass media advertising artist and thin model. This makes the message that the ideal body type for women is high and thin. This makes a lot of women have the notion that the ideal body shape is tall and skinny. This assumption led to women trying to have a thin body shape, and those who already have a thin body wants to have a more thinner body shape with a variety of ways, for example on a strict diet, taking weight loss products, and resist eating (Sukamto, 2006). Women who want to look skinny like a model of women in the media, tend to be more concerned about her weight (Field, as cited in Santrock, 2003). The ideal body

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shape according to the mass media is not ideal according to the measures of health. Average weight of women considered ideal by the media has become increasingly thin and stay in the range of 13-19% below a healthy weight (Garner, Garfinkel, Schwartz, & Thompson, as cited in Sukamto, 2006).

In the last few years the possibility of increasing disorders and anorexia nervosa can be experienced by anyone (Sokol & Gray, 1998). Anorexia nervosa disorder is more common in women than men, 90% of cases of anorexia nervosa were experienced by women (Dziegielewski, 2002). Generally anorexia nervosa occurs in women with middle to upper levels of education, from families who are economically upper middle, has the characteristics of self-love to compete (competitive) and has a high target to achieve. They set high standards for something, but became disillusioned because of what they charge is not reached. Conditions fail to achieve what they are targeting causes them to be very concerned with the assessment of others and turned to what can be controlled, such as their weight (Striegel-Moore, Siberstein, & Radin, as cited in Santrock, 2003). Anorexia nervosa usually occurs in early to mid-adolescence and the disorder is more common in women than men (Dusek, 1996; Davison, et al., 2004).

Anorexia nervosa is a disorder that can cause death. Mortality caused by disorders of anorexia nervosa was ten times greater than the general population who are not impaired, and two times greater when compared with patients with other psychological disorders (Davison et al., 2004). Several studies show that mortality in patients with anorexia nervosa was approximately five per cent after suffering about 5-8 years, after twenty years since the disorder appeared the mortality rate ranges between 13-20%. The cause of death usually was starvation, electrolyte disturbances in the body, and suicide (Sokol & Gray, 1998).

Based on the Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision (DSM-IV TR) (cited in Davison, et al., 2004), anorexia nervosa is one of several types of eating disorders. The definitions of eating disorders are severe disturbances in eating behavior accompanied by a false perception about shape and weight (Davison, et al., 2004). Anorexia nervosa is a disorder characterized by refusing to maintain a normal weight, has a tremendous fear that she/he would be overweight, and feels fat even though his body is thin. The main characteristics of patients with anorexia nervosa are a refusal to maintain minimum normal body weight (eg less than 85% of the expected weight according to age/height). In addition, other characteristics found in patients with anorexia nervosa will include fear of weight gain, the distortion in body image, diet is very limited (often accompanied by excessive exercise), and amenorrhea (L.W.Craighead, W. E. Craighead, Kazdin, & Mahoney, 1994). Amenorrhea is the absence of menstruation for at least three times in a row (Wolfe, 2003). One of the characteristics of patients with anorexia nervosa is a distortion of body image (negative body image). Patient has the feeling she was still not thin enough, though her weight was already below normal; she exhibits the behavior of patients with eating disorders. The results of the initial assessment of researchers to some sufferers of anorexia nervosa using the interview were as follows.

> *Aku nggak mau makan banyak, akhirnya hari ini aku bisa nggak makan lagi karena berat badan belum turun, beratku 47 kg dan tinggiku 159. Menurutku aku dah gemuk banget, di pipi, paha, lengan, dan perut. Tiap hari kalau ngaca liat orang yang makin gemuk, aku malu karena gendut. Gimana mau gak dipikiri tiap hari liat gitu koq.* (I don't want to eat too much, actually I won't eat again today, coz my weight is not yet ideal, I'm still 47 kg, and my height is 159. I feel too obese, my cheek, thigh, arm, and belly. Everyday in front of the mirror, I see a bigger and bigger person, I'm ashamed coz of obesity. Of course I'm occupied with that image). (Subject V).

> *Banyak orang bilang aku thin, tapi thin gimana gini koq thin. Seringkali aku kalo jalan dengan teman-teman ditawari makan aku gak akan makan. Aku nggak mau makan banyak, lebih baik nggak makan karena badanku belum thin. Aku bisa gak makan berhari-hari.* (People said I'm thin, but is it? Thin is not like this! I was frequently invited to eat with my friends, but I refuse to eat. I don't want to eat much, its better that I don't eat, coz my body is not yet thin. I'm able to fast several days in a row). (Subjek F).

