

OBESITY AND DEPRESSION: THEIR IMPACT ON QUALITY OF LIFE AMONG POSTGRADUATE STUDENTS IN PAKISTAN

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ABSTRACT

The present study aimed to investigate the relationship between Obesity, Depression, and Quality of Life in postgraduate students. Sample comprised of 200 students with approximately equal number of obese and non-obese, taken from different colleges, universities of Wah Cantt, and Islamabad. Revised version of Beck Depression Inventory (BDI; 1971) and Quality of Life (QOL; 2003) scales were used to measure the depression and Quality of Life, respectively. Body Mass Index was calculated with the help of BMI calculator (a measuring index of obesity). Non-probability sampling was applied for data collection. Correlation, t-test, and Regression analysis were computed to see the differences and relationship between the study variables consecutively. Results indicated that students with high body mass index experience high level of depression and poor quality of life. There was a negative association between obesity and quality of life. Depression was positively associated with Body Mass Index and negatively related with quality of life. Students belong to low socio economic status experienced more depression and poor quality of life than high socio economic status people did. Female students showed more depression as compared to males students.

Keywords: obesity, depression, quality of life, body mass index (BMI), students.

INTRODUCTION

Obesity is an increase rate of body fat, which leads the individuals towards high risk of illness, abnormality and even death. It is increase in weight, which is not appropriate with age, height and body structure of individuals (Saunders Comprehensive Veterinary Dictionary, 2007). During the last few decades the percentage of overweight and obesity increased rapidly, the prevalence of obesity in Americans individual has increased by 22% for women and 7% for men (Brownell, 1991). The most likely environmental factors that are contributing to the present obesity level are low physical activities and excessive use of calories (Hill & Melanson, 1999; Dipietro, 1995).

In Asian nations, the obesity rates are high than in the United States, and in many countries obesity is higher in women than men. In past ten years i.e. from 1990-2000,

the increased rate of obesity in children and adolescents are 15.3% and 15.5% correspondingly (Ogden, Flegal, Carroll, & Johnson, 2002). Sarafino & Edward (2008), found that females are more conscious about their weight and many boys are trying to gain weight. In many girls, the rate of overweight continues growing in adulthood. Moreover, the prevalence of obesity (BMI above 30 kg/m²) is high in those people living in urban areas as compared to rural (Dowse et al., 1995). Obesity rate increases with age that is obesity rate was 6.6% in 7 years old and rising to 13.8% in 10 years old individuals. In china the prevalence of obesity and overweight raised from 9.7% to 14.9% in urban areas and from 6-8% to 8.4% in rural areas between 1982 and 1992 (Ge, 1997). Overall, worldwide prevalence of obesity is estimated 25%. The same range is mentioned

for adolescents (Ogden et al., 2006; World Health Organization, 2007). Across culture, the prevalence ratio of depression in gender is 2:1 (Jacobi et al., 2004). Biological and psychosocial explanations reported the high prevalence of depression in females, and results indicated that depression is high in lower social class (Kessler et al., 1994)

Based on the present situation the prevalence of obesity in adults rises from 21% to 40% in the next 25 years (Kopelman, 2000). Data showed that near 60% of US adults, individuals are overweight and more than 31% are obese (Spieget & Alving, 2005). Obese people face many negative experiences like they are teased and rejected by other social groups (Brownell, 1991). Overweight and obesity effects the person's interpersonal relationship, education system, employment, health, and overall quality of life (Puhl, Henderson & Brownell, 2005). Obese people are less likely to be selected in employment settings than non-obese on the bases of same type of qualification level. This weight stigma has a bad and negative effect on their raise and permanency of employment (Roehling, 1999). Negative body image in individuals has many destructive psychological consequences like low self-esteem and depression (Noles, Cash & Winstead, 1985). National institute of health (Peters, 2011) gave the following categories for BMI as one of the measuring index of obesity. i.e., Underweight = <18.5, Normal weight = 18.5-24.9, Overweight = 25-29.9 and Obesity = BMI of 30 or above.

Depression mostly occurs during puberty age and the prevalence of depression is more in girls than boys (Twenge & Hoeksema, 2002), symptoms of depression in girls are associated with hormonal change is puberty stage. Increase in depressive symptoms is more among European American girls than African Americans and Latino girls, because they have no desire to be thin and afraid of decline in self-image and well-being (Hayward et al., 2000).

Quality of life is thought to be as multidimensional construct including an individual's perception of emotional, physical and social well-being having both emotional and cognitive component (Rubin & Peyort, 1999). WHO defined Quality of Life as "people's perception to their standards according to culture and values of their lives

in relation to their demands, achievements and concerns". This is a broad concept affected by the physical and psychological states, and the social relationship with the environment of the individual (Power, 2003; Coons & Kaplan, 1992). Four factors that are linked with the quality of life of individuals are, (1) good interaction with friends and family (2), health (3), friends and family health (4), the rules and standards of living (Phillips, 2006).

