Article title: “Obesity associated with depression, environmental factors, and stress related eatings”: Analysis of obesity and its associated factors

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Abstract

Objective:
Recently in Pakistan obesity is a health problem. The relationship between depression, stress, social factors, emotional eating, and obesity is investigated in this study. Much research has been done on obesity and its associated factors like depression, stress level also the concerning problems caused by the obesity. The aim of this survey was to investigate that how depression, social factors, and stress-related eating are associated to obesity and overweight.

Methods:
A cross-sectional survey was conducted and distributed among different cities of Pakistan. Data was collected through questionnaire conducted online through Google Forms and distributed in different WhatsApp groups. Our research was conducted on both gender (male and female) and age of the participants ranged from 15 years and above within the region of Pakistan. SPSS.21 used for statistical purposes and the graphical data obtained.

Results:
A total of 134 responses were obtained, out of which 39.5% were obese. Various variables were taken as 47.3% respondents suffered from depression, 24.8% had the family history of obesity, 20% those who skipped their meal they lose their weight.

Conclusion:
Obesity is a multifactorial disease that caused by a combination of biological, genetic, social, environmental, and behavioral determinants.

Introduction:
Obesity or overweight related to excessive accumulation of body fat. It is associated with many other diseases including heart disease, diabetes, and stroke. It traditionally run-in families. Definition of obesity nowadays is that the overweight and obesity are based by measuring the height and weight. There are several etiological factors that has been find during this research study on which obesity depends. Obesity naturally has a multifaceted biological basis that includes eating habits, the biological factors related to normal body growth, genetics, adipose tissue function and energy expenditures. Obesity development may be examined from a psychological
perspective. There are a lot of environmental or genetic factors which enhance the obesity and caused people to become overweight. Genetic factors are estimated about 40–70% of variations in weight. Obesity is associated with depression, so it is hard to separate the two. There seems to be a reversible association between obesity and depression. People who are depressed usually get addicted to drugs which might cause obesity and same could happen with the people who are obese can be a victim of depression. The body weight and obesity are highly inherited. The deficiency of adipocyte-derived satiety hormone leptin is identified in highly obese children.

**Methods and material:**

A cross-sectional survey was conducted from 25th April to May 10th, 2022 and distributed among different cities of Pakistan. A proper questionnaire was made for this purpose and the data was collected through questionnaire conducted online through Google Forms and distributed in different WhatsApp groups. Our research was conducted on both gender (male and female) and age of the participants ranged from 15 years and above within the region of Pakistan. The responses obtained were from different cities of Pakistan such as Islamabad, Rawalpindi, Lahore, Sheikhupura, Sialkot and Gujranwala. The questionnaire consisted of a total of sixteen questions. Through simple random selection 134 responses from different individuals were obtained regarding the “Overweight and Obesity associated within depression and stress related eating”. Factors such as depression, stress, emotional eating, genetics, or environmental factors were included in this questionnaire. The resulting data was analyzed using the frequency percentage and bar charts, and the P value was calculated to make our conclusions. During the study, it was made sure that all the ethical standards were followed.

**Results:**

A total of 134 responses were obtained, out of which 39.5% claimed that they are overweight and suffering from obesity. The percentages of respondents for each variable include in the questionnaire as follows: 47.3% respondents suffered from depression, 24.8% have the family history of obesity. Further to 43.5% have eat their meal twice in a day, 11.5% eat more than three times a day while only few percentages of people who eat meal only once a day. It was also observed that about 20% those who skipped their meal they have lose their weight. 14% people claimed that they take medications which make them to eat excessively than their normal routine. Among the respondents, 25.2% people affirmed that they gain at least one pound increase in their weight immediately after eating. Also, about 31.3% claimed that the nervous character, depression
level, stress level, eating habits, environmental or hormonal factors have strong effect on the obesity. Other problems which linked to being overweight or obese are infertility (21.4%), cancer (10.7%), diabetes (33.6%), and heart disease (26%) were respond by the people. Our survey filled by both male and female. But we were able to get most responses from females. We circulated our responses in different WhatsApp groups and thus, females are the main respondents of this survey. The survey filled by about 86.3% by females and 13.7% by males.

