

The Impacts of Obesity on Psychological Well-being: A Cross-sectional Study about Depressive Mood and Quality of Life

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Objectives : The aim of this study was to assess whether individuals who visit clinics to ask medical help for obesity treatment depict comparable levels of depression, body dissatisfaction, eating psychopathology and lower quality of life.

Methods : This is a cross sectional study with 534 females who sought treatment for their obesity or overweight being recruited in seven clinical units in Seoul, Korea. The patients group was divided into two groups. The group 1 consisted of the patients with BMI >25 kg/m². The women who showed BMI ≤ 25 kg/m² among patients recruited for this study were classified as the group 2. The control group (group 3) was composed of 398 healthy females who have never tried to lose weight.

Results : We found that group 1 had higher frequency of more than moderate level of depression than group 2 and group3 did. Both patients groups showed greater eating

disordered attitudes and behaviors regardless of obese condition than the control group. Group1 showed relatively lower level of quality of life than group2 and group3 in terms of the quality of life related to physical well-being. In addition, the control group reported higher quality of life in psychological health than both patients groups did.

Conclusions : In conclusion, it is necessary for clinicians to make a careful evaluation of depressive tendency and eating disorders when obese women seek for medical help. The combination of medical treatment and psychological approach for obese women would result in higher quality of life.

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Key words : Overweight, Obesity, Quality of life

INTRODUCTION

Obese people are subjected to social rejection, discrimination and negative stereotyping [1]. Such experiences could be expected to lead to negative consequences in terms of self-image, self-esteem and mood, and there is a widespread assumption that obesity has profound psychological costs [1]. Obesity has a major impact on mental health, psychological well-being and quality of life as well as on general medical illnesses. Obesity represents a major health problem with significant economic implications for the society [2]. Obese people confront social discrimination and stigmatization in almost every situation of their lives. There seems to be a tendency of lower education level and decreased opportunity for a job in this population. It has been assumed that a higher than normal prevalence of psychopathology is

observed in obese group [1] and that there is a relationship between body mass index (BMI) and the degree of psychiatric distress. The relation between obesity and the depressive mood in obese women has attracted much interest among psychiatric clinicians and researchers [3,4]. More specifically, the patients who visit clinical units to seek for bariatric help tend to show higher prevalence of depression, binge eating disorder and borderline personality disorder [5,6]. Depression is one of the most common psychiatric disorders that accompany significant impairment of both social and professional functioning. During a depressive episode, the patient has the same level of quality of life as a patient with a severe stroke [7]. The depressive tendency of obesity patients leads to the failure of alimentotherapy and the psychiatric approach to reduce the symptoms of depressive disorders contributes to the successful weight loss [8]. It has also

been reported that ongoing weight loss in obesity treatment influences the significant decrement of the depression index score [9,10]. The depressive individuals with obesity usually stay in relatively low quality of life and even only moderate levels of weight loss causes the improvement of quality of life [11]. However, the relationship between obesity and psychological maladjustment is still controversial. Probabilities of different methods measuring depression and obesity may cause diverse results in this issue. BMI calculated using self-reported weights and heights also might be a factor which contributes to deviated results caused by false reporting of weights that is usually reported to be lighter than actual weights. The aim of this study was to assess whether individuals who visit clinics to ask medical help for obesity treatment depict comparable levels of depression, body dissatisfaction, eating psychopathology and lower quality of life, comparing with the control group who is not

related to any bariatric methods.

