Psychological characteristics of obesity: Sociocultural factors and psychotherapeutic options of weight loss and weight maintenance

Ph.D. thesis

Kohlné Papp Ildikó

Semmelweis University
Doctoral School of Mental Health Sciences

Supervisors:
Dr. Dóra Perczel-Forintos, Ph.D., associate professor
Dr. Ferenc Túry, MD, Ph.D., professor

Official opponents:
Dr. Pászthy Bea, PhD, associate professor
Dr. Pék Győző, PhD, chair, associate professor
Pigniczkiné Dr. Rigó Adrien, assistant professor

Final Exam Committee:
Chairman:
Dr. Tringer László, professor emeritus
Members:
Dr. Unoka Zsolt PhD, associate professor
Pigniczkiné Dr. Rigó Adrien, PhD, assistant professor

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INTRODUCTION

Obesity is considered as one of the hugest challenges of our age, exerting severe burdens on the individual and society as well. Besides its well-known physical consequences, obesity has important psychological and social consequences. Poorer psychological condition (e.g., body dissatisfaction, low self-esteem, depression, eating disorder) and lower quality of life are characteristic to obese people – especially those who seek help. In today's Western societies attractiveness has an increased importance, and physical characteristics are considered to be more modifiable. It is a broadly spread view that an individual must take responsibility for his/her appearance, therefore negative attitudes are related to being overweight. The stigmatization of obesity appears at a very young age and it is considered as a socially accepted phenomenon. It is extremely hard to change it, as obese people themselves have negative attitudes towards overweight and overweight people. Despite the fact that stigmatization of the obese is quite common, actually it is a very current and novel phenomenon, which is a result of general well-being and consumer society. Therefore, we know little about the triggering causes of this stigmatization and the possibilities how to change it.

Besides reducing prejudices related to obese people, the treatment of obesity is also a crucial task of society. The rate of adulthood and childhood overweight and obesity has significantly increased in both developed and developing countries. This is also characteristic of our country, as 65% of the Hungarian adult population is overweight or obese nowadays. Therefore, it is an urgent and essential issue that the increasing prevalence of obesity has to be reduced or stopped at least. In order to achieve it, it is essential to put special emphasis on weight maintenance in parallel with effectively supporting weight loss. As our diet and dietary behavior is extremely complex, and it is influenced by several environmental, social-cultural and psychological factors besides biological ones, these cannot be neglected during the treatment of obesity. Nowadays dieting and change of lifestyle have become fashionable activities, numerous ways to lose weight are available for the obese; however, the long-term efficiency of these methods has not been confirmed yet. One evidence-based option to treat obesity is behavioral therapy, which is rarely performed in our country despite of the fact that it is considered as an efficient method in itself or performed as a supplementary therapy as well. Because of that, it would be crucial to know and present this method better and help it gaining popularity in our country.

OBJECTIVES

In my thesis I presented three studies in total. The first two cross-sectional studies focused on prejudices against the obese among adolescents using questionnaires. The objective of the third, prospective study was to demonstrate the efficiency of a weight loss program applying behavioral therapy supplemented with self-supportive components among overweight and obese adults.

1. The relationship of sociocultural effects on body dissatisfaction and prejudices against the obese in adolescence

The aim of the study was to reveal valuables that could possibly account for the dissatisfaction with body image and prejudices against obese people in adolescence. The main question was how the internalization of sociocultural effects (media, parents, peers) impacts their self-perception (body disatisfaction) of teenagers and their judgement (prejudice against obese people) of obese peers.

2. The stigmatization of obesity among Gypsy and Hungarian children

The second study assessed prejudices against the obese in a cultural context, among children of Hungarian and Gypsy origin. As far as we know there has been no research in Hungary examining prejudice against the obese among Gypsy people, therefore the main purpose of our research was to assess if there are any differences in the extent of prejudices against overweight peers children of Gypsy origin and those of no Gypsy origin.