Based on the characteristics of patients with anorexia nervosa and the results of the initial interview that the patients have a distorted body image that underlies the behavior of eating disorders, the forms of appropriate interventions to help people with anorexia nervosa should be cognitive behavior therapy (CBT). CBT is recommended as one form of treatment for patients with anorexia nervosa (Wilson & Fairburn, as cited in Bowers, Evans, Le Grange, & Andersen, 2003). Results showed that cognitive behavior therapy effectively deals with disorders of anorexia nervosa (Pike, 2000; Wilson & Fairburn, as cited in Bowers, et al.).

CBT is based on the assumption that human behavior is reciprocally influenced by the thoughts, feelings, physiologi-

cal processes, and its consequences on behavior (Craighead, et al., 1994). To change maladaptive behavior means not just changing her/his behavior, but also the cognitive aspects underlying it. CBT for patients with anorexia nervosa is aimed at helping sufferers cope with the restructuring of cognitive impairment associated with negative body image and learn more adaptive behaviors associated with feeding behavior (Sidiropoulos, 2007).

Vitousek (cited in Bowers, et al., 2003) states that research on the application of CBT in patients with anorexia nervosa is still less than research on the application of CBT in patients with bulimia nervosa. Empirical studies on the effectiveness of CBT on disorders of anorexia nervosa are still rare (Spangler & Hoyal, 2005). Research on CBT in patients with anorexia nervosa has been conducted with subjects, researchers, in western cultural setting. One of which was conducted by Pike, Walsh, Vitousek, Wilson, and Bauer (2003) regarding the effectiveness of CBT in patients with anorexia nervosa who had received medical treatment in hospital. They divided the subjects into two groups with different treatments, with CBT and nutritional counseling. The CBT reveals a better result and more effective in preventing recurrence of the disorder. Faucher (nd) conducted research on the effectiveness of CBT in obese patients who were too concerned with weight, body dysmorphic disorder women, and people with eating disorders. The results showed CBT is more effective for obese people, women who are too focused or concerned with weight, and women with body dysmorphic disorder when compared to subjects with eating disorders. This condition occurs because the proportion of CBT in patients with eating disorders is less stressed with efforts to improve body image, whereas patients with other disorders were focused on improving body image. Faucher suggested that further research balancing the proportion of cognitive therapy that focuses on improving body image and behavior therapy that focuses on improving eating behavior in patients with eating disorders. Serfaty et al. (cited in Wolfe, 2003) conducted a study on twenty-five patients with anorexia nervosa who received CBT treatment and ten patients with anorexia nervosa who received treatment programs with nutritional advice and support therapy. The results show that, when contacted again six months after therapy was given, approximately 70% of patients with anorexia nervosa who received CBT, no longer shows the characteristics of anorexia nervosa.

The objective of this research was to determine the effect of cognitive behavior therapy for the anorexia nervosa in adolescent girls to help them overcome the symptoms of anorexia nervosa.

Methods

Cognitive Behavior Therapy

Cognitive behavior therapy is a therapy aimed at changing the behaviors that are less adaptive through changing the way of thinking to more adaptive ways of thinking. CBT was used in this study to alleviate the tendency to suffer from anorexia nervosa; it consists of several stages of the modified stage of CBT for anorexia nervosa from Edwald Vitousek's (cited in Spangler & Hoyal, 2005) as follows: (a) establish commitment and motivation of people to change through psychoeducation on metabolism, nutrition, weight, and the effects of dietary restriction, (b) normalize eating patterns and weight of the patient, (c) identify, evaluate, and modify thoughts or beliefs related to patient body weight, food, and body image, and (d) prepare the patient to prevent recurrence of disorders.

The Tendency of Anorexia Nervosa.

Anorexia nervosa is a disorder characterized by refusing to maintain a normal body weight and is generally followed by going on an excessive diet, vomiting out what had been eaten. Excess exercise may also be performed, the patient has a tremendous fear that she/he would be obese, the presence of cognitive distortions of feeling fat even though his/her body is lean. Due to the mismanagement of excessive weight, women who had regular menstruation can suffer from amenorrhea.

These variables were measured using the Eating Attitude Test (EAT) developed by Garner and Garfinkel (1979). Aspects of anorexia nervosa tendency which was measured were follows: (a) food preoccupation, which is concerned with excess of food, (b) body image for thinness, (c) vomiting and laxative abuse, (d) dieting, restricting food intake (e) slow eating or eating slowly, (f) clandestine eating, and (g) perceived social pressure to gain weight or social pressure to gain weight. EAT has a concurrent validity coefficient of 0.87 (Garner & Garfinkel, 1979) and internal consistency reliability of 0.79 (Corcoran & Fischer, 1987).