Different studies have done to evaluate the impact of illness on individual's quality of life. Obese individuals always remain in guilt, helplessness, low self-esteem and they lose their interest in physical activities (Wooley, 1991). Severely obese women reported high level of depression than severely obese men and individuals with poor body image are usually on high risk of depression. Overweight individuals are more depressed than normal (Dixon et al., 2003). For Individuals of age 12-14 years, there was more chance of depression when they continuously gain weight. Overweight adolescents reported low self-esteem and problem in social functioning than normal BMI (Swallen et al., 2005). Obesity and depression are interlinked with each other and they are considering disabilities (Simon et al., 2008). In females obesity is directly associated with major depression while in males depression and obesity are inversely proportional to each other. Adverse childhood experiences can promote the child to develop depression and obesity (Stunkard et al., 2003). Obesity is considered as a major health problem in many countries. For example, In England (1993) overall 15% of adults were found obese (13% of men, 16% of women), but in 2008 its prevalence increased from 15% to 25% (National Centre for Social Research, 2009). The results of a study indicated that obesity is negatively associated with health related quality of life. Low socio economic status (SES) people shows the higher level of obesity. It also found that overweight and obese people of low SES have lower health related quality of life than people with normal weight of the same group. In addition, obese people in higher SES have higher health related quality of life than individual of lower SES with same weight (Kinge & Morris, 2010).

As the literature highlighted the impact of obesity on individuals, this study will be helpful to examine how obesity can affect the quality of life of adolescents. The aim of the present study is to investigate the relationship between obesity, depression, and quality of life among students. Moreover, it also aimed to see the effect of obesity on depression and quality of life and to see the role of demographic variables (i.e. age, gender, education level etc.) on the study variables.

Hypothesis

1. Obesity will be negatively associated with the quality of life and positively associated with depression among students;
2. Individuals with low socio economic status will have poor quality of life and high level of depression;
3. Obese girls will score high on depression as compared to obese boys whereas; obese girls will have poor quality of life than obese boys.

Method

Table 1: Demographic profile of the sample (N = 200).

Characteristics	Frequencies	Percentages
Age		
Late adolescents (18-19)	63	31.7%
Early adults (20-22)	84	42.2%
Middle adults (23+)	52	26.1%
Gender		
Male	100	50%
Female	100	50%
Education		
Intermediate	24	12%
Bachelor	90	45%
Master	67	33%
M.phil & above	18	9.5%
Marital status		
Single	189	94.5%
Married	11	5.5%
Socio Economic Status		
Low	111	55.5%
High	89	44.5%

Instruments

Demographic Sheet. The demographic sheet was used to obtain information about participant's age, education, gender, marital status, socio economic status, and living system.

Beck Depression Inventory (BDI). Beck Depression Inventory was originally devised

Sample

The sample consisted of 200 students with equal distribution of obese and non-obese students from colleges and universities of Islamabad and Wah Cantt. Non-probability sampling was used for the sample selection. The age range was from 18 to 29 years (M= 20.85, SD= 2.68). Approximately, half of the sample belonged to late adolescence (n = 63) with age range 18 and up to 20 years, other belonged to early adults (n = 84) with age range 20-22 years, while remaining belonged to middle adults (n = 52) with age range 23 years and above (Berk, 1999). The sample was consisted of equal number of male and female participants. The socioeconomic status was classified with respect to their family monthly income level (low SES= <40000 and high SES= >40000), more than half of the participants belonged to low socio economic status (n = 111) and remaining were with high socio economic status (n = 89) (see table 1). Control variables for the study were education and socioeconomic status etc

by Beck in 1961 and was revised in 1971. This is a self-report questionnaire consisted of 26 items, that assesses the existence and severity of cognitive, affective, motivational and physical symptoms of depression. Every item of this inventory is scored on a 4-point scale. By adding all the items total scores are obtained and the score ranged from 0-63. Higher scores indicate high level of

depression. Cut off scores for depression ranges from 0-9 indicate no depression; 10-16 for mild depression; 17-23 for moderate depression; and 24 or above for severe depression. BDI is one of the most widely used instruments for the assessment of depression in clinical sample as well as in adolescents and adults. It detects present episodes of depression. Internal consistency and split half reliability coefficient of BDI is .92 and .93 respectively.