SUBJECTS AND METHODS

Five hundred and thirty four females who sought treatment for their obesity or overweight were recruited from July to August of 2003 in seven clinical units in Seoul, Korea. The patients group was divided into two groups. The group 1 consisted of the patients with BMI ≥ 25 kg/m² (N=262; mean age 34.19 \pm 9.51). The women who showed BMI < 25 kg/m² among patients recruited for this study were classified as the group 2 (N=272; mean age 31.95 \pm 9.01). Anyone who was reluctant to participate in this study was excluded. The control group was composed of 398 healthy females who have never tried to reduce weight, including visiting bariatric clinics. They were recruited from August to September of 2003 among the population of females that had BMI < 25 kg/m² and were in similar age group to the patients group. The control group was designated as the group 3 (N=398; mean age 27.67 \pm 7.65). All participants were informed about the procedures and aims of this study. They filled out the questionnaires anonymously with an appropriate amount of time. Participants' age, educational level, marital status, monthly income, occupation, weight and height were assessed by questionnaire. Self reported weight and height was used to calculate body mass index (BMI, kg/m²)[12]. Demographic survey also included the weight which participants considered to be ideal for themselves, the presence of the obese members in their direct family line, the age and the weight when they became obese for the first time, the stressful event history at the first obesity onset, the number and methods of trials to lose weight before they visited clinics and the previous history of being bantered due to obesity. The Beck Depression Inventory [13,14] is a 21 item self-report questionnaire that assesses depressive symptoms. Its reliability and validity have been well documented [15]. We

Table 1. General characteristics of study populations

Characteristics	Group 1	Group 2	Group 3
Age	34.19 \pm 9.51	31.95 \pm 9.01	27.67 \pm 7.65
Age when the heaviest	33.21 \pm 10.69	28.00 \pm 8.64	23.28 \pm 7.67
The heaviest weight	73.88 \pm 9.06	57.32 \pm 7.13	55.43 \pm 5.60
Current weight	72.10 \pm 9.14	54.06 \pm 6.05	51.69 \pm 4.99
Current height	159.39 \pm 5.16	159.96 \pm 5.33	161.60 \pm 4.72
Age when the lightest	24.98 \pm 6.07	25.99 \pm 6.50	24.95 \pm 8.46
The lightest weight	56.82 \pm 8.24	48.31 \pm 5.18	48.16 \pm 4.53
Ideal weight perceived	56.20 \pm 5.54	48.86 \pm 3.95	48.82 \pm 3.55
Number of trials	2.88 \pm 2.59	3.57 \pm 2.65	2.74 \pm 2.46
Body dissatisfaction score	82.61 \pm 12.62	74.70 \pm 13.76	70.87 \pm 12.91
Depression score	15.54 \pm 7.49	12.60 \pm 6.15	12.93 \pm 7.64
Bulimia score	73.43 \pm 18.77	67.10 \pm 20.44	62.31 \pm 18.66
Body mass index	28.33 \pm 2.80	21.10 \pm 1.86	19.80 \pm 1.78
Education (%)			
< 6	1 (0.7)	0 (0.0)	0 (0.0)
6 ~ 9	10 (7.5)	2 (1.5)	0 (0.0)
9 ~ 12	57 (42.5)	55 (40.4)	3 (1.5)
>12	66 (49.3)	79 (58.1)	193 (98.5)
Total	134 (100)	136 (100)	196 (100)
Economic status (%)			
Low(<1 million won)	23 (26.1)	25 (28.7)	59 (38.1)
Middle(1 to 3 million won)	37 (42.0)	42 (48.3)	55 (35.5)
High(>3million won)	28 (31.8)	20 (23.0)	41 (26.5)
Total	88 (100)	87 (100)	155 (100)
Marital status* (%)			
Single	52 (38.8)	67 (48.9)	139 (70.2)
Married	78 (58.2)	65 (47.4)	56 (28.3)
Divorce	2 (1.5)	5 (3.7)	2 (1.0)
Bereavement	2 (1.5)	0 (0.0)	0 (0.0)
Total	134 (100)	137 (100)	198 (100)

* tested by Chi-square test, p=0.000

measured the degree of bulimic and binge eating tendency using the Bulimia Test (BULIT)[16] which was translated into Korean language by Yoon in 1996. The World Health Organization Quality of Life assessment Instrument (WHOQOL) is a self-report questionnaire invented by World health Organization (WHO) with the aim to measure the quality of life in the various cultures. Quality of life has been defined by the World Health Organization as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. The instrument is organized into six broad domains of quality of life. These are: physical domain; psychological domain; levels of independence; social relationships; environment; and spiritual domain. Within each domain a series of sub-domains (facets) of quality of life summarize that particular domain of quality of life. The WHOQOL's overall coverage of quality of life ensures a conceptual coherence, missing from many other measures of health status

