

Psychiatry/Mental Health  
Section

Eating Behaviour and Stress due to the Psychological Impact of COVID-19 among Bariatric Surgery Patients Resulting in Weight Regain: A Narrative Review

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ABSTRACT

The Coronavirus Disease-2019 (COVID-19) pandemic has significantly changed the lifestyle of people around the globe. Epidemics are well known for initiating mental stress and patients having undergone bariatric surgery for obesity are at high risk for the common presence of psychological co-morbidities. The recent lockdowns imposed by various governments to curb the COVID-19 epidemic have affected the eating habits of many people. In patients with bariatric surgeries, eating disorders can have a profound impact on their health, leading to weight regain. Individuals who have undergone bariatric surgery may represent a particularly susceptible population. The adverse effects might be manifested in the form of eating disorders, psychological problems, and negative impacts on weight loss outcomes. There have been challenges in weight loss due to lockdowns, resulting in negative psychological impacts. Furthermore, changes in socialisation, routine physical activities, emotional stress, and experiences of trauma that have been evident at global levels might have a negative impact on the eating habits of bariatric surgery patients. The current paper highlights the psychological impact of COVID-19 among bariatric surgery patients resulting in weight regain caused by eating disorders and stress and addresses the psychological morbidity in this understudied population. In addition, the impact on the psychology of patients, as their surgeries have been delayed owing to lockdown procedures, has been discussed.

**Keywords:** Coronavirus disease-19, Emotional eating, Obesity, Psychological morbidity

INTRODUCTION

The pandemic has brought myriad changes within lifestyles, health, commercial, and economic factors. Many lives have been lost, and several complications have occurred in the lives of global populations. As people were confined to their homes due to nationwide lockdowns and social distancing norms, there have been notable changes in the psychological aspects of the people. The current theoretical paper aimed at analysing the psychological impact of COVID-19 among bariatric surgery patients resulting in weight regain, with a primary focus on changes in eating behaviour and stress. The reasons that have initiated treatment problems within bariatric patients following the pandemic and their psychological implications within the patients have been outlined. Additionally, the factors that have led to such eating problems and their impact on patients have been focused on. The paper is of utmost importance within the psychological health domain as it identifies the psychological problems that have occurred in social aspects and opens up the scope for identifying future interventions that can be initiated to mitigate such issues.

Rationale

Currently, there is increasing psychological distress associated with the COVID-19 pandemic and mandatory lockdowns. The study will aid in understanding the psychological distress in responses in a similar instance addressing the vulnerable groups that are impacted during the lockdown [1,2]. Data collected through the research can be used by medical professionals to overcome the psychological impact among patients who have undergone bariatric surgery that has increased their weight.

Aim and Objectives

The review aimed to analyse the psychological impact of COVID-19 among bariatric surgery patients who have increased weight and

its impact on their eating habits. The objectives were to review the role of social isolation and loneliness in increasing the weight of the patient, to review the impact of delays in bariatric surgery and their outcomes during the pandemic, to understand the relationship between mental health and emotional eating during the pandemic, to review the different factors that lead to stress eating and weight regain among bariatric patients, and to review the coping behaviour of bariatric surgery patients during COVID-19.

LITERATURE SEARCH

In the following research, a narrative review has been conducted. The main database where secondary literature searches have been used comprise MedRxiv, Google Scholar, PubMed and Ovid Medline. In addition, secondary qualitative data has been collected from credible websites and government reports. To search the literature, keywords have been used.

The present research has become more focused, with only relevant data collected. The main keywords used are Bariatric surgery, obesity, COVID-19, pandemic, and weight gain. Boolean search was used to select articles and use them for outcomes. The data and information gained from the articles have been presented under subheadings, making the outcomes more systematic. The Boolean search strategy applied is outlined as follows [Table/Fig-1].

| Keywords          | And/or | Keywords    | And/or | Keywords          |
|-------------------|--------|-------------|--------|-------------------|
| Bariatric surgery | And    | COVID-19    | And    | Weight gain       |
| Pandemic          | Or     | COVID-19    | And    | Bariatric surgery |
| Bariatric surgery | And    | Obesity     | And    | Weight gain       |
| Obesity           | Or     | Weight gain | And    | COVID-19          |
| COVID-19          | Or     | Pandemic    | And    | Weight gain       |

[Table/Fig-1]: Boolean search strategy used for literature search.

The inclusion and exclusion criteria have been discussed below to identify the criteria for selecting key literature.