WHO-Quality of Life Brief Scale (WHO-QOL BREF). Quality of Life was assessed with the help of QOL. Quality of Life scale is a brief version of the WHO QOL-100 (100 items scale) with four domain scores. The WHO QOL scale consisted of 26 items and comprised of four dimensions, Physical functioning ;Psychological functioning, Social dimensions, and environmental The Scale was originally developed by WHO in 2003 (Power, 2003) where as it was adapted and translated in Urdu language in 2003 by Khan, Akhter, Ayub, Alam and Laghari. The scale has three negative items (items 3, 4, and 26). The overall scores on the scale can also be taken as an indicator of overall quality of life of the person reflecting that higher the scores better would be the quality of life. The alpha reliability of this scale is .94.

Body Mass Index (BMI). It is a consistent measurement of an individual's body weight to calculate his or her height and weight

(Peters, 2011). The formula for calculating BMI is (Weight (kg) / height m²).According to National Institute of Health (NIH), Underweight are those that have Body Mass Index less than 18.5; and individual with BMI range between 18.5-24.9 are considered normal; BMI between 25-29.9 are overweight; while individual with Body Mass index equal and above 30 will considered as obese.

Procedure

The participants were approached after taking the permission from authorities of the educational institutions they were studying in. Individuals were personally contacted, after taking informed consent they were briefed about the purpose of the research and were assured about the confidentiality of data and informed that they would only be used this for research purpose. First Body Mass Index of individuals were calculated through BMI formula to find their body weight then the questionnaires of Beck Depression Inventory (BDI) and Quality of Life (QOL) scales were handed over to them. All the participants were guided to read all the items and encircle the option how they feel and how each statement were described their situation.

Results

Analysis was done by using Predictive Analytics Software (PASW) 18. Inferential statistics (bivariate correlation, independent sample T-Test and regression analysis) were used to test the hypotheses.

Table 1: Pearson correlation between Body Mass Index (BMI), Quality of Life (QOL), and Beck Depression Inventory (BDI) (N=200).

Variables	1	2	3
1. Body Mass index	-	.07**	.12*
2. Quality Of Life		-	-.50*
3. Depression			-
M	25.82	16.41	21.19
SD	6.19	9.37	3.86

*p < .05

Table 1 shows Pearson correlation between Body Mass Index (BMI), Quality Of Life (QOL), and Depression. It shows that there is negative correlation between Quality of Life (M= 21.19, SD= 3.86) and Body Mass Index (M= 25.82, SD= 6.19) (r= -.07, p< .01). Table

also indicates that Depression (M= 16.41, SD= 9.37) is positively correlated with Body Mass Index (r= .12, p< .01), while it has significant negative correlation with Quality of Life (r= -.50, p< .01).

Table 2: Mean, Standard Deviation, and t value for male & female on Body Mass Index (BMI), Quality of Life (QOL), and Depression scale (BDI) (N=200)

Variables	Males (n=100)		Female (n=100)		t	p	95%CI		Cohen's d
	M	SD	M	SD			LL	UL	
Body Mass Index	25.56	5.77	26.08	6.61	5.90	.56	-2.25	1.21	0.08
Quality of Life	17.52	9.34	15.31	9.31	1.66	.09	-.39	4.81	0.24
Depression	91.37	12.38	92.38	15.39	5.11	.61	-4.91	2.89	0.07

Note. LL= Lower Limit; UL= Upper Limit; CI= Class Interval
 Table 2 shows mean differences across gender (males VS females) on Body Mass Index, Quality of Life, and Depression. The table

indicates non-significant differences of gender on Body Mass Index, Quality of Life, and Depression, which means there is no variation in these scales across gender ($p > .05$).

Table 3: Mean, Standard Deviation, and t value for low and high SES groups on Body Mass Index (BMI), Quality of Life (QOL), and Depression scale (BDI) (N=200).

Variables	Low SES (n=111)		High SES (n=89)		t	p	95%CI		Cohen's d
	M	SD	M	SD			LL	UL	
Body Mass Index	25.61	6.11	26.07	6.33	.51	.613	-2.19	1.29	0.07
Quality of Life	89.36	12.87	95.01	14.65	2.90	.00	-9.49	-1.81	0.41
Depression	17.57	8.79	14.98	9.91	1.96	.05	-.02	5.20	0.69

Note. $df = 198$; UL= Upper Limit; LL= Lower Limit; CI= Class Interval
 Table 3 shows mean differences between low and high SES groups on Body Mass Index, Quality of life, and Depression scale. Results indicate significant mean differences on Quality of Life ($t = -.51$, $df = 198$, $p < .05$), which shows that high socioeconomic status group ($M = 95.01$, $SD = 14.65$) have higher Quality of Life than low socio economic status group ($M = 89.36$, $SD = 12.87$). Table 4

also indicates significant difference on Depression scale for low and high socioeconomic status groups, which shows that low socioeconomic status group ($M = 17.57$, $SD = 8.79$) experiences higher level of depression than high socioeconomic status group ($M = 14.98$, $SD = 9.91$). Whereas, mean difference on Body Mass Index is found to be non significant, which means there is no significant difference in Body Mass Index due to low and high socio economic status.