[17]. In this research, we used the Korean version of WHOQOL which has been standardized by Min et al. [18] according to the WHO's index to form a non-English version. Body dissatisfaction was measured using the checklist of self body images which had 25 items. Scores range from 1 (the most satisfied) to 5 (the least satisfied), with higher scores representing greater negative self body images. Participants were asked which of the scores they considered to be their satisfaction level about their bodies. SPSS version 12.0 (Chicago, Illinois Inc.) was used to analyze the data statistically. The general characteristics of study populations were evaluated using descriptive statistics. The frequencies of BDI grades, BULIT grades and BULIT quartiles according to three study groups were also analyzed with chi-square test. Analysis of Variance (ANOVA) was used to investigate WHOQOL according to three study groups. Polynomial logistic regression method was also applied. p-value was set at 0.05.

Table 2. Frequencies of BDI grades according to groups, numbers(%)*

BDI	Group 1	Group 2	Group 3
Normal(~9)	27 (20.6)	49 (36.0)	74 (37.2)
Mild(10~15)	42 (32.1)	44 (32.4)	65 (32.7)
Moderate(16~23)	47 (35.9)	35 (25.7)	41 (20.6)
Severe(24~)	15 (11.5)	8 (5.9)	19 (9.5)
Total	131 (100)	136 (100)	199 (100)

* tested by Chi-square test, p=0.009

Table 3. Frequencies of BULIT grades according to groups, numbers(%)*

BULIT	Group 1	Group 2	Group 3
Normal(~81)	97 (73.5)	105 (76.6)	169 (84.9)
Morbid(82~101)	27 (20.5)	22 (16.1)	22 (11.1)
Severe(102~)	8 (6.1)	10 (7.3)	8 (4.0)
Total	132 (100)	137 (100)	199 (100)

* tested by Chi-square test, p=0.089

Table 4. Frequencies of BULIT quartiles according to groups, numbers(%)*

BULIT	Group 1	Group 2	Group 3
1st quartile(~65)	12 (9.4)	34 (25.2)	65 (33.3)
2nd quartile(~75)	18 (14.1)	34 (25.2)	61 (31.3)
3rd quartile(~83)	33 (25.8)	30 (22.2)	38 (19.5)
4th quartile(84~)	65 (50.8)	37 (27.4)	31 (15.9)
Total	128 (100)	135 (100)	195 (100)

* tested by Chi-square test, p=0.000

Table 5. Crude Odds ratio and Adjusted Odds ratio according to depression, bulimia and body image for study groups

	Crude OR	95% CI	Adjusted OR*	95% CI
Depression				
Group3	1.00		1.00	
Group2	0.93	0.50 ~ 1.76	2.04	1.36 ~ 3.10
Group1	2.61	1.20 ~ 5.67	4.63	2.82 ~ 7.56
Bulimia				
Group3	1.00		1.00	
Group2	3.02	1.47 ~ 6.18	0.63	0.41 ~ 0.98
Group1	3.50	1.60 ~ 7.60	0.95	0.60 ~ 1.52
Body image				
Group3	1.00		1.00	
Group2	2.37	1.12 ~ 5.01	0.67	0.47 ~ 1.02
Group1	7.34	3.37 ~ 16.16	2.25	1.43 ~ 3.52