3. Evaluating the efficiency of behavioral therapeutical weight loss groups supplemented with self-supportive components during the program and in a one-year perspective

In our country it is considered rare that obese patients receive a psychological support, and there is also a lack of effectiveness check of behavioral therapeutical weight loss groups. Because of this the major purpose of our study was to assess the efficiency of a 24-week behavioral therapeutical weight loss program during the program and in a one-year period after the end of the program. Besides monitoring the change of bodyweight and BMI, we measured its efficiency via monitoring changes in lifestyle variables (eating behaviors and exercising habits), weight loss goals, body image, and psychological factors.

INTRODUCTION OF THE STUDIES

1. The relationship of sociocultural effects on body dissatisfaction and prejudices against the obese in adolescence

Study design: cross-sectional questionnaire study, availability sampling.
Subjects: 370 children were enrolled aged 10 to 16 years (from 5th through 8th grade). 145 of them were boys (39%) and 225 were girls (61%). The mean age of the sample was 12.8±1.14 years. The mean BMI in the full sample was 19.27, with a standard deviation 3.15, there was no significant difference between the mean BMI of the two genders ($t_{(368)}$=1.52, p=0.130, and $t_{(247)}$=0.07, p=0.940).
Methods: the methods consisted of anthropometric data including demographic data and data acquired by self-report. Body satisfaction was measured with the Multidimensioned Questionnaire of Body Image Satisfaction, and the Drive for Thinness and Body Dissatisfaction subscales of Eating Disorder Inventory. The affective, cognitive and conative (behavioral) aspects of prejudices against obese people were measured using three methods (Adjective Checklist, Visual Analog Scale, and the Hungarian version of Shared Activities Questionnaire [SAQ]). In each case the subject was instructed to judge four drawings: a boy with normal build, a girl with normal build, an obese boy and an obese girl. Sociocultural influence was evaluated using the Tripartite Influence Scales, while the internalization of sociocultural influence were measured using the Sociocultural Attitudes Towards Appereance Questionnaire-3 (SATAQ-3). In addition, we assessed the self-esteem of the participants (using the Rosenberg Self-Esteem Scale), their subjective nutritional status and their intention to lose weight.

2. The stigmatization of obesity among Gypsy and Hungarian children

Study design: cross-sectional questionnaire study, availability sampling. Because of the question referring to origin, several schools rejected the participation in the study.

Subjects: 247 children aged from 9 to 16 years (from 3th to 8th grade) were enrolled in this study (108 boys and 139 girls). 136 of them (55.1%) reported to have Hungarian origin, and 111 of them (44.9%) described themselves to have Gypsy origin. In our study we considered a subject belonging to ethnic Gypsy if they described themselves as Gypsy. Mean age: 12.2±1.76 years. Mean BMI: 19.3±3.51. There were significantly more overweight children among children with Gypsy origin compared to not Gypsy children ($t_{(232)}$=2.282, p=0.023).

Methods: the methods consisted of demographic data and anthropometric data acquired by self-report. To evaluate stigmatization against obese children, we presented 6 boy and 6 girl figures to the subjects participating in the study based on the study of Richardson and his coworkers' study (1961). Among the presented 6 boy and 6 girl figures one had no visible disability ("Non handicapped"), one of them had crutches and had his/her left leg in plaster ("Use of crutches"), one was sitting in a wheelchair ("Use of wheelchair"), one had his/her left hand amputated ("Amputations"), one had a facial disfigurement on the left side of his/her face ("Facial disfigurement"), and one child was obese ("Obesity"). The participating children were instructed to rank the figures based on how much they like them. They were asked to give a "1" for those with whom they would be friends with most pleasure, a "2" to those with whom they would be friends with less pleasure and so on, and finally a "6" to those with whom they would be friends with the least pleasure. Consecutively, they were instructed to rank the figures of the other gender likewise.

3. Evaluating the efficiency of behavioral therapeutical weight loss groups supplemented with self-supportive components during the program and in a one-year perspective

Study design: it was a prospective study with a follow-up period of one and a half years. The evaluation of the 24-week program was completed with a one-year follow-up.