Evaluation depends on an adaptation to the norm of the EAT, a total score above 30 means a tendency of anorexia nervosa, whereas a total score below 30 indicates that the subject should not be categorized as having a tendency of anorexia nervosa.

Subject

Three subjects (anorexia nervosa sufferers) were participating in this research with the following criteria: (a) girls aged 18-22 years, (b) has a score of the EAT above 30, (c) had not received cognitive behavior therapy treatment for the disorders experienced, (d) have a Body Mass Index (BMI = weight in kilograms divided by height squared in meters) of less than 18.5, which is included in the category of thin (underweight), and (e) acknowledge the need for help.

Data Collection Methods

Data collection methods used is listed in Table 1.

Research Design

The design study is a single case experimental design. The tendency to suffer from anorexia nervosa was measured with the EAT at the time prior to treatment (baseline phase) and after administration of treatment (treatment phase). Treatment (X) was in the form of cognitive behavior therapy with an individual format.

Data Analysis

The effectiveness of CBT can be determined by comparing the score of EAT at the time before treatment with EAT score at the time after administration of treatment. Besides using the EAT, researchers also use some supporting data such as weight gain, excessive eating behavior (binge eating), the behavior of vomiting (purging), resist eating behavior, the behavior of using laxatives, excessive exercise behaviors, as well as thoughts and feelings associated with eating behavior subject.

Results and Discussion

The results of analysis on the total score of EAT at this stage of the baseline phase and treatment phase indicate a change in the category of a higher level to a lower level in all subjects. Subject V with anorexia nervosa levels shows a decreased tendency of the category of being moderate to very low, while subject X and subject F decreased from low to very low category. This suggests that the research hypothesis was accepted, it means there is an influence of CBT to decrease the tendency of anorexia nervosa. EAT scores and categories of subjects are shown in Table 2.

Table 1
Data Collection Methods

Data Collection Methods	Data obtained
Questionnaires to reveal the subject's height and weight	Height and weight to get a description of the IMT
The Eating Attitude Test (EAT)	The intensity of anorexia nervosa
Interviews	Data associated with the anorexia nervosa: the causes of disturbances, the impact of interference experienced, the age of the emergence of disorders, treatment efforts that have been done, and the need for treatment.
Self monitoring	The data trend rate of anorexia nervosa: Excessive Eating Behavior (binge eating), regurgitate the food (purging), use of drugs (laxatives), excessive exercise, as well as thoughts and feelings of subjects related to eating behavior.
Observation	Weight (weighing is done on body weight of subjects)

Table 2
Comparison Score EAT Subjects Research

Subjects	*Baseline phase*		*Treatment phase*	
	Score	Category	Score	Category
V	64	Moderate	11	Very Low
F	36	Low	20	Very Low
X	31	Low	13	Very Low

Table 3
EAT Score Subject V

EAT Aspect	*Baseline Phase*		*Treatment Phase*	
	Score	Category	Score	Category
Food preoccupation	4	Low	1	Low
Body image for thinness	21	High	3	Very Low
Vomiting and laxative abuse	8	Moderate	0	Very Low
Dieting	19	Moderate	3	Very Low
Slow eating	4	High	0	Very Low
Clandestine eating	0	Very Low	0	Very Low
Perceived social pressure to gain weight	8	Very High	4	Moderate
Total Score EAT	64	Moderate	11	Very Low

The results are consistent with the opinion of Garner and Bemis (cited in Bowers, Evans, Le Grange, & Andersen, 2003). Freeman, Felgoise, A. M. Nezu, C. M. Nezu, &

Reinecke (2005), and Fairburn and Hope (cited in Hawton, Salkovskis, Kirk, & Clark, 1991) also states that CBT is effective to deal with disorders of anorexia nervosa. CBT aims to help patients overcome the disorder with cognitive restructuring and learn more adaptive behaviors associated with feeding behavior. The interviews in all three subjects showed that the anxiety that comes before or after eating behavior was reduced in intensity. Changes in the behavior of the three subjects were due to cognitive changes associated with feeding behavior. Here are the following details of the results of CBT treatment in the three subjects.

