

Evaluation of pre-bariatric aspects: Strategies for optimizing safety and efficacy of bariatric surgery for management of obesity

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ABSTRACT

Background and aims: Obesity is main risk factor for diverse physiological and socio-psychological conditions and premature mortality. Weight loss has been an important strategy for decreasing obesity related mortality. Bariatric surgery is getting wider acceptance as popular treatment option for obesity due to limitations of other treatment methods. Various pre-bariatric aspects can contradict the surgical intervention and result in postoperative complications if not properly assessed. This review assesses these aspects for identifying the points that affect the desired clinical outcomes and safety of bariatric surgery.

Materials and Methods: Springer database, PubMed, Google Scholar and Scifinder were searched for literature.

Results: Studies reveal that the obese individuals should be properly investigated for various psychiatric issues before subjecting them to bariatric surgery. Studies further suggest specific psychological interventions for obese individuals with severe psychiatric issues prior to bariatric surgery. The obese individuals should also be properly assessed and educated for their eating behavior, lifestyle changes and available social support so safety and efficacy of bariatric interventions remains well intact. Selection of bariatric procedure should be made on evaluation of factors such as disease conditions, current treatment and postoperative complications.

Conclusion: Improved outcomes and safety of bariatric surgery can be concluded from assessment of pre-bariatric psychiatric aspects, available social support and rational selection of surgical method.

Keywords: Obesity, Bariatric surgery, Pre-bariatric aspects, Psychiatric issues, Social Support, Method selection

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INTRODUCTION

Obesity is one of the most important health issues both in developing as well as developed countries around the globe and is rapidly becoming matter of great concern for health care professionals [1]. Clinically, an individual is defined obese when his/ her body mass index (BMI) becomes greater than 30 kg/m². Its prevalence is increasing at an alarming rate both in developing as well as developed countries of the world [2]. Obesity has been a main risk factor for type-2 diabetes, hypertension, dyslipidemia, osteoarthritis, cardiovascular disease, sleep apnea, certain cancers and gastroesophageal reflux and premature mortality. Moreover, it has also been associated with poorer health-related quality of life and greater morbidity more than that caused by poverty, drinking or smoking [3, 4]. Statistics show that more than one third cases of pulmonary embolisms are occurring due to obesity. Similarly, more than half of type-2 diabetes cases are also attributed to obesity. Many other medical conditions such as chronic back pain, pancreatic and colorectal cancers, osteoarthritis, gallbladder disease are also closely associated with obesity [5]. It is also associated with overall increased mortality and decrease in lifespan by ten years [6]. Obese individuals are characterized by decreased rates of employment in Canada, Europe and the United States [7]. Obese conditions also result in various negative psychological impacts which in turn lead to poor quality of life, social stigma, depression, anxiety, disordered eating and self-esteem issues [5, 8].

Weight loss is one of the main strategies for decreasing the obesity related health issues and mortality. Many strategies such as diet regimen, lifestyle changes and pharmacological treatment can be used for the reduction of body weight. However, the effectiveness of these options is limited in the treatment of morbid obesity as well as they do not remain effective for longer terms [9, 10]. Therefore, alternative approaches resulting in weight loss in a sustained manner over longer period of times are preferred.

Bariatric surgery is getting wider acceptance among patients as well as surgeons as a popular treatment option for management of obesity. It is preferred for the effective treatment of obesity due to its sustained postoperative weight loss and improvements in obesity-related co-morbidities [11]. Bariatric surgery can be defined as a group of surgical procedures performed for facilitating weight loss through open or laparoscopic sleeve gastrectomy (SG), roux-en-Y gastric bypass (RYGB) as well as adjustable gastric banding (AGB). RYGB and sleeve gastrectomy are the most commonly recorded procedures with 38.3% and 45.9% operations respectively performed for the period of 2014-2018. One anastomosis gastric bypass / mini gastric bypass (OAGB / MGB) bariatric procedures have also been recently included for the management of obesity and have been reported to account for 7.7% of the bariatric surgeries for the period of 2014-2018 [12]. Biliopancreatic diversion (BPD) without or with duodenal switch (BPD-DS) is performed less commonly (0.0% and 0.02% respectively for the period of 2014-2018) but is considered surgical intervention of choice

