



Association between Depressed Mood and Morbid Obesity: Experience from a Bariatric Surgery Program

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ABSTRACT

Introduction: Obesity is on the rise in Pakistan. This study aims to assess the association of depression and obesity in patients who have undergone bariatric surgery at our center.

Aims & Objectives: To assess the association of depression and obesity in patients who have undergone bariatric surgery at our center.

Place and duration of study: This one-year mixed descriptive study was conducted at Sir Ganga Ram Hospital, Lahore between January 2021 and January 2022

Material & Methods: Ninety bariatric surgery patients files were screened to see whether data regarding depression screening and follow-up was complete as per DSM-V formulated depression questionnaire. Patients were then randomly selected and asked for short interviews to understand themes and experiences regarding their mood to understand the association between obesity and depression.

Results: Statistically significant difference existed in the depression scores at each follow-up from the previous score and from baseline, showing decreased weight resulted in lower scores. Themes of (i) financial constraints and economic struggles, (ii) depression linked to eating habits, (iii) anger and irritability as a predominant symptom of low mood, and (iv) using religion as mental health therapy were picked during the interviews.

Conclusion: Bariatric and metabolic surgery should be offered to patients as per guidelines for patients who require it. Depression and mental health disorders are prevalent in the obese population, and these should be screened for and appropriately dealt with in both the pre-operative and post-operative phase. Surgical candidacy decision should not be based on the presence or absence of mental health disorders.

Key words: Bariatric surgery, depression, morbid obesity

INTRODUCTION

Pakistan in the last decade has seen a tremendous growth in the number of morbidly obese individuals¹. It is estimated from different studies that the obesity incidence in the country is somewhere between 25-40% including individuals who are overweight, obese and morbidly obese². Obesity has created a dilemma for this diaspora of South Asians due to its deleterious effects on diabetes control and worsening ischemic heart disease and hypertension prevalence and morbidities^{3,4}.

However, mental health and its association with obesity is overlooked in the Pakistani population. It is commonplace that mental health in Pakistan is neglected, where nearly 15% of the population may be inflicted by mental disorders. There are cultural taboos and hurdles associated with both identifying patients at risk by physicians and in directing towards appropriate care. Individuals themselves

may not be comfortable talking about their mood or mental health and may show resistance towards receiving care. A large part of the healthcare gap lies in insufficiently trained general practitioners to screen for mental health, an inadequate number of psychiatrists and mental health providers for the population, and a lack of teaching undergraduate medical students how to screen for mental disorders regardless of which specialty they pursue in their career^{5,8}.

In Pakistan stressors such as poverty, trauma, impact of terrorism has all played a role in the development of mental health disorders^{9,11}.

Obesity and depression are very interlinked phenomena. Up to half of obese people may become depressed, leading to worsening of eating habits and vicious cycles that further aggravate the depression and obesity. Further, up to half of individuals who are depressed may find themselves become obese due to comfort food or maladaptive eating patterns¹². This study has been conducted at a bariatric surgery unit in a public sector hospital that

provides free of cost services. It was started to combat the obesity epidemic that we were seeing in our country and surgical clinics quite often in the last four years. Having done over 90 procedures, we began screening and following patients for mental health recently to inculcate a holistic approach to our practice and program. This study was done to assess the association of depression and obesity in patients in our program.

MATERIAL AND METHODS

This is a mixed descriptive study conducted at Sir Ganga Ram Hospital, Lahore who had screening for depression and follow up data available from a period of January 2021 till January 2022. Patients were all enrolled after taking explicit informed consent. Short interviews were held with patients regarding their perceptions of their mood after review of files showed their depression screening and follow-up was complete. 8 questions were formulated based on the DSM-V criteria for screening for depression and these were asked pre-operatively, 4 weeks post-operatively and at 6 months post-operatively routinely for patients as per ward protocol. A total score out of 8 was tallied for each patient at each follow up visit. Patients were included if all these follow up scores were available in their medical records. Each patient was offered a psychiatrist consultation if the score was greater than 4. Data analysis was done using SPSS V24. All ethical considerations under the declaration of Helsinki were followed.

RESULTS

Quantitative Analysis: 24 patients were included in the follow-up cohort. 70.8% of participants were female and 29.2% were male. Patients had a mean age of 36.9 ± 8.73 years and mean follow up time of 13.6 ± 4.18 months.

Patients had a mean pre-operative weight of 133.2 ± 17.8 kilograms and had a mean weight loss of 45.5 ± 14.1 kilograms. Their mean pre-operative BMI was 51.2 ± 8.87 kg/m² with a mean change in BMI 17.2 ± 6.23 kg/m².

Table-1 shows the screening questions asked for depression according to the DSM-V criteria and the frequency at which they were present in patients pre-operatively, at 4 weeks and 6 months follow up and the mean depression score pre-operatively and respectively at follow up.

Variable (N=24)	Pre-operative	At 4 weeks	At 6 months
Depressed mood every day, most of the day?	62.5%	37.5%	4.2%
Markedly diminished interest of pleasure in activities?	41.7%	8.3%	8.3%
Weight loss or gain or appetite change associated with mood?	45.8%	25.0%	16.7%
Slowing down of thoughts or movement i.e psychomotor retardation or agitation?	66.7%	16.7%	4.2%
Fatigue or loss of energy associated with mood?	100%	79.2%	45.8%
Worthlessness or feelings of guilt?	41.7%	8.3%	0%
Diminished concentration at work or in daily activities?	75.0%	54.2%	20.8%
Recurrent thoughts of suicide or suicidal ideation?	4.2%	0%	0%
Depression Score	4.46 S \pm 1.35	2.29 \pm 1.3	1.04 \pm 0.99

Table-1: Frequency of depression symptoms present in participants pre-operatively and at follow-up with mean depression score pre-operatively and at follow up.

Student T-test was done to see if there was a significant difference between depression scores pre-operatively and at 4 weeks follow up and pre-operatively and at 6 months follow up, and at the 4 weeks follow up and 6 months follow up. P-values of 0.001, 0.02 and 0.008 were obtained respectively showing that a statistically significant difference existed in the depression scores at each follow-up from the previous score.

A bivariate analysis was done of depression score pre-operatively and weight pre-operatively, the Pearson correlation coefficient 'r' was 0.02 which shows a weak positive relationship. Such that higher

weights are slightly associated with higher depression scores.

A bivariate analysis was done of depression scores at 6 months and weight loss. A Pearson correlation coefficient 'r' of -0.3 was found. This shows that with greater weight loss there is a lower depression score.

Qualitative analysis: Patient were asked how they feel regarding their mood or feeling of sadness and their weight: Their statements are quoted here.

"It is a never-ending cycle. I diet and I lose 2-3 kilograms, but then I eat more because I feel hungrier. When I eat more I gain more weight than I had lost and it makes me upset and feel low. I become irritable and angry and feel hopeless. This has been the case for the past few years now."

"With the economical situation becoming difficult and the stresses of daily living one feels sad or depression. But not hopeless, because God is always there and he overlooks everything. I do feel upset about my weight gain but mainly because it slows me down and I feel tired all the time. I have lost a lot of productive hours due to my weight. God-willing it will be fine."

"My spouse says they find me beautiful when I am overweight and themselves stay fit. They keep feeding me saying it is out of love. I feel largely depressed and guilty because of all this. I have no energy to make my spouse happy, it is very depressing when it is only my spouse trying to make me happy, I often cry and feel low and don't want to do anything besides sleep or eat."

"I am a food vendor of sweetmeats. I have consumed those daily as well. All I do is sit at my shop all day selling and eating sweetmeats. I am not depressed, God does not like that, it is ingratitude. I am irritable now because I can not work as efficiently and thus I am losing days at work. The weight became this much, when and how, I do not know, it just happened but I am glad there is treatment for people like me."

"Every day is depressing for me and every day is a struggle. I am obese, I can barely move or do anything I want. I have to take so many medications for my blood pressure and sugar. It is depressing having to know that my body works only when I am on medications. Nothing feels right anymore. I cry often, I get angry often, I don't like speaking to friends or family as they irritate me. I used to love eating even that I do not like anymore, but I can not stop. I don't think I eat that much, but it is difficult to diet. Every time I try I fail and it feels worse."

Themes of (i) financial constraints and economic struggles, (ii) depression linked to eating habits, (iii)

anger and irritability as a predominant symptoms of low mood, and (iv) using religion as mental health therapy were picked during the interviews.

DISCUSSION

The case of depression and obesity is one that has affected people across all ages, gender, and creed. An individual suffering from obesity may find themselves the target of bullying, repeated taunts from even close family and friends about their weight and social discrimination and discomfort. All off these events amount to a sense of failure, loss of hope and guilt. As these symptoms persist they may find themselves feeling depressed for longer periods of time which in turn begins to affect daily performance, work and concentration and satisfaction with life thus further aggravating the depression. These individuals will certainly have a history of failed attempts at weight loss and may find themselves' eating more after periods of dieting thus worsening the obesity¹³.

In a country like Pakistan where the socioeconomic status of most of the population is below, at or marginally above the poverty line we can see that the obesity crisis in the country may be linked to unhealthier diets due to the greater affordability of cheaper and less healthier options. Studies have shown that economic crisis may breed greater obesity figures. As the obesity crisis in such a population increases, there are greater co-morbidities realised such as diabetes, hypertension, and ischemic heart disease. These in turn add a further financial stressor of regular medication and increased hospital visits. Both these factors-economic constraints and chronic co-morbid conditions- further add to the causative factors of depression in obese patients^{13,14}. We found in our results that our patients with economic constraints, obesity and co-morbid did find it harder to cope and these were factors linked to experiencing low mood and depression.

Pakistan is a Muslim majority country with a faith centric population. Collective faith and spirituality lends support to many of these individuals and may have a positive impact on protecting from severe depression. Further it may engender a sense of hopefulness from the idea that God will intervene and help as promised. Perhaps the strongest protection offered by faith is protection from suicide as Islam considers suicide a sin. Suicide rates in Pakistan were found to be 7.5 per 100,000 and individuals aged less than 30. This is much lower than the global suicide rate. The importance of faith in the Pakistani population is one that is important

to understand as it can be capitalized by physicians to help promote positive mental health messages that are faith-based. However, faith is only one component of an intricate dilemma where multiple factors lead to depression in a low middle-income country like Pakistan and obese individuals may suffer more frequently from it¹⁵⁻¹⁷.

In Pakistan due to socio-cultural approaches to parenting and societal influences individuals may be affected greatly by emotional dysregulation. This in turn has been shown in the literature to have an adverse impact on dietary habits where in emotional dysregulation turns into maladaptive eating patterns. Of our participants wherein one was fed by their spouse of out love and resulted in obesity and emotional maladaptive eating patterns associated with depression we see a classic example of emotional dysregulation. Likely due to socio-cultural factors and the influences of subservient behavior this individual was unable to stand up to their spouse or caved to the affectionate response even though they could identify that this response was having a negative health impact. However a lack of clarity associated with emotional dysregulation allowed this individual to indulge in certain maladaptive eating patterns resulting in obesity and depression. Understanding relationships in a socio-cultural appropriate context for all physicians dealing with obesity is fundamental to extracting an appropriate history and then formulating a plan and counselling that may engage the individual towards healthier choices for themselves resulting in better mental health outcomes^{18,19}.

We found that our screening questions for depression including feeling low mood went down considerably in all 8 components over 6 months follow up time. Low mood went from a reported 62.5% to 4.2%. We found that the mean depression score for each follow up at 4 weeks and 6 months was significantly decreased from baseline, where at baseline on average 4 out of 8 components of depression were experienced by participants. Studies have shown that after bariatric surgery over 90% of patients find satisfaction and find that their depression has become better²⁰. This is likely due to less hopelessness and guilt associated with weight and better emotional regulation as self-confidence and esteem are boosted with weight loss.

Large longitudinal studies show that patients undergoing bariatric surgery show an improvement in their depression in the first 2 years mainly as weight loss progresses, however this may be reversed if weight loss reaches a plateau or regain occurs. Nevertheless, the short-term effect of

improvement in depression is clinically significant as improvement in mood would lead to better resolution and will power. This in turn effects making healthier choices and decreased maladaptive eating habits which lead to weight regain. Patient screening for depression should not influence who receives bariatric surgery, that is, patients who are depressed should not be prioritized or sidelined with the view that they may show worse outcomes. In our bariatric surgery program which is a public health initiative free of cost we have a criteria where super-obese or patients requiring metabolic surgery are prioritized. Thus depression or mental health does not factor in the decision making process of who should or shouldn't receive surgical intervention, however screening and approaching the patient holistically is integral²¹.

Considering mental health remains a taboo in Pakistan, surgeons should be more pro-active in this community with screening for depression in pre-operative bariatric surgery patients. This pre-operative screening as is shown by our experience identifies individuals at risk of depression and who may need psychological counselling in a socio-cultural appropriate context. Such counselling may favour outcomes of weight loss post-operatively and be for the benefit of the patients²². Especially in South Asian populations where seeking care for mental health issues and access to care are both hindered, creating a space for mental health discussion with the patient pre-operatively may open an avenue or channel for the individual to seek care albeit with their surgeon to begin with. Appropriate referral can then be commenced, and the patient's overall health prioritized.

In the formative time of our bariatric surgery program, we overlooked mental health due to a multitude of factors. Resource limitations, streamlining of a nascent public health program for metabolic surgery to combat obesity, amongst other reasons. However, as our interactions with morbidly obese individuals who visited our clinic increased, we were able to notice that in their stories there were elements of depression which were being overlooked. Perhaps it is the South-Asian physician's Achilles heel to over-look mental health due to the prevalent culture. Thus, we believe our study proves that South-Asian populations are at an equally high risk of experiencing depression with obesity as the Western population. Centres undertaking bariatric surgery in South-Asian countries such as Pakistan must begin a collaborative effort with the psychiatrist and psychologist to improve mental health outcomes in patients during the pre-operative phase and a long-

term follow up of any mental health issues must be considered as well.

CONCLUSION

This study provides a reliable association between obesity and mental health disorders, especially depression and the importance of bariatric surgery in combating both the deteriorating mental health as well as the physical signs and symptoms of obesity. Bariatric and metabolic surgery should be offered to patients as per guidelines for patients who require it. Depression and mental health disorders are prevalent in the obese population, and these should be screened for and appropriately dealt with in both the pre-operative and post-operative phase. Surgical candidacy decision should not be based on the presence or absence of mental health disorders. Screening for mental health disorders in the obese population especially those who are planned for bariatric surgery in countries like Pakistan where mental health disorders are still a taboo topic is a pressing concern.

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