Subjects: between January, 2010 and June, 2014 eight behavior therapeutical weight loss groups took place with an average 10 participants (8–12). 73 individuals were enrolled in the weight loss groups, of which 63 completed the program (19 males and 44 females). Hence the drop-out rate was 13.7% which can be considered favorable. The mean age of the participants (N=63) was 42.1 years (SD=11.33 years, range: 25–68 years). At the beginning of the program the mean bodyweight of the participants was 110.4 kg (SD=24.94 kg; range: 75–209 kg), the mean BMI was 37.3 (SD=6.84; range: 26.88–65.96). During the follow-up period 49 individuals (16 males, 33 females) sent back the follow-up questionnaire via e-mail, which is a rate of 77.7%. We did not find significant difference in the assessed variables between those

who participated in the follow-up phase and those who refused to participate in the follow-up phase.

Description of the intervention: the small groups with 8-12 participants were held once a week during 24 weeks by me and a psychologist colleague, each occasion lasting 2 hours. Self-support was introduced gradually, according to this we participated in the sessions every occasion during the first 8 weeks, every two weeks during the second 8 weeks, and once a month during the last 8 weeks, the remaining sessions functioned as self-support groups. The basis of this method is the transtheoretical model created by Prochaska and DiClemente (1982), and its theme is built upon the traditional behavioral therapeutic elements described earlier, such as establishing realistic purposes, self-monitoring, stimulus control, problem-solving skills, assertive skills, stress management, relaxation techniques, relapse prevention), supplemented with cognitive elements (e.g. cognitive distortions, thought diary, and conceptualization of the relationship of self-esteem and body image).

Methods: demographic and anthropometric data were acquired (an objective measurement took place at the beginning of the program, on the 8th week and at the end of the program; during the follow-up period data were required via self-report). Changes of lifestyle was measured on the one hand with the Exercise: Stages of Change – Short Form inventory, and on the other hand with the Three-Factor Eating Questionnaire Revised 21-item (TFEQ-R21). Body image was operationalized with the Body Dissatisfaction subscale of Eating Disorder Inventory and Body Shape Questionnaire Short Form 14, and the Body Weight Dissatisfaction Inventory. The psychological status of the participants was measured using the Satisfaction With Life Scale and the Rosenberg Self-Esteem Scale. In addition, we asked questions referring to the followings: questions related to body weight and its story, the major motivations for weight loss, weight goals (Goals and Relative Bodyweight Inventory).

RESULTS

1. The relationship of sociocultural effects on body dissatisfaction and prejudices against the obese in adolescence

Regarding objective and subjective nutritional status, it can be claimed that though there was no significant difference between girls' and boys' objective nutritional status (BMI) ($\chi^2(2)=4.25$, $p=0.119$), yet significantly more girl reported themselves to be obese than boys ($\chi^2(2)=113.30$, $p<0.001$), and significantly more boys reported themselves to be thin than girls ($\chi^2(2)=7.17$, $p=0.028$), compared to which would have been reasonable based on their objective

nutritional status. Related to this, girls had 2.5 times higher probability to be on a diet compared to boys (*OR*=2.66, 95% CI[1.47;4.80], *p*=0.001). Having a higher BMI score was a significant predictor of trying to lose weight (*OR*=1.29, 95%, CI 1.19–1.41, *p*<0.001).

Regarding body image satisfaction, it could be seen that according to the results of the Body Dissatisfaction and Drive for Thinness subscales of the Eating Disorder Inventory girls are more dissatisfied with their bodies ($t_{(356)}$=3.364; p=0.001, Cohen d=0.37), and they have higher desire for thinness than boys ($W_{(338)}$=6.924; p<0.001, Cohen d=0.72). However, when we assessed body satisfaction using the Multidimensional Body Image Satisfaction Questionnaire, there we found no significant gender difference ($t_{(368)}$=0.436; p=0.663; Cohen d=0.05). Therefore, boys and girls are similarly satisfied with their appearance (e.g. with their face, body shape, or height).