* adjusted for age and marital status

Table 6. Mean score of WHO QOL according to groups

WHO QOL	Group 1	Group 2	Group 3
The maximum score is 20			
Physical domain*	12.43 ± 2.61	13.39 ± 2.17 [†]	13.41 ± 2.29 [†]
Psychological domain*	11.51 ± 2.28	11.99 ± 2.21	12.31 ± 2.40 [†]
Social relationships	12.88 ± 1.92	12.90 ± 2.09	13.14 ± 1.93
Environment	10.98 ± 2.01	10.83 ± 2.04	10.91 ± 1.97
The maximum score is 100			
Physical domain*	52.46 ± 15.85	58.22 ± 13.80 [†]	58.58 ± 14.22 [†]
Psychological domain	47.69 ± 13.23	50.49 ± 13.11	52.52 ± 14.17 [†]
Social relationships	55.50 ± 12.02	55.64 ± 13.10	57.13 ± 12.05
Environment	43.74 ± 12.63	42.82 ± 12.76	43.35 ± 12.32

Values are expressed by mean ± standard deviation.

*p<0.05: post-hoc test contrast to group 1, [†] tested by ANOVA

RESULTS

Nine hundred and thirty-two participants completed the questionnaires. The average age of three groups was 34.19 years (Group 1), 31.95 years (Group 2) and 27.67 years (Group 3), respectively. The average of body dissatisfaction scores which were measured by the checklist of the self body images was 82.61 for Group 1, 74.70 for group 2 and 70.87 for Group 3. The averages for the depression scores and bulimia scores of each group were also analyzed (Table 1). The average BMI was 28.33 (group1), 21.10 (group2) and 19.80 (group3). There were statistically significant differences in education level and marital status among three groups as analyzed by chi-square test. However, the groups did not differ on economic status (Table 1). It was predicted that the obese patients group (Group 1) would show higher scores for depression and body dissatisfaction. As we predicted, we found that group 1 (the patients with BMI ≥ 25 kg/m²) had higher frequency of more than moderate level of depression than group 2 (the patients with BMI < 25 kg/m²) and group 3 (the control group with BMI < 25 kg/m²) did (Table 2). Additionally, group 2 depicted 2.04 times higher odds ratio than group 3 in depression and 4.63 times and 2.25 times higher odds ratios were shown in group1 in terms of depression and body dissatisfaction respectively, compared with group 3 (Table 5). Preceding the results of this study, we presupposed that patients group in the normal range of body weight (Group 2, the patients with BMI < 25 kg/m²) was more likely than group 1 and group 3 to report eating disorders. However, in our study, both patients groups (Group 1 and Group 2) showed greater eating disordered attitudes and behaviors regardless of obese condition than the control group (Table 3, 4). In regard to the matter of quality of life, group 1 (the patients with BMI ≥ 25 kg/m²) showed relatively lower level of quality of life than group 2 and group 3 in terms of the

quality of life related to physical well-being. In addition, the control group (Group 3) reported higher quality of life in psychological health than both patients groups (Group 1, 2) did (Table 6).

DISCUSSION

Several studies have proven that obesity leads to depression and low self-esteem. At all ages, body esteem was lower in the girls with higher BMI, and the associations between weight concern, body dissatisfaction and weight status increased with age [19]. There are consistent findings of a relationship between body mass index (BMI) and body dissatisfaction in children, particularly in girls [20]. Body dissatisfaction tends to be more common in girls than boys. Women are under more pressure to be thin [21]. Other studies supported that the negative stereotyping on psychological well-being of overweight and obese people has been exaggerated. Obese children may have only moderate levels of body dissatisfaction, and few are depressed or have low self-esteem in spite of adverse social and interpersonal consequences of obesity. As many as half of obese and overweight children and adolescents in some community studies appear not to be aware that they are overweight. At the same time, many normal-weight and even underweight individuals express dissatisfaction with their bodies whilst many who are overweight or obese do not. Body dissatisfaction is not, therefore, a unique marker in obesity [1].