Subject V

At baseline phase subject V feel fat and have a fear of weight gain prior to consuming food. She takes a long time before deciding to eat or not. She thinks any food in the slightest amount will increase the weight and makes it even. She wanted to lose weight because fat is

Table 4
Subject V Weight

Phase:	Baseline Phase	Treatment Phase								
Date:	25 Sept 2008	31 Oct 2008	7 Nov 2008	10 Nov 2008	13 Nov 2008	17 Nov 2008	20 Nov 2008	24 Nov 2008	27 Nov 2008	30 Nov 2008
Weight (kg):	46	48.8	48.5	47.4	48.4	48.3	49	48.5	49	48.7
IMT Category:	thin	normal	normal	normal	normal	normal	normal	normal	normal	normal

Table 5
Excessive Eating Behavior Subject V

Phase	Baseline Phase			Treatment Phase								
Date:	25-31 Oct 2008			1-7 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	1	2	50	1	2	50	0	3	0	1	3	33.3
Day II	1	2	50	2	2	100	1	2	50	2	3	66.7
Day III	1	1	100	1	1	100	2	3	66.7	1	3	33.3
Day IV	0	2	0	2	2	100	1	3	33.3	1	2	50
Day V	2	2	100	2	4	50	0	1	0	1	2	50
Day VI	2	3	66.7	0	1	0	2	3	66.7	0	3	0
Day VII	0	1	0	0	1	0	2	2	100	0	3	0
Total	7	13	53.8	8	13	61.5	8	17	47.1	6	19	31.6

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 6
Purging Bahavior Subject V

Phase	Beseline Phase			Treatment Phase								
Date	25-31 Oct 2008			1-7 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	1	2	50	1	2	50	1	3	33.3	0	3	0
Day II	1	2	50	0	2	0	0	2	0	0	3	0
Day III	1	1	100	1	1	100	0	3	0	0	3	0
Day IV	0	2	0	0	2	0	0	3	0	0	2	0
Day V	2	2	100	1	4	25	0	1	0	0	2	0
Day VI	2	3	66.,7	0	1	0	0	3	0	0	3	0
Day VII	0	1	0	0	1	0	0	2	0	0	3	0
Total	7	13	53..	3	13	23,1	1	17	5.9	0	19	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 7
Using Laxatives Behavior Subject V

Phase	Baseline Phase			Treatment Phase								
Date	25-31 Oct 2008			1-7 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I:	0	2		0	2	0	1	3	33.3	0	3	0
Day II:	0	2	0	1	2	50	0	2	0	0	3	0
Day III:	0	1	0	0	1	0	0	3	0	1	3	33.3
Day IV:	1	2	50	2	2	100	0	3	0	0	2	0
Day V:	0	2	0	1	4	25	0	1	0	0	2	0
Day VI:	0	3	0	0	1	0	0	3	0	0	3	0
Day VII:	0	1	0	1	1	100	0	2	0	0	3	0
Total	1	13	7,7	5	13	38.5	1	17	5.9	1	19	5.3

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 8
Excessive Exercise Behavior Subject V

Phase	Baseline Phase			Treatment Phase								
Date	25-31 Oct			1-7 Nov			17-23 Nov			24-30 Nov		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	1	2	50	1	2	50	0	3	0	1	3	33.3
Day II	1	2	50	1	2	50	1	2	50	2	3	66.7
Day III	1	1	100	0	1	0	1	3	33.3	1	3	33.3
Day IV	1	2	50	2	2	100	1	3	33.3	1	2	50
Day V	0	2	0	3	4	75	0	1	0	1	2	50
Day VI	1	3	33.3	1	1	100	2	3	66.7	0	3	0
Day VII	0	1	0	0	1	0	1	2	50	2	3	66.7
Total	5	13	38.5	8	13	61.5	6	17	35.3	8	19	42.1

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

not beautiful. Therefore, she often felt guilty after eating, although in small amounts.

After the treatment was done, Subject V realized that she was not fat but she still has a fear of weight gain. She said that the intensity of this fear is not as high as before treatment, because she no longer identifies food with weight gain, except when she eats in a very large portion and when she was only eating meat with no vegetables at all. Her desire to lose weight also decreases because she no longer sees herself fat. Based on her confession, now after eating her no longer feels guilty and was happier because the burden of hers minds was reduced.

Subject V change the category of EAT on five aspects, namely the category of very high, high, and moderate to very low category (on the aspects of body image for thinness, vomiting and laxative abuse, dieting, slow eating, perceived social pressure to gain weight). Aspects of food preoccupation (excessive attention to food) remained at a low category but decreased score. The aspect of Clandestine eating (eating in secret) remains at very low category because this behavior is not performed by subject V both before and after treatment. Comparison of EAT score of every aspect of subject V can be seen in Table 3.