During the evaluation of explanatory variables of body image dissatisfaction, the hierarchical multiple linear regression analysis revealed that higher BMI (β=0.151; p=0.004), subjective nutritional status (β=0.328; p<0.001), being a female (β=0.177; p<0.001), greater exposure to the media influence(β=0.157; p=0.009), deeper thin-ideal internalization (β=0.202; p<0.001), and lower self-esteem (β=-0.264, p<0.001) had the highest explanatory power. Regarding sociocultural influence, the parental and peer influence did not prove to be relevant explanatory variables. The above-mentioned variables explain 44% of body dissatisfaction.

According to the results of the mediation analysis, media has a significant effect on body image dissatisfaction, which effect is mediated by the thin-ideal internalization. The thin-ideal internalization explains 54% of the relationship of media influence and body image dissatisfaction. Regarding the prejudices against obese people, we found that participants judged the obese boy and the obese girl more unfavorably on all three measurements compared to the boy with normal build and the girl with normal build. The judgement of the obese boy and the obese girl was significantly different only on the Recreational subscale of the Shared Activities Questionnaire ($t_{(367)}$=2.518; p=0.012), where it could be seen that the obese girl was judged more favorably compared to the obese boy. During the evaluation of the explanatory variables of prejudices against obese people, we found that prejudices referring to the obese girl were explained significantly by higher exposure to parental influence (β=-0.221; p<0.001), and being a male (β=0.229; p<0.001). The above-mentioned variables explained 10.2% of prejudices referring to the obese girl. Related to the judgement of the obese boy, the deeper internalization of athletic-looking body ideal (β=0.132; p=0.022), and being a male (β=-0.134; p =0.038) proved to be the relevant explanatory variables. In contrast with what we expected, we found that the acceptation of athlete-looking body ideal and being a male did not predict

more favorable evaluation of the obese boy. The variance explained by these variables is only 3.5%.

2. The stigmatization of obesity among Gypsy and Hungarian children

More than half of the participants (62.7%) ranked the non handicapped figure as first or second among girl figures, and among boy figures also the non handicapped figure was ranked as first or second the most (68%). In contrast with this, the majority of the participants ranked the obese figure to the last two places among both boy (57.5%) and girl (49%) figures. Kendall's coefficient of concordance (W) revealed a significant difference in the ranking of participants ($W_{(11)}$=0.148, p=0.001). Girl and boy figures were ranked equally by the participants independently of their gender or origin. Based on this the following preference ranking can be established: non handicapped, use of crutches, facial disfigurement, amputations, use of wheelchair, obesity. We found a significant difference between the ranking of Gypsy children and children with Hungarian origin. Children with Hungarian origin ranked the figure of the non handicapped girl more positively ($H_{(1)}$=6.628, p=0.010) compared to Gypsy children. In contrast to this, Gypsy children ranked the figure of the obese girl ($H_{(1)}$=8.146, p=0.004) and the obese boy ($H_{(1)}$=5.468, p=0.019) significantly more positively. We did not find significant difference in the ranking of the other figures. Finally, we evaluated the relationship between BMI and ranking. Our results indicate that there is no relationship between BMI and the figures of the obese children, in accordance with these children with higher BMI also preferred the figure of the obese child the least.

3. Evaluating the efficiency of behavioral therapeutical weight loss groups supplemented with self-supportive components during the program and in a one-year perspective

During the program the group participants had an average weight loss of 10.1 kg (SD=5.89 kg, range: 0.0–28.0 kg) with huge inter-individual variability, which accounts for 9.0% of the initial bodyweight (SD=4.48%, range: 0.0–24.4%). 88.9% of the participants' weight loss reached at least 5-10%, of which 28.6%had a weight loss exceeding10%. During the one-year period of the follow-up phase respondents (N=48) were lighter in bodyweight with an average of 10.5 kg compared to their bodyweight measured at the beginning of the program (SD=11.40 kg, range: -3.0–59.0 kg), which stands for an average bodyweight loss of 9.2% (SD=8.41%, range:-3.0–39.9%). 75.0% of the participants had a weight loss of at least 5-10%, of which 35.4% had a weight loss exceeding 10%. Body weight ($F(1.3;62.0)=45.792$; $p<0.001$) and BMI ($F(2,96)=49.550$, $p<0.001$) decreased significantly during the period of the assessment, and this