In our research, the obese patients group (the patients with $\text{BMI} \geq 25 \text{ kg/m}^2$) showed higher frequency of more than moderate level of depression and lower level of quality of life related to physical well-being than average-weight patients and control groups. Average-weight patients (the patients with $\text{BMI} < 25 \text{ kg/m}^2$) who sought treatment for their obesity or overweight which they thought they had depicted 2.04 times higher odds ratio than

control group with $\text{BMI} < 25 \text{ kg/m}^2$ in depression. 4.63 times and 2.25 times higher odds ratios were shown in the patients with $\text{BMI} \geq 25 \text{ kg/m}^2$ in terms of depression and body dissatisfaction respectively, compared with control group. The higher quality of life in psychological health was reported in control group compared with both patients group. These results suggest that overweight and obese women are likely to have depressive mood, lower quality of life and low self-esteem related to body satisfaction. The distorted findings of psychological well-being which were most significantly expressed in obese or overweight group in this study were depression, body dissatisfaction and lower quality of life. It is interesting that the women who were not overweight but visited clinical units to seek medical help for obesity treatment showed more depressive tendency comparing with the women who never visited bariatric clinics. Our study also examined that patients group regardless of weight status showed greater eating disordered attitudes and behaviors than the control group. Overall, these results may conclude that clinic attenders who are aware that they need medical treatment for obesity independent of weight status tend to report psychological distress, eating pathology and depressive symptoms. According to Wardle and Cooke in the literature published in 2005, studies of clinical samples typically report poorer psychological well-being in treatment seekers when compared with population-based obese and normal weight controls [1]. Generally, clinical samples show lower self-esteem than obese or normal-weight community controls. It may be that those who seek treatment are more adversely affected psychologically by their obesity than those who do not [1]. A few limitations should be noted. The present study was partly dependent on self-reported measures, which implies that participants might not report accurately or answer questions in a more socially acceptable way. Some authors have argued that minority

groups may be particularly likely to answer surveys in the way that they perceive the researcher to expect [22]. This should be considered to reach a more reasonable conclusion of this research. In addition, we sampled patients who sought treatment at bariatric clinical units. It is unclear whether the obtained results from this study are generalizable to community samples. One more limitation concerns the study design. We conducted the cross-sectional study. This emphasizes the need for longitudinal studies in the causal relationship between obesity and psychological well-being. In spite of the limitations mentioned above, this study underscores the necessity that clinicians evaluate depressive tendency and eating disorders carefully when obese women seek for medical help. The combination of medical treatment and psychological approach for obese women would result in higher quality of life and psychological well-being. Treatment programs should concern that obese people face social discrimination, stigmatization and negative stereotyping and this might result in psychological maladjustment in obese or overweight population. Psychological problems that obese people tend to experience are not just an inevitable consequence of obesity but complications of obesity which should be treated appropriately.

CONCLUSIONS

In conclusion, obese women are likely to have depressive mood, lower quality of life and low self-esteem related to body satisfaction. Moreover, clinic attenders who are aware that they need medical treatment for obesity independent of weight status tend to report psychological distress, eating pathology and depressive symptoms. Due to a few limitations this study showed, the need for longitudinal studies in the causal relationship between obesity and psychological well-being should be considered. Nevertheless, we conclude that it is

necessary for clinicians to make a careful evaluation of depressive tendency and eating disorders when obese women seek for medical help. The combination of medical treatment and psychological approach for obese women would result in psychological well-being.