Weight loss prior to treatment of subject V was 46 kg and belongs to the category of thin according to Body Mass Index (BMI) (Table 4). At the beginning of treatment, weight of subject V was increased to 48.8 kg and turn into a normal category. Furthermore, during the treatment the changes vary, sometimes her weight decreased, sometimes increased, but still in the normal category. Measurements at the end of treatment showed the weight of subject V reached 48.7 kg and still in the normal category.

Table 5 shows the data of overeating of subject V before and after treatment. Behavior of overeating (binge eating) before treatment was 7 times during the 13 times eating behavior (53.8%). At the time of treatment the frequency

Table 9
EAT Score of Subject X

EAT Aspects	Baseline Phase		Treatment Phase	
	Score	Category	Score	Category
Food preoccupation	3	Low	1	Very low
Body image for thinness	5	Very low	4	Very low
Vomiting and laxative abuse	4	Low	0	Very low
Dieting	6	Very low	0	Very low
Slow eating	4	High	1	Very low
Clandestine eating	0	Very low	0	Very low
Perceived social pressure to gain weight	9	Very high	7	High
Total Score EAT	31	Low	13	Very low

was 8 times out of 13 times eating behavior (61.5%) and 8 times out of 17 times of eating behavior (47.1%). Measurements after treatment showed that the frequency of the feeding behavior of subject dropped to 6 times out of 18 times the eating behavior (31.6%).

At baseline phase behavior of vomiting (purging) of subject V was 7 times out of 13 times the eating behavior (53.8%) (Table 6). The subject's self-monitoring data reveals that during the baseline phase, behavior of overeating were followed by vomiting, resulting the same number of frequency of both kinds of behavior at the baseline phase. Regurgitating food frequency decreased during the stage of treatment to 3 times out of 13 times (23.1%) and then once out of.17 times the feeding behavior (5.9%). Finally, the frequency of this behavior reaches zero, or no longer regurgitate food behavior at the end of treatment (0%).

Behavior using laxatives of subject V during the baseline phase was once out of 13 times the feeding behavior (7.7%) (Table 7). When treatment was conducted the frequency increased to 5 times out of 13 times (38.5%) before it finally decrease to once out of 17 times the feeding behavior (5.9%). This occurs as a compensation of decreased behavior of regurgitating food of subject V. During the treatment the use of laxatives decreased along with the decreasing behavior of regurgitating food. At the end of the behavior treatment the use of laxatives decreased to 5.3%.

Subject V did excessive exercise as much as 5 times out of 13 times eating behavior at baseline phase (38.5%) (Table 8). This frequency was increased to 8 times out of 13 times eating behavior (61.5%) along the treatment, but eventually decreased to 6 times out of 17 times the eating behavior (35.3%) during the same stage. The dynamics were similar to those seen in the behavior of using laxatives when treatment was applied. So, when regurgitating food decreased along the treatment, the use of laxatives and excessive exercise increased. However, there are differences between the behavior patterns of using laxatives and excessive exercise behaviors. When at the end of treatment the use of laxatives decreased, excessive exercise behavior again increased to 8 times out of 19 times eating behaviors (42.1%).

The dynamics of the process of behavior change experienced by subject V can be explained as follows. Cognitive restructuring have reduced the desire to lose weight in subject V; she no longer thinks of herself as fat. She reduces the behavior to vomit or use laxatives, drugs, reducing excessive dieting and exercise behaviors. Behavior becomes more regular in eating and gain weight so that BMI category falls in the normal range. Subjects V were able to show a more adaptive eating behavior that reduced the pressure of social environment on her to eat regularly to increase his weight.

Subject X

Before the treatment was given, subject X feels fat and have a fear of weight gain prior to consuming food. This makes her often resisting the urge to eat until she feels really hungry or gastric disease symptoms begin to appear. According to her, food will increase weight and makes her becoming more obese, although few in quantity number and low in calories. Subject X wanted to lose weight because fat is not beautiful and it would be difficult to obtain a partner. Moreover, she does not want exposed to diseases as a result of obesity. This sometimes made her feel guilty and overwhelmed after eating, although in small amounts.

In interviews conducted after the treatment was given subject X said that now she could see that she was not fat. She is not afraid again of weight gain as long as it does not exceed the limits she determined, namely 45 kg (normal category according to BMI). Her desire to lose weight also decreases. She no longer identifies foods with weight gain, so she does not become anxious before a meal. Guilt after eating sometimes still appear but it is not too burdensome, it did not last long to disappear.