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in extremely obese individuals. Other methods such as gastric bypass and gastric band are also employed accounting for 0.9% and 5% operations respectively for the period of 2014-2018 as shown in Figure 1 [12, 13]. Since last one-decade, bariatric surgery has got increased popularity for the effective treatment of obesity due to its demonstrated advantages. Many experts are of the opinion that bariatric surgery is the solution to the looming obesity epidemic [14, 15]. Moreover, bariatric procedures have led to improvements in lipid profiles (both lipoproteins of low and high-density) of patients, homeostasis and glucose metabolism. Further to that, obese patients have been found recovered from type-2 diabetes upon bariatric surgical interventions [16].

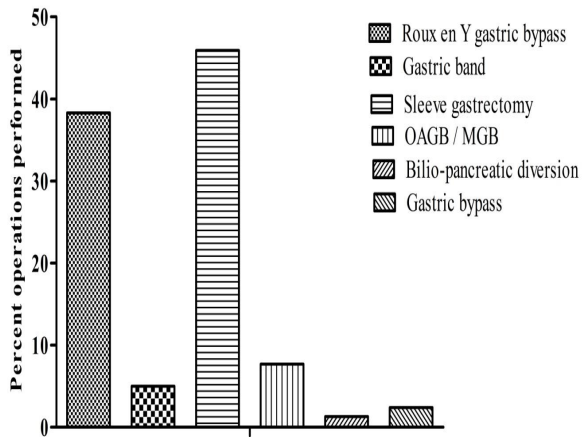


Figure 1: Percent operations performed through different bariatric surgery methods

Despite its effectiveness for the management of obesity, the postoperative outcomes of bariatric surgical interventions are greatly influenced by various behavioral and psychosocial factors [14]. Increased psychological co-morbidities are always associated with extreme obesity. Clinical interviews of the preoperative obese patients have revealed that 20-70% patients were found suffering from a past or current psychiatric disorder [17]. On the other hand, the incidences of depressive disorders have found to be ranging in 4.4%-53% post-bariatric patients, thus impacting their physical functions and eating negatively. Other psychiatric issues such as social phobia, somatization, obsessive-compulsive disorder and hypochondriasis, aggressiveness, body image dissatisfaction, perfectionism and low self-esteem have also been associated with post-bariatric patients [18]. Owing to the growing number of patients preferring for bariatric surgical interventions, it is imperative to evaluate their preoperative psychiatric conditions in order to achieve maximum postoperative outcomes for a longer period of time [19]. Similarly, there are some other important aspects associated with the selection of individuals for surgical intervention as well as with methods of surgical interventions. The evaluation of these aspects also plays vital role in the success of the bariatric surgical interventions in the management of obesity.

Obesity is an important medical concern and is currently affecting human populations in both developed and developing countries. Bariatric surgery is getting wider popularity among both obese individuals and surgeons owing to its long-term effects. However, certain issues associated with obesity and with the method of bariatric intervention should be considered before the intervention for achieving maximum benefits for a longer time. This review has been

undertaken for assessing such pre-bariatric aspects in obese individuals in order to identify potential contradictory factors. All pre-bariatric psychological considerations and other important aspects will be reviewed in detail for concluding the points that affect the desired clinical outcomes of bariatric surgery.