#### Inclusion criteria:

- Articles included in the research are not older than five years and are published on authorised websites.
- Articles available in the English language are included.
- Research papers including information about COVID-19 and its psychological impact on bariatric surgery patients will be included.
- Articles containing information regarding weight gain due to stress after the pandemic are included in the research.

#### Exclusion criteria:

- Articles in languages other than English will be excluded.
- Research papers not providing information about bariatric surgery patients.
- Articles lacking data and information about weight gain due to stress during the pandemic.
- Articles older than five years and without full content available were excluded.

## DISCUSSION

**Social isolation and loneliness during the COVID-19 pandemic and its impact on weight:** The onset of the pandemic has brought a devastating impact on the economy, employment, health, and access to medical and mental healthcare [3]. To mitigate the risks associated with the spread of diseases, several unprecedented social distancing initiatives have been undertaken. According to the study social isolation has been objectively identified as the number of social contacts, and ultimately isolation has been perceived as an attribute of social isolation [4]. It has been argued in a study that while social distancing initiatives have proven instrumental in reducing the spread of infection, they have also increased social isolation and reduced social and community support systems [5]. Social connection is fundamental to the mental well-being of individuals, and about 29% of mortality is increased by social isolation [6]. Various factors related to COVID-19 and subsequent social isolation and loneliness have influenced how individuals eat. Research initiated within a national sample in a study reported a positive mode of eating behaviour during the initial months of the pandemic [7]. This comprised positive changes such as decreased dining out, reduced fast food consumption, and increased home cooking. However, the same study outlined contrasting results, indicating that breakfast was skipped, unhealthy snacking increased and there was a rise in sweets and carbohydrate consumption. Within the participants, which comprised the obese population and who were expecting bariatric surgery, a 33.4% increase in weight was observed. Research conducted on obese individuals in the UK has revealed that higher Body Mass Index (BMI) levels were associated with poor physical quality, poor dietary habits, and greater frequency due to the pandemic [8]. A survey initiated on patients undergoing treatment for obese problems found that a majority of patients faced challenges in losing weight [6].

In a single-site study in the USA led by [7], bariatric surgery patients reported high levels of loneliness and decreased social support. Accordingly, patients reported increased emotional distress and exhibited problematic eating habits. Similarly, in the research initiated on Italian bariatric patients showed that about 37% of participants outlined increased loneliness and 66% reported increased hunger [5]. Episodes of eating and calorie intake tend to rise during emotional distress, especially during periods of depression, boredom, and loneliness. Furthermore, negative impact and social isolation have led to an increase in binge-eating habits.

**Delays in bariatric surgery and their outcomes during the pandemic:** The COVID-19 pandemic had a serious impact on the

delivery of surgical care across the globe. According to reports elective surgeries were cancelled and delayed to reallocate resources for treating COVID-19 patients and reducing infection spread [9]. However, the impact of the pandemic on elective surgeries such as bariatric and metabolic surgeries is still unclear, necessitating further research. Key findings indicate significant changes in surgical practices, comprising of preoperative interventions such as Gastrointestinal (GI) endoscopies, postponing the planned primary and revision bariatric surgeries, and follow-up procedures for patients who have undergone surgery. The prime reasons for the changes were owing to the international recommendations towards planning surgeries, management of outpatient clinics and managing the healthcare practitioners to prioritise the COVID-19 cases.

One of the study has outlined the impacts of delaying bariatric surgeries from the perspectives of the patients. The main themes that have emerged from the findings are the changes in mobility, changes in eating habits, postponement of secondary surgeries and most importantly psychological impacts [10]. The author has emphasised that the primary psychological impacts resulting from delayed bariatric surgeries were anxiety, tension, lack of support, and depression. Reduced social interactions affected the mental support of patients, making them more tense about their appearance and health status. Patients on the waiting list have been suffering from anxiety about their health conditions. Consequently, it is evident that the delay in bariatric surgeries has led to notable delays for bariatric patients, impacting their health outcomes.

**The relationship between mental health and emotional eating during the pandemic:** Obesity has been considered one of the epidemics of the 21<sup>st</sup> century. Complications associated with obesity and resulting deaths usually take years to develop. However, the COVID-19 pandemic has led to the deaths of many patients with obesity-related complications [11]. The prime reason for this is that they were highly susceptible to lung complications owing to pre-existing problems such as high blood pressure, increased cholesterol levels, and poor lung capacity. Within the findings of one study the lockdown resulted in a myriad of complex emotions within people with obesity, primarily consisting of anxiety, depression, and sleep disturbances [2]. The most notable coping mechanism observed in people with obesity is resorting to eating habits. A study has outlined that the emotional turmoil was managed through emotional eating that comprised binged and uncontrolled eating [12]. Such eating behaviours were not triggered by hunger, rather they were deemed as an alternative for suppressing anxiety and other associated feelings. Along with increased food consumption, alcohol consumption, and decreased mobility, weight issues and obesity among people were further exacerbated.