significant decrease occurred during the weight loss program. Participants arrived with irrealistic weight loss goals (dream weight loss: 32.9%; desired weight loss: 26.0%; acceptable weight loss: 17.35%; disappointing weight loss: 8,1%), which weight loss goals significantly moderated by the end of the program, and these changes remained stable in the follow-up period (dream weight loss: $F(2,88)=31.681$; $p<0.001$; desired weight loss: $F(1.7; 75.0)=38.550$; $p<0.001$; acceptable weight loss: $F(2,88)=19.044$; $p<0.001$; disappointing weight loss: $F(1.6; 68.3)=15.099$; $p<0.001$).

Regarding eating behaviors a significant improvement could be detected during the period of the weight loss program, and this improvement remained stable in the follow-up period. The cognitive restraint of eating increased significantly ($F(1.7; 75.3)=30.736$; $p<0.001$), and uncontrolled eating ($F(2,90)=16.548$; $p<0.001$) and emotional eating ($F(2,90)=32,207$; $p<0,001$) decreased significantly.

Regarding regular exercising it can be said that participants were already considered physically active at the beginning of the program, as 47.8% of the respondents performed exercises regularly at the beginning of the program. By the end of the weight loss program this rate increased significantly (69.6%), then it relapsed to 60.9% in the follow-up period ($Q(2)=6.609$, $p=0.037$).

Body dissatisfaction (EDI)($F(2,88)=12.762$; $p<0.001$) and body shape concerns (Body Shape Questionnaire) ($F(2,86)=7,754$; $p<0,001$) decreased significantly, and satisfaction with bodyweight and body shape ($\chi^2(2)=40.343$, $p<0.001$) increased significantly during the program, and these changes remained stable during the follow-up period.

The participants' self-esteem improved significantly during the weight loss program, and this increase also remained in the follow-up period ($F(2.88)=4.864$; $p=0.010$). Satisfaction with life increased significantly by the follow-up period compared to that at the beginning of the program ($F(2.88)=4,397$; $p =0.015$).

Assessing the predicting factors of successful weight loss only three variables demonstrated significant correlation with weight loss based on correlation analysis: lower cognitive restraint of eating measured at the beginning of the program ($R=-0.39$; $p=0.002$), higher percentage of weight loss in the first 8 weeks of the program ($R=0.66$; $p<0.001$), and the increase of cognitive restraint of eating ($R=0.55$; $p<.001$). Based on the results of the multiple linear regression analysis controlled for gender, age and education, greater initial weight loss (8^{th} week) ($\beta=0.745$; $p<0.001$), and the increase of cognitive restraint of eating by the 8^{th} week ($\beta=0.351$; $p<0.001$) predicted greater weight loss during the program. The variance explained by the model (adjusted R^2) was 60.7%.

In the assessment of successful body weight maintenance, according to the correlation analysis successful weight maintenance correlated significantly with the increase of cognitive restraint of eating reached by the end of the program (R=0.37; p=0.009), regarding weight loss goals successful weight maintenance correlated with smaller difference in percentage between the actual and desired bodyweight (R=-0.31, p=0.037) and between the actual and acceptable body weight (R=-0.31, p=0.031). In addition, greater weight loss measured one month after the end of the program (R=0.43; p=0.003), the increase in cognitive restraint of eating (R=0.43; p=0.003), and the decrease in emotional eating (R=0.36; p=0.014) also correlated significantly with weight maintenance. The results of the multiple linear regression revealed that the change of bodyweight in percentage measured in the first month after the closure of the program (β=0.542; p<0.001), the decrease in emotional eating measured during the follow-up period of one month (β=0.323; p<0.001), and the difference in percentage between the actual and acceptable bodyweight (β=-0.313; p<0.001) at the end of the program predicted successful weight maintenance the most in the follow-up period. The explained variance of the model was 44.4%.