Pr-bariatric psychological aspects and selection of appropriate candidates

Morbid obesity development and continuation is considered a psychologically complex process. It is evident that apart from diverse medical conditions, obesity also causes various psychological issues. Obesity related psychological issues are more evident in patients with morbid obesity as compared to patients with lower obesity. It has been found that morbid obese individuals are exposed to depression five times more than individuals with lower obesity. Psychiatric disorders associated with obesity include anxiety, eating disorder such as binge eating disorder, depression disorders like major depressive disorder, low self-esteem and mood disorders [20, 21]. Currently the patients seeking bariatric surgery as treatment for the management of their obesity are increasing in number. However, not every obese individual can be best candidate for weight loss through bariatric surgery. This has led the obesity related health care professionals to search for the pre-bariatric psychological aspects in individuals seeking bariatric surgery, so maximum effects of the interventions can be achieved for a longer period of time [14]. But bariatric surgical interventions are inherently associated with risks and have some limitations, thus long-term behavioral changes are required for their success. This in turn necessitates for a thorough psychological assessments to be completed for the obese individuals so as appropriate candidates can be ascertained for surgery as well as optimized clinical outcomes can be achieved [22]. Determination of appropriate candidate for the bariatric surgery as well as achieving optimum outcomes of the surgical interventions have always been a challenging task for the staff of bariatric clinics. Success of the bariatric surgery requires many changes in lifestyle and behavior, which are in turn influenced by psychosocial factors. Research based studies have shown that about 10-25% of patients regain weight after surgical interventions, while 5-25% (or more) patients may have postoperative complications due to their poor compliance towards treatment recommendations [23, 24]. Similarly, some patients can also show postoperative psychological issues due to lifestyle changes and weight loss as a result of the bariatric interventions. Therefore, behavioral and psychosocial evaluation and preparation for surgery are considered the main components within most bariatric programs. The following section reviews the areas of the psychological assessments as part of the screening of candidates for bariatric surgery.

Evaluation of Patient's understandings of the surgery

It is very important to know that obese patients are seeking bariatric surgery for the appropriate reasons. Moreover, their expectations are realistic, and they know about what can be achieved as a result of this surgical intervention. The patients are also required to have a complete understanding of the surgery as well as the resulting lifelong behavior changes that must occur for achieving long-term success. To make the patients satisfied with the outcomes of the surgery, it is important that the patients have realistic expectations about weight loss through bariatric surgery and consider it nothing but a tool for weight loss [25]. Research has revealed that patients maintain between 44-80% of their excess weight loss after 1-5 years of the bariatric surgery. Patients with BPD-DS,

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BPD and RYGB experience higher weight loss than patients having laparoscopic adjustable gastric banding (LAGB). Excess weight can be defined as any weight that leads to a BMI value more than 24.9 kg/m², the highest weight considered to be within the normal weight range [26]. It has been found that 65% of the preoperative patients overestimated perceived weight loss while 25% of these postoperative patients accurately assessed weight loss [27]. Expectations for unrealistic body weight loss through bariatric surgery result in depression and disappointment. Similarly, those who want bariatric surgery for certain cosmetic purposes or those who do not completely understand the required behavioral changes such as avoiding fluids with meals, chewing food to applesauce consistency and lifelong vitamin supplementation, may not be considered appropriate candidates. Further investigations should be made for such candidates in order to achieve the desired goals [28].

Evaluation of patient's pre-operative lifestyle

It is very important that the patients undergoing bariatric surgical interventions understand what they are going to agree on [28]. Psychological assessment program at this stage involves asking the candidate patients to describe things such as what are included in the surgery, what are the expected outcomes and what are the potential risks associated with the procedure. They are also asked about the lifestyle changes that are required for success of bariatric surgery. The details of this discussion can be determined by the specific procedure (gastric bypass or laparoscopic gastric banding) decided for a patient. The patients that fail in demonstrating the clear and basic understanding of the above-mentioned factors are sent back to the concern surgeon. The expert opinion of a nutritionist in such cases can also help in designing a realistic bariatric intervention program. Occasionally, the candidate patients are required to appear for the intellectual testing in order to determine their competence for informed consent. The understanding of many patients about bariatric surgery and its clinical outcomes has already been developed owing to their participation in many seminars or due to their discussion with people who have had the surgery. The ultimate aim of such discussions with patients is to emphasize the bariatric surgery role as a tool rather than a magical cure. They are told that the surgery is not meant for stopping them from overeating. They are educated that bariatric surgery will allow them to feel satisfied with decreased quantity of food. They are further advised to stop taking further food upon reaching that point of satisfaction. Furthermore, they are strictly advised to show complete compliance towards the surgeon as well as treatment strategies. They are clearly told that failure in stopping food intake beyond the point satisfaction will result in serious consequences like "dumping" and possible regain of weight soon after the surgery. Thus, this makes it clear that bariatric surgery does not mean the patients should continue eating in irresponsible manner. The patients are, thus, encouraged to consider the bariatric surgery simply as a tool for improving their body weight related health issues in case appropriate decisions are made in this direction [22].

It is important to mention here that bariatric surgery programs sometimes recommend preoperative interventions in lifestyle. These interventions are advised in face of the fact that weight loss before bariatric surgery can maximize postoperative weight loss as well as minimize the preoperative complications. Thus, this in turn helps in promoting self-regulated eating behaviors and physical activities, resulting in the maintenance of weight loss for a longer time [29]. The main purpose of the preoperative

interventions in lifestyle is to initiate evidence-based behavior therapy for the management of weight loss. The behavior therapy results in 5–10% body weight loss, thus obesity-related health parameters get improved for a short term. Program for behavior therapy for the purpose of obesity management includes goal setting, stimulus control, self-monitoring, problem solving, social support and reinforcement [30]. The obese patients are advised for increasing their physical activity for short period of 10 minute. Similarly, they are also encouraged for increasing their lifestyle activity as much as they can. To achieve a better and productive social support during behavior therapy, it is provided in groups in many centers for a 3-6 months period [29]. The benefits of standard behavior therapy for the management of obesity are further enhanced when it is combined with bariatric-specific psychoeducation and goal setting programs arranged for preoperative patients. Bariatric-specific behavioral goals might include taking a multivitamin, slowing the eating rate, limiting consumption of calorie-dense liquids or soft foods, eating regular meals (aimed at reducing restrained grazing and eating) and practicing separation of solid food and liquid consumption. Elimination or reduction in caffeine, soda, alcohol and caffeine is also very important before subjecting the patients to bariatric surgery. Moreover, smoking cessation is also advised for the patients before their bariatric surgical interventions [29, 30].

Evaluation of patient's current eating behaviors

Research studies have revealed eating problems such as Binge Eating Disorder (BED) is prevailing in 10-27% of pre-surgical candidates. BED does not involve purging after eating as it is in the case of bulimia nervosa. Night Eating Syndrome (NES) is the second eating disorder that is prevalent this population. NES is characterized by a shift in the circadian pattern of eating which results in the frequent night awakenings associated with morning anorexia and nocturnal eating [31, 32]. Reviewing the patients eating behaviors by psychologists before surgery is very important as information about need for behavior modifications, motivation and possible eating disorders can be efficiently obtained from this review. Moreover, review of the patients eating and exercise behaviors can also reveal their attitude and motivation about the anticipated lifestyle changes [22]. Among the above-mentioned eating disorders, bulimia nervosa is considered to be contradictory to surgery. This is because of the purging that poses serious health risks after bariatric surgery and, thus, the expected outcomes cannot be achieved. The patients identified with bulimia nervosa during the preoperative review are referred for further cognitive behavioral treatment. This helps in addressing the purging and bingeing before the patients are subjected to bariatric surgery. Diverse opinions exist about the effects of binge eating disorder on the outcomes of bariatric surgery. Some studies have revealed no negative effect of the bingeing as it resolves, while other studies suggest an increased possibility of "grazing" after the initial weight loss. Thus, such patients having habit of frequent binge are advised supportive counseling before surgery or advised controlling their binge after surgery [22, 28]. Moreover, the obese patients seeking for bariatric surgical interventions should also know that the surgery alone cannot alter the previously described eating behaviors. A research study shown that about 34% of the post-bariatric patients have reported cravings for some specific foods even 6 weeks after the surgery [33]. If the concerned surgeons see that a patient will experience this situation after surgery, then the obsess individuals would not be best candidates for bariatric interventions as maximum benefits cannot be achieved.

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Evaluation of patient's previous and current psychiatric histories

Previous and current psychiatric disorders should also be included in the psychological assessment before bariatric surgery. If such psychiatric disorders are left untreated, then adherence to recommendations can be affected, thus resulting in the minimum or even no clinical effects of the bariatric surgery [28]. Similarly, evaluation of psychological disorders also helps in identifying any potential condition that can impair the patient's ability to handle the surgery. Evaluation for psychiatric disorders include assessment of symptoms of mania, anxiety, depression, psychosis, substance abuse, family history of mental health issues, suicidal ideation, history of abuse and any treatment experiences. Moreover, a Mini-Mental Status Examination is completed owing to the increased prevalence of behavioral and psychiatric complications observed in the population of obese individuals [19].

Research studies using standardized interviews-based assessment for patients other than surgical candidacy have revealed that majority of the patients were found with substance or mood (Axis I) disorders. These disorders included dysthymia (3.8%), major depressive disorder (10.4–13.3%), anxiety disorders (16.2–24.0%) and bipolar disorder (1.7%) as shown in Figure 2 [20, 34]. When specified for bariatric surgery, a subset of this study showed that 28.5% of patients seeking bariatric surgery were found with one or more forms of personality disorders [20]. It has been revealed by recent studies that depression is the most common psychiatric disorder among the population of obese individuals [35, 36]. Another study has suggested that obese individuals having their BMI more than 40 kg/m² had the depression episodes five times more than those having average body weight. Furthermore, it has also been revealed by the pre-surgical psychological assessment that 23-47% patients were currently using psychiatric medicines [28].

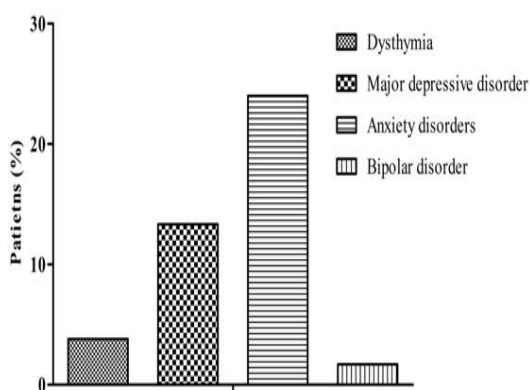


Figure 2: Various mood disorders present in patients seeking bariatric surgery

Though depression may prevail with higher frequency in the population of obese individuals, alone it cannot be contradictory to bariatric surgery. It is the depression severity that has been an important factor to be considered before the surgical intervention. Mild type of depression can be easily resolved after surgery and improvements in its status can be measured through improvement in functioning and mood [37]. When the concern surgeon sees the severity of the depression enough for undermining the patient's ability to remain adherent to recommendations, then psychological intervention is critical in such situation.

Similarly, psychological intervention is also needed in case suicidal ideation, psychosis or bipolar disorder is suspected in the bariatric surgery candidate. The patients identified with suicidal ideation, psychosis or bipolar disorder should be provided with complete information about appropriate treatment resources. Moreover, anxiety can also be a possible factor for affecting the patient's coping through the surgery experience [37]. The anxiety disorders of the patients may increase their difficulties for controlling apprehension immediately after or before surgery. Thus, anxiety disorders can be highly problematic when some unexpected medical information or news is presented before such patients. This can also be problematic for patients when certain changes are made in their treatment strategy.

Substance dependence or current substance abuse is not much frequent in obese patients (less than 1.7%) seeking bariatric interventions. On the other hand, about 18% of the patients of this population may have alcohol dependence, a known history of alcohol abuse or a family history of substance abuse, thus resulting in their higher BMI [38]. Issues such as current substance or alcohol abuse or use of any nicotine are contradictory to bariatric surgery, thus they must be completely addressed before subjecting the patients to bariatric surgery. Similarly, when patients seeking bariatric surgery reveal any history of sexual abuse, they psychologists must consider the aspects related to emotional reactions that can affect the