What is not changing in subject X were three aspects of EAT, namely the aspect of body image for thinness, dieting, and clandestine eating. Aspects of body image for thinness remain at very low category but with a decreased score. Aspects of dieting and clandestine eating remain at the category of very low but with a decreased score. The four other aspects showed decreased scores followed by a change of category from low to very

low and the category of very high to high. Comparison of every aspect of EAT of subject X can be seen in Table 9.

Subjects X weight at baseline phase was 41 kg, underweight according to BMI category. At the start of treatment subject X weight increased to 42.2 kg and then drop to 41.8 kg (Table 10). During the treatment, the weight of subject X was fluctuating, sometimes it increases and sometime it decreases, but still in a stable skinny category, until finally reaching the normal category of 43.5 kg. Measurement of body weight at the end of treatment showed her weight was 43.4 kg (normal category).

The frequency of binge eating behavior during the baseline phase of subject X was eight out of 22 times of the eating behavior (36.3%) (see Table 11). When the treatment frequency is decreased to once out of 18 times the feeding behavior (5.6%) and then increased to four out of 23 times the eating behavior (17.4%). Final measurements showed the frequency of binge eating behavior of subject X decreased to once out of 23 times the feeding behavior (4.4%).

Table 10
Weight of Subject X

Phase	*Baseline Phase*	*Treatment Phase*								
Date	25 Sept 2008	31 Oct 2008	7 Nov 2008	10 Nov 2008	13 Nov 2008	17 Nov 2008	20 Nov 2008	24 Nov 2008	1 Des 2008	4 Des 2008
Weight (kg)	41	42.2	42	41.8	42.6	42.4	42.6	43.5	43.2	43.4
Category IMT	thin	thin	thin	thin	thin	thin	thin	normal	normal	normal

Table 11
Excessive Eating Behavior Subject X

Phase:	*Baseline Phase*			*Treatment Phase*								
Date:	25-31 Oct 2008			1-3 & 10-13 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information:	a	b	c	a	b	c	a	b	c	a	b	c
Day I:	1	2	50	0	1	0	2	2	100	0	1	0
Day II:	2	3	66.7	1	3	33.3	1	3	33.3	0	3	0
Day III:	2	3	66.7	0	2	0	0	5	0	0	6	0
Day IV:	0	3	0	0	1	0	0	5	0	0	4	0
Day V:	1	4	25	0	4	0	0	3	0	1	3	33.3
Day VI:	1	3	33.3	0	4	0	0	2	0	0	3	0
Day VII:	1	4	25	0	3	0	1	3	33.3	0	3	0
Total:	8	22	36.4	1	18	5.6	4	23	17.4	1	23	4.4

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 12
Purging Behavior Subject X

Phase:	Baseline Phase			Treatment Phase								
Date:	25-31 Oct 2008			1-3 & 10-13 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information:	a	b	c	a	b	c	a	b	c	a	b	c
Day I:	0	2	0	0	1	0	0	2	0	0	1	0
Day II:	0	3	0	0	3	0	0	3	0	0	3	0
Day III:	0	3	0	0	2	0	0	5	0	0	6	0
Day IV:	0	3	0	0	1	0	0	5	0	0	4	0
Day V:	0	4	0	0	4	0	0	3	0	0	3	0
Day VI:	0	3	0	0	4	0	0	2	0	0	3	0
Day VII:	0	4	0	0	3	0	0	3	0	0	3	0
Total:	0	22	0	0	18	0	0	23	0	0	23	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 13
Using Laxatives Behavior Subject X

Phase	Baseline Phase			Treatment Phase								
Date	25-31 Oct 2008			1-3 & 10-13 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	2	0	0	1	0	0	2	0	0	1	0
Day II	0	3	0	0	3	0	0	3	0	0	3	0
Day III	0	3	0	0	2	0	0	5	0	0	6	0
Day IV	0	3	0	0	1	0	0	5	0	0	4	0
Day V	0	4	0	0	4	0	0	3	0	0	3	0
Day VI	0	3	0	0	4	0	0	2	0	0	3	0
Day VII	0	4	0	0	3	0	0	3	0	0	3	0
Total	0	22	0	0	18	0	0	23	0	0	23	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 14
Excessive Exercise Behavior Subject X