DISCUSSION

1. The relationship of sociocultural effects on body dissatisfaction and prejudices against the obese in adolescence

The results indicate that body image dissatisfaction and prejudices against the obese are present both among boys and girls. We managed to confirm several explanatory variables of body image dissatisfaction identified earlier in the literature. According to the results of the hierarchical multiple linear regression analysis, besides higher bodyweight, subjective nourishment status, being a female and having lower self-esteem, it is greater exposure to media influence and deeper internalization of the thin-ideal that explains body dissatisfaction significantly. The internalization of the thin-ideal has a mediating role between media influence and body dissatisfaction.

However, we could not confirm the explanatory power of sociocultural influence and their internalization in prejudices against obese people. When judging the obese boy, no sociocultural influence (media, parents, and peer) was found to have a significant explanatory power; however, when judging the obese girl, only the parental influence referring to the importance of thin-ideal was confirmed. Furthermore, the internalization of the thin-ideal did not demonstrate a significant linear association with the development of prejudices against obese

girls, regarding boys the higher extent of internalization of the athlete-looking body ideal was associated with more positive judgement of the obese boy.

Therefore, though the existence of prejudices against obese people was confirmed in the age group of 10-15 years in our study, we could not acquire a complete picture of its possible causes. These results highlight the necessity for further investigations, which would aid to explore and understand better the development of negative prejudices and discrimination related to obesity, contributing to develop proper interventions in the struggle against these socially accepted prejudices.

2. The stigmatization of obesity among Gypsy and Hungarian children

We are the first in our country to assess prejudices against the obese among Gypsy children. The assessment has supported our hypothesis that Gypsy children are more accepting towards their obese peers. They evaluated both the figure of the obese boy and the obese girl more positively than children with Hungarian origin. Therefore, we can assume that they evaluate obesity in a different way than children with Hungarian origin. To clarify the causes of this difference further research is required.

3. Evaluating the efficiency of behavioral therapeutical weight loss groups supplemented with self-supportive components during the program and in a one-year perspective

Our results indicate that the 24-week behavioral therapeutical weight loss program supplemented with self-supportive elements can be a cost-effective way to facilitate the weight loss of overweight and obese individuals. 89% of the participants could reach a weight loss of at least 5-10% which can be expected also in case of professional weight loss methods. 73.5% of them managed to keep this rate of weight loss even one year after the closure of the program. In one third of them (35%), the extent of weight loss exceeded 10%.

Besides losing weight there were favorable changes also in weight loss goals, eating behaviors, physical exercising habits, body image, and general psychological well-being of the participants, and these improvements remained stable even in the one-year follow-up period.

Regarding successful weight loss and weight maintenance, to sum up we can state that though we tested the predictive power of several new variables and variables that have been previously assessed in numerous studies, in our study few of them had actual significant predictive power. Among the variables assessed in international studies, we confirmed only the predictive power of initial weight loss; however, we identified several novel variables which would be worth being confirmed in further studies.

The value of our study derives from the fact that to our knowledge we were the first in Hungary to perform the effectiveness check of behavioral therapeutical weight loss method from a one-year perspective. We were also the first to apply the transtheoretical model of behavioral alteration in favor of helping overweight and obese individuals to lose weight. Further merit of the study is the preliminary screening of the participants and the prospective design which enables to analyze cause-effect relations. Since obesity is a risk factor for several chronic diseases, introducing this weight loss method would be required in specialized medical care. It would be useful in our opinion to extend the weight loss program to further special groups, for instance those who live with type 2 diabetes.

SUMMARY

In our studies we aimed to acquire a more precise picture of prejudices against the obese, and of behavioral therapeutical options of treating obesity. Despite the fact that obesity is a major issue in our country, the psychological support and research on that issue is infinitesimal. In contrast with the huge international interest, studying the psychological options of treating obesity is less characteristic in our country.

During the assessments on the one hand we confirmed the international results in a Hungarian population, and on the other hand we revealed several novel factors. During the studies we aimed to apply the modern multivariable statistical analyses to reveal more associations.

We reckon that our results may contribute to the better understanding of prejudices against obese individuals, and that they may demonstrate a direction towards elaborating and introducing a protocol of evidence-based behavioral therapeutical weight loss. By all means, we believe it is crucial to continue new, intriguing research directions based on our results.

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