Regression test used to predict our alternative hypothesis (H1) that whether health status, family history, skipping of meal, depression, stress, or emotional eating are significant predictors for obesity or weight. The binary logistic regression model was used and Hosmer-Lemeshow test was performed for goodness of fit along with exp(B) with 95% CI to regulate the number of times obesity could affected by various significant predictors. The P-value of Hosmer-Lemeshow test for the goodness of fit is (p= 1.000) which indicates that model was a good fit. Health status; well (p=0.346, 95% CI), very well (p=0.745, 95% CI), satisfactory (p=0.694, 95% CI), skipping of meal (p=0.141, 95% CI), emotional eating (p=1.000, 95%), social factors (p=0.05, 95%), family history; yes (p=0.262, 95% CI), No (p=0.637, 95%), depression (p=1.000, 95%), stress (p=1.000, 95%) were not statistically significant predictor of obesity. The overall accuracy is 87.7%. The odds ratio is 3.487 which indicates people who suffered from obesity, and they claimed about emotional eating, 3.487 times higher as compared to those who have no obesity. And, for sleeping pattern we obtained p-value (.000) by performing the test of normality on SPSS.

**Discussion:**

From our survey, various variables were taking into consideration, which affect the obesity among which include the depression, stress, emotional eating habits, genetic factors, and other environmental factors. In this study, 134 respondents were included who reported differences in age, stress level, genetics, depression, emotional eating habits, anxiety level, and various other psychological or cardiovascular disorders.

**Age and Obesity:**

Survey filled by people belonging to different age groups. The results demonstrated that the survey targeted youngsters age ranging from 21 to 25 years. And it was calculated that out of 39.5% of people with obesity 56.49% were from age group between 21-25 years and lowest percentage was about 10.69% of age group 26-30 years and 19.8% above than 30 years. By using the BMI, we
found that about 29.77% said they have normal body weight while approximately 51.99% respondents were overweight/obese and 18.32% were underweight.

**Depression & anxiety linked to obesity:**

Obesity is associated with depression, so it is hard to separate the two. There seems to be a reversible association between obesity and depression. People who are depressed usually get addicted to drugs which might cause obesity and same could happen with the people who are obese can be a victim of depression. The fact that they both carry a high prevalence and an increased risk of cardiovascular disease. In our questionnaire we observed about 47.3% suffered from depression and anxiety and eat meal more than three times in a day which in return caused them to become obese.

**Emotional eating and Obesity:**

Obesity has been consistently associated with emotional eating. Moreover, people with overweight have been found to display less powerful coping skills in response to emotions that are negative, which leads them to eat emotionally often. Emotional eating has also been associated with difficulties with weight loss. These difficulties are increased being eating, reduced self-monitoring, and lower quality social support. People having high BMI level also have taken high stress and are the more victim to emotional eating. As compared to the people who are under weight or normal weight, overweight people eat more frequently in negative state of emotion. About 49.62% start eating when they are anxious, 25.19% overeat when they are sad and 25.19% console themselves by eating when they are lonely.

**Genetics and Obesity:**

Obesity is an inherited trait it run in families. There are various genetic factors which contribute to obesity and provides recommendations for addressing the epidemic. There was an indication of physiological role of a lot of genes in regulating body fat distribution by the identification of mutation in many genes in spontaneous monogenic models of animals. In human the mutation in the leptin receptor, leptin, PC1, POMC, MC4-R (melanocortin 4-receptor), and PPAR (peroxisome proliferator-activated receptor) gamma two genes has been found and describes in the patients dealing with extreme obesity. But MC4-R mutation has dominant inheritance pattern with non-syndromic phenotype. The genes for these disorders have been found on chromosomes 9q34 and 1q21-22. In our questionnaire about 24.81% respondents have family history of obesity, and 58.14% have no family history and about 17.05% do not exactly know but they respond that they
might have genetic history for obesity but not to be sure about this. So, from these percentages we conclude that genetic plays a significant role on the onset of obesity.

Environmental factors, stress, and obesity:
Out of 39.5% people having obesity, 68.7% had stress and 31.3% people think that environmental factors also affect the obesity. These percentages showed that there are higher chances people with stress are at the higher risk of to become overweight or obese. On the other hand, the evidence for social and environmental factors that contribute to obesity are often underappreciated. Many medical providers still attribute obesity within a person’s control, such as dietary choices, amount of exercise, or willpower, which perpetuates a stigma that accompanies this disease.

Conclusion:
To conclude, we were able to obtain our desired results. Research studies with substantial procedures prove this theory that the overweight and obesity are associated within the depression and stress related eating. Current findings also suggest that future randomized controlled trials may test whether stretching sleep is an effective strategy to prevent weight gain and promote a healthy diet for those who suffer from depression. The research conducted through Google forms and only 134 respondents responded, we concluded our research with success.

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