REFERENCES

1. Wardle J, Cooke L. The impact of obesity on psychological well-being. *Best Pract Res Clin Endocrinol Metab* 2005 Sep;19(3):421-440
2. Jeong BG, Moon OR, Kim NS, Kang JH, Yoon TH, Lee SY, Lee SJ. Socioeconomic costs of obesity for Korean adults. *Korean J Prev Med* 2002; 35(1) :1-12 (Korean)
3. Wing RR, Matthews KA, Kuller LH, Meilahn EN, Plantinga P. Waist to hip ratio in middle-aged women: associations with behavioral and psychosocial factors and with changes in cardiovascular risk factors. *Arterioscler Thromb* 1991; 11(5): 1250-1257
4. Sullivan M, Karlsson J, Sjoström L, Backman L, Bengtsson C, Bouchard C, Dahlgren S, Jonsson E, Larsson B, Lindstedt S, Naslund I, Olbe L, Wedel H. Swedish obese subjects (SOS) an intervention study of obesity: Baseline evaluation of health and psychosocial functioning in the first 1743 subjects examined. *Int J Obes Relat Metab Disord* 1993; 17(9): 503-512
5. Prather RC, Williamson DA. Psychopathology associated with bulimia, binge eating, and obesity. *Int J Eat Disord* 1988; 7(2): 177-184
6. Fitzgibbon ML, Stolley MR, Kirschenbaum DS. Obese people who seek treatment have different characteristics than those who do not seek treatment. *Health Psychol* 1993; 12(5) :342-345
7. Sobocki P, Ekman M, Agren H, Krakau I, Runeson B, Martensson B, Jonsson B. Health-Related Quality of Life Measured with EQ-5D in Patients Treated for Depression in Primary Care. *Value Health* in press 2007
8. Faith MS, Matz PE, Jorge MA. Obesity-depression association in the population. *J Psychosom Res* 2002; 53(4): 935-942
9. Wadden TA, Vogt RA, Andersen RE, Bartlett SJ, Foster GD, Kuehnel RH, Wilk J, Weinstock R, Buckenmeyer P, Berkowitz RI, Steen SN. Exercise in the treatment of obesity: Effects of four interventions on body composition, resting energy expenditure, appetite, and mood. *J Consult Clin Psychol* 1997; 65(2): 269-277
10. Wadden TA, Stunkard AJ, Liebschutz J. Three-year follow-up of the treatment of obesity by very low calorie diet, behavior therapy, and their combination. *J Consult Clin Psychol* 1998; 56(6): 925-928
11. Fontaine KR, Barofsky I. Obesity and health-related quality of life. *Obesity Rev* 2001; 2(3): 173-182
12. Garrow JS, Webster J. Quetelet's index (W/H²) as a measure of fatness. *Int J Obes* 1985; 9(2): 147-153
13. Beck AT, Ward CM, Mendelson M, Mock JE, Erbaugh JK. An inventory for measuring depression. *Archiv Gen Psychiatry* 1961; 4(6): 561-571
14. Han HM, Yeom TH, Shin YW, Kim KH, Yoon DJ, Jung KJ. The research on Korean version of Beck Depression Inventory. *J Korean Neuropsychiatr Assoc* 1986; 25(3): 487-502 (Korean)
15. Didie ER, Fitzgibbon M. Binge eating and psychological distress: Is the degree of obesity a factor? *Eat Behav* 2005; 6(1): 35-41
16. Smith MC, Thelen MH. Development and validation of a test for bulimia nervosa. *J Consul Clin Psychology* 1984; 52(5): 863-872
17. Billington DR. WHOQOL-Annotated Bibliography. WHO/MNH/MHP/98.4. Rev.2. Geneva : WHO; 1999. p. 3-4
18. 민성길, 김광일, 박일호. 한국판 세계보건기구 삶의 질 척도 지침서. 하나의학사. 2002, p47-70
19. Davison KK, Markey CN, Birch LL. A longitudinal examination of patterns in girls' weight concerns and body dissatisfaction from ages 5 to 9 years. *Int J Eating Disord* 2003; 33(3): 320-332
20. Ricciardelli LA, McCabe MP. Children's body image concerns and eating disturbance: A review of the literature. *Clin Psychol Rev* 2001; 21(3): 325-344
21. Kang YJ, Sohn MS, Jin KN, Kim HJ, Ohr HC, Suh SJ. Factors influencing weight control behavior and intention of obese children and adolescents. *Korean J Prev Med* 1998; 31(2): 199-214 (Korean)
22. Smolak L, Striegel-Moore RH. Challenging the Myth of the Golden Girl: Ethnicity and Eating Disorders. In: Striegel-Moore RH, Smolak L, Editors. *Eating disorders: Innovative Directions in Research and Practice*. Washington, DC: American Psychological Association; 2001. p. 111-132