Table 4: Regression Analysis of Body Mass Index on Depression, and Quality of Life (N= 200)

DV	Independent Variable	B	S.E	β	t	P	R ²
QOL	Body Mass Index	-.21	.14	-.01	.15	.88	25%
	Depression	.74	.09	.50	8.09	.00	

Note. $df = 197$; $R = .50$, $R^2 = .25$, Adjusted $R^2 = .24$.

Table 4 shows regression analysis of quality of life on Depression, and Body Mass Index. BMI and depression are the predictors of quality of life. Table 5 shows standard error, unstandardized coefficient and standardized coefficients. Results shows that Body Mass

Index (i.e. $\beta = -.01$, $p < .05$) has negative influence on quality of life, explaining 25% of variance in QOL, that is more the person will be obese, will have the poor quality of life but the result is non-significant. It also shows that depression ($\beta = .50$, $p < .05$) negatively predicts the quality of life and this is a significant predictor of quality of life.

Discussion

The aim of the present study was to investigate the relation between Obesity, Depression, and Quality of Life among college/ university students. It also aimed to examine the role of demographic variables (i.e., age, gender, education, marital status, and socioeconomic status etc). The results indicated negative correlation between obesity and quality of life (Table 1). That is more will be the body mass index of the individual lower will be the Quality of Life. The result is in line with previous studies. Previous researches show that obesity has a major effect of the health related quality of life (Doll, Peterson, & Brown, 2000). They found similar results on their study that high body mass leads to poor Quality of Life. Another study was conducted to explore the relationship between obesity and quality of life and also focus on the impact of obesity on quality of life. Obesity confers negative consequences on both (physical & psychosocial) aspects of quality of life.

Results also revealed that Body Mass Index has positive correlation with depression ($r = .12, p < .05$), (Table 1). These findings are consistent with past researches (Dixon et al 2003; Doll, Peterson, & Stewart-brown, 2000). Obese individuals always remain in guilt, helplessness, low self-esteem and they also lose their interest in physical activities (Wooley, 1991). Overweight individuals are more depressed than normal (Dixon, et al., 2003). For Individuals of age 12-14 years, there was more chance of depression when they continuously gain weight. Overweight adolescents reported low self-esteem and problem in social functioning than normal BMI (Swallen et al., 2005).

Our results do not show a significant difference between male and female on Body Mass Index, depression and quality of life (Table 2). As previous studies showed opposite results like, Webster et al. (2011) in a study found that women with lack of social support showed higher scores for post natal depression and poor quality of life. Those women who have high post natal depression reported poor quality of life. Severely obese women reported high level of depression than severely obese men and individuals with poor body image are usually on high risk of depression (Dixon et al., 2003). Findings of

the present research were not consistent with the literature (Hill & Melanson, 1999). It could be due to cultural differences. In West, home settings and other circumstances are different for individuals as compared to Eastern culture. To make the phenomenon clearer further research in this area would be very helpful.

The present study results displayed significant mean differences on depression scale ($t = 1.96, df = 198, p < .05$) and Quality of Life scale ($t = -2.90, df = 198, p < .05$), which shows that people of low socioeconomic status experience high level of depression and their Quality of Life is poor than of high socioeconomic status (Table 3). Besides this, people of low SES have lower health related quality of life and experience more depression than people of high status group. And people in higher SES have higher health related quality of life than individual of lower SES (Kinge & Morris, 2010). Findings also showed that depression ($\beta = .50, p < .05$) has significant positive impact on quality of life and quality of life has its negative impact on it (Table 4).

Limitations and suggestions

The cross sectional nature of the study hinders us to infer the causality. Purposive convenient sampling technique was used and sample was small that was taken from the colleges and universities effect the generalizability of the findings. Comparatively large sample size from different populations and backgrounds may be taken through random sampling technique. Self-report measures were used that may lead to chance of biasness. Qualitative studies may mitigate the effect of single source biasness. A general reservation and discrete attitude was evident due to stigma attached with discussion of obesity. Therefore, the socially desirable responses were inevitable that might have limited the assessment of true responses.

Conclusion

Obesity is associated with low self-esteem, poor self- concept, and makes an individual vulnerable to many psychological complications. Obese individuals may experience social rejection, poor interpersonal relationship, educational and/ or job related complexities, and their overall quality of life is affected. In addition, girls are more

vulnerable to experience depression and poor quality of life due to the obesity. Focused preventive measures and appropriate intervention strategies can mitigate the negative effects of obesity and improve the quality of life.

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