Phase	Baseline Phase			Treatment Phase								
Date	25-31 Oct 2008			1-3 & 10-13 Nov 2008			17-23 Nov 2008			24-30 Nov 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	2	0	0	1	0	0	2	0	0	1	0
Day II	0	3	0	0	3	0	0	3	0	0	3	0
Day III	0	3	0	0	2	0	0	5	0	0	6	0
Day IV	0	3	0	0	1	0	0	5	0	0	4	0
Day V	1	4	25	0	4	0	0	3	0	0	3	0
Day VI	1	3	33.3	0	4	0	0	2	0	0	3	0
Day VII	0	4	0	0	3	0	0	3	0	0	3	0
Total	2	22	9,1	0	18	0	0	23	0	0	23	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Subject X has no vomiting (purging) behavior before treatment was given. Notes during and after treatment, showed that X does not bring up the subject of regurgitating food behavior (Table 12).

According to Table 13 it can be seen that subject X did not use laxatives, either before or during treatment.

Subject X did excessive exercise as much as twice out of 22 times the feeding behavior (9.1%) at baseline phase. The frequency of this behavior decreased to zero (0%) during treatment until treatment was completed, meaning that excessive exercise behavior is no longer done by the subject X (Table 14).

Subject F

At the initial condition before getting the treatment, subject F regarded eating as routine, not as helpful or useful.

Table 15
Score EAT Subjek F

Aspek EAT	Baseline Phase		Treatment Phase	
	Score	Category	Score	Category
Food preoccupation	7	Moderate	1	Very low
Body image for thinness	4	Very low	3	Very low
Vomiting and laxative abuse	4	Low	0	Very low
Dieting	7	Very low	4	Very low
Slow eating	5	Very high	4	High
Clandestine eating	3	Moderate	1	Very low
Perceived social pressure to gain weight	6	High	7	High
Total Score EAT	36	Low	20	Very low

She did not see it as the need for continuity of metabolic processes in the body. This makes F reluctant or lazy to eat, especially when she had to do a lot of work in one day. Eating is just wasting her time because she needed a long time to eat. Behind the thought, F has a fear of weight gain. She became anxious when her shirts or pants did not fit her again. She often felt she was not as skinny as her friends who were fatter than she was. This makes her very often to resist the urge to eat in order to restore her former weight so that the clothes she was wearing can be loose again. Besides wasting time, eating will complicate her efforts to lose weight. When she ate, she often feels forced and anxious. If others are reminding her to eat, she was annoyed because she was asked to do things that she did not like.

After the treatment F said that now she could see that she was not fat, but very thin. She was no longer afraid of the weight gain, even now she is trying to gain weight and feel happy when the desire was achieved. She no longer looked eating as a routine but as a necessity. This end the anxiety and feeling being forced that usually arise when it came to eating. Now she is eager to eat and always try to eat as much as three times a day. She now felt sad when she missed the good time of eating.

Table 16

Subject F Weight

Phase	*Baseline Phase*	*Treatment Phase*						
Date	26 Agst 2008	10 Nov 2008	14 Nov 2008	19 Nov 2008	26 Nov 2008	3 Des 2008	10 Des 2008	6 Jan 2009
Weight (kg):	45	45.8	45.5	47.2	46.8	46.8	47.2	45.7
Category IMT:	thin	thin	thin	Thin	thin	thin	thin	thin

Table 17

Excessive Eating Behavior Subject F

Phase	Baseline Phase			Treatment Phase								
Date	28 Okt-2 Nov 2008			15-19 Nov 2008			20-26 Nov 2008			3-9 Des 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	3	0	0	3	0	0	3	0	0	2	0
Day II	0	2	0	0	3	0	1	2	50	0	2	0
Day III	0	3	0	0	4	0	0	3	0	0	3	0
Day IV	0	2	0	0	3	0	0	3	0	0	3	0
Day V	0	1	0	0	3	0	0	3	0	0	2	0
Day VI	0	3	0	-	-	-	0	2	0	0	3	0
Day VII	-	-	-	-	-	-	0	3	0	0	3	0
Total	0	14	0	0	16	0	1	19	5.3	0	18	0

Information.

a = frequency of binge eating

b = frequency of eating

c = comparison of the frequency of overeating and eating frequency (%)