According to a study, food intake and eating behaviour are complex processes involving three main regions of the brain [9]. The initial signal is sent by the hypothalamus, triggered by hormonal and other digestive signals. The second signal is complemented by the reward system, comprising of the amygdala, insula, orbitofrontal cortex, and striatum. Regulating appetite, often referred to as reward, involves the feeling of satisfaction and emotional happiness that a person gets after enjoying a tasty meal.

The third component of eating habits is the prefrontal cortex, which is highly affected by emotions and external stimuli [13]. Emotional eating, also known as stress eating, is the tendency to consume food in response to positive and negative emotions rather than driven by hunger. With bariatric patients, the main risk that is associated with emotional eating is the improper activation of the hypothalamic-pituitary-adrenal axis can result in either chronic or acute stress. Another significant observation among bariatric and obese persons is the cravings for sweet and high-calorie foods due to negative emotions. Subsequently, it is evident that the pandemic has caused emotional stress in individuals, leading to eating disorders.

**Factors that lead to stress eating and weight regain among bariatric patients:** Compared to other pandemics, the COVID-19 pandemic had a more deleterious impact across the globe owing to a lack of information and awareness within the healthcare sector about its effects and mitigation techniques. COVID-19 was considered an inevitable and invisible enemy, as the complete list of symptoms, degree of contagiousness, incubation period, and lethality were unknown. Furthermore, the timeframe required for patients to return to normal health states was also uncertain [14]. A study outlined that since the onset of the pandemic, bariatric surgery patients have experienced depressed moods, anxiety, and loneliness [13]. To worsen the impacts, the pandemic triggered and worsened symptoms and effects such as insomnia, anger issues, numbness, and bereavement. Feelings of loneliness and emptiness are sufficient for self-harm and suicidal tendencies among individuals [3]. One of the main factors that have to be considered when focusing on the mental health issues in bariatric patients is that they already have stress and anxiety due to weight-related concerns. They often face stigma and marginalised for being fat and obsessed with their appearance, which contributes to ongoing stress. However, social interactions and outdoor physical activities are the main sources utilised by obese individuals to reduce stress [15]. Furthermore, engaging in outdoor activities and undergoing bariatric surgeries can motivate them to improve their health.

However, such factors have been severely affected by the pandemic. Subsequently, patients who have undergone bariatric surgeries, both in their postoperative and preoperative stages, are at risk of developing eating disorders, especially stress eating, which is often triggered by psychological impacts. Along with loneliness and decreased social interactions, other factors have led to the development of stress and anxiety in bariatric patients [2]. In the research findings, it was outlined that food insecurity has been one of the main reasons for stress within the obese population [13]. As lockdown procedures were initiated, the families that had never experienced food security faced limited windows and facilities for purchasing food. Furthermore, there was widespread panic and anxiety among people as they stood in long lines outside grocery stores to stock up their quarantine pantries. Previous research on food security issues has outlined that this behaviour is a precursor to “feast or famine” [7]. This behaviour comprises alternating periods of abundant food, hoarding, and overconsumption driven by the fear of hunger and food shortages, followed by food scarcity, avoidance, skipping meals, and other dietary changes. Subsequently, this behaviour has been a triggering factor for stress eating among obese patients who have undergone bariatric surgeries.

The article has focused on the role of media and social media messages during the pandemic [7]. The article has focused that after the implementation of lockdown protocols, the number of media messages and the use of social media increased tremendously. There was an exponential rise in the spread of rumours under the pretext of “viral news.” Rumours circulated about the progression and adverse effects of COVID-19 infection and how they have impacted the global population [9]. Such news and information have led to increased fears and anxiety within the common population, including individuals who are obese. According to the findings of a study, there were reports of deteriorating healthcare services and delays in surgeries, which led to stress and anxiety among patients who had planned for bariatric surgeries [15]. Such news resulted in emotional disturbances and feelings among obese persons which acted as triggers for stress eating. Another prevalent trend during the lockdown period was the influence of influencers and celebrities on dietary habits [16].

Many influencers presented shows that displayed various recipes and food items. In addition, there were unscientific and improper dietary suggestions provided within social media, which had a

notable impact on patients with obesity [15]. It has been argued that such factors were present before the pandemic; however, the impact of such factors was more profound during the lockdown as exposure to social media and other media sources had increased. As there was no concrete evidence about dietary plans and immunity factors available within society, many people were influenced by the wrong information that was propagated during the pandemic on social media [2]. Subsequently, a notable portion of patients with bariatric surgery and the obese population had engaged in wrongful diets, leading to weight regain and poor nutritional status of the population.