Table 18

Purging Behavior Subject F

Phase	*Baseline Phase*			*Treatment Phase*								
Date	28 Oct-2 Nov 2008			15-19 Nov 2008			20-26 Nov 2008			3-9 Des 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	3	0	0	3	0	0	3	0	0	2	0
Day II	0	2	0	0	3	0	0	2	0	0	2	0
Day III	0	3	0	0	4	0	0	3	0	0	3	0
Day IV	0	2	0	0	3	0	0	3	0	0	3	0
Day V	0	1	0	0	3	0	0	3	0	0	2	0
Day VI	0	3	0	-	-	-	0	2	0	0	3	0
Day VII	-	-	-	-	-	-	0	3	0	0	3	0
Total	0	14	0	0	16	0	0	19	0	0	18	0

Information

a = frequency of binge eating

b = frequency of eating

c = comparison of the frequency of overeating and eating frequency (%)

Table 19
Using Laxatives Behavior Subject F

Phase	Baseline Phase			Treatment Phase								
Date	28 Oct-2 Nov 2008			15-19 Nov 2008			20-26 Nov 2008			3-9 Des 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	3	0	0	3	0	0	3	0	0	2	0
Day II	0	2	0	0	3	0	0	2	0	0	2	0
Day III	0	3	0	0	4	0	0	3	0	0	3	0
Day IV	0	2	0	0	3	0	0	3	0	0	3	0
Day V	0	1	0	0	3	0	0	3	0	0	2	0
Day VI	0	3	0	-	-	-	0	2	0	0	3	0
Day VII	-	-	-	-	-	-	0	3	0	0	3	0
Total	0	14	0	0	16	0	0	19	0	0	18	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Table 20
Excessive Exercise Behavior Subject F

Phase	*Baseline Phase*			*Treatment Phase*								
Date	28 Okt-2 Nov 2008			15-19 Nov 2008			20-26 Nov 2008			3-9 Des 2008		
Information	a	b	c	a	b	c	a	b	c	a	b	c
Day I	0	3	0	0	3	0	0	3	0	0	2	0
Day II	0	2	0	0	3	0	0	2	0	0	2	0
Day III	0	3	0	0	4	0	0	3	0	0	3	0
Day IV	0	2	0	0	3	0	0	3	0	0	3	0
Day V	0	1	0	0	3	0	0	3	0	0	2	0
Day VI	0	3	0	-	-	-	0	2	0	0	3	0
Day VII	-	-	-	-	-	-	0	3	0	0	3	0
Total	0	14	0	0	16	0	0	19	0	0	18	0

Information
a = frequency of binge eating
b = frequency of eating
c = comparison of the frequency of overeating and eating frequency (%)

Subject F experienced four aspects that changed her category from very high to high and medium and low categories to be very low. Three aspects of the category remains that remains was the body image for thinness, dieting, and perceived social pressure to gain weight. Comparison of EAT score of every aspect of subject F can be seen in Table 15.

Table 16 shows the comparison of weight data of subject F before and after getting treatment. Weight of subject F at baseline phase was 45 kg (skinny category according to BMI). During the treatment her weight was going up and down in the range of 45-47 kg. However, weight changes are not accompanied by changes in BMI categories. Measurements during treatment showed that the weight of subject F increased to 47.2 kg when compared with her weight before treatment and the end of treatment decreased to 45.7 kg (lean on the category).

Before treatment was given, subject F never eat to excess. However, during the treatment, overeating behavior appeared once out of 19 times the feeding behavior (5.3%). Measurements at the end of treatment showed the behavior of overeating on subject F did not show up anymore (0%) (Table 17).

Table 18 shows that subject F did not reveal any behavior of regurgitating food (0%), both at the baseline phase and treatment phase.

Table 19 reveals that subject F never used laxatives neither at the baseline nor during the treatment phase.

Same as omitting laxatives and not regurgitating behaviors, Table 20 shows that subject F did not exercise excessively, too.

Conclusion

The results showed that there were changes in subjects before and after cognitive behavior therapy. CBTis effective in helping reducing the tendency of research subjects who

suffers from anorexia nervosa. Factors that contribute to the effectiveness of CBT is the quality of relationship between the therapist and the subject, clarity of purpose and form of each activity session of CBT, and the sincerity of the subjects in following the intervention process and carry out tasks independently in order to reach cognitive restructuring, followed by a more adaptive behavior change associated with the feeding behavior.

Limitations

This single case experimental design emphasizes the effect of treatment (clinical significance) of CBT. Due to the limited number of subjects, applying CBT to similar cases of anorexia nervosa should fulfill these conditions: the briefing and debriefing form of cognitive restructuring and behavior adaptation enrichments should be tailored to the condition of the subject. A complete assessment of the dynamics of the deviation is needed to assist the handling process.

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