Another broader aspect that has led to psychological impacts and eating disorders within bariatric patients has been limited exposure to exercise [17]. Moderate exercise is considered one of the most important factors for maintaining proper health and mental status among people with obesity. Exercise is recommended as an appropriate tool for promoting both physical and psychological well-being [18]. However, fitness centres and recreational parks were closed en masse during the pandemic, limiting outdoor exposure and activities for the obese population. In addition, the social distancing norms and the fear of getting infected were some of the reasons that led to an increase in restricting exercise activities among the people [19]. The notable impact faced by the obese and bariatric surgery patients was distress due to loss of shape and weight gain. In addition, they were concerned about their chances for bariatric surgeries as elective surgeries had been delayed. These factors have led to emotional triggers and stress within the obese population, and they have engaged in stress eating, leading to significant weight gain and further health complications.

**Coping behaviour of bariatric surgery patients during COVID-19:** In the study initiated by Filindassi V et al., it has been presented that a notable percentage of patients having undergone bariatric surgery have reported considerable weight gain, which is a critical issue during the 36-month follow-up time of 36 months [20]. The weight gain is an alarming situation during the follow-up period as it can lead to poor outcomes owing to the bariatric surgeries.

However, it has been argued in a study that the perception of weight gain has been varied owing to factors such as real weight change, perceived weight, and age [13]. In addition, the increase in weight gain might not have been triggered by the pandemic; however, it has displayed the underlying eating disorders within individuals, which have been perceived during the pandemic. This makes them a target for clinical attention, and they have to be treated differently [21]. Conversely, such patients can benefit from close monitoring and early detection of dysfunctional behaviours. Another factor that has led to emotional problems among patients who have undergone bariatric surgeries is the limited physical and mental health support systems [22]. Subsequently, such factors have led to considerable weight gain and eating disorders within the patients.

The study by Félix S et al., focused on the patients who cohabited with families and friends during the lockdown and showed to face fewer difficulties in dealing with emotionally activating episodes and fewer disordered eating behaviours and attributes [13]. This is in correlation with previous researchers who have outlined that perceived help and support from families and friends are known to result in less emotional turmoil, stress, and more weight loss in patients with bariatric surgeries [12]. The support and help from families have proven to be a notable coping mechanism used by the patients during times of distress. As outlined in a study, families and acquaintances have supported the patients to have healthy diets and keep a check on their eating behaviour [2]. In addition, communication and mental support from families have helped in resolving mental pressure and turmoil within the patient, and their impact has been visible in the form of proper weight management. However, this is not the only empirical reason for coping mechanisms for patients with bariatric surgeries. The article has



presented a different point of view, wherein concerns for keeping families safe during the pandemic have added to the concerns and worries of patients with bariatric surgeries [23]. As unemployment has exponentially risen and the spending capacities of people have decreased, obese patients in the preoperative stage for surgeries have been suffering from anxiety and fear about sustaining their families [24-28]. This has led to a negative impact on weight management and healthcare outcomes for obese patients.

## CONCLUSION AND FUTURE SCOPE OF RESEARCH

From the aforementioned discussion, it is evident that the onset of COVID-19 has led to myriad changes across the globe, especially within the healthcare sector. As more resources have been allocated for the management of the needs of COVID-19 patients and associated treatments, elective surgeries such as bariatric surgeries have been delayed. This has led to prominent problems within the obese population across the globe. Along with physical complications, the psychological health of obese people who are in pre or postoperative stages for bariatric surgeries has been affected, and negative impacts are observed [28]. The main manifestations of the psychological impacts visible within bariatric patients are eating disorders and binge-eating. The endorsed exposure to outdoor activities and fear assisted with the pandemic have led to considerable weight gain within post-bariatric patients within six months of their observation period. This can have a profound negative income on the weight management programs of the patients and accordingly a negative impact on their health is initiated. Additionally, there has been a considerable increase in emotional distress, owing to decreased healthcare support and social isolation. In such a scenario, there is a need for emotional support and behavioural therapy for patients undergoing bariatric surgeries. The therapy is required to reduce their stress and improve motivation to adhere to the weight loss programs. In addition, community support is required within the patients to ensure that their healthcare needs are catered to and weight management programs can be resumed. Accordingly, there is a need for further research on the interventions that can be initiated to improve the weight management outcomes of patients undergoing bariatric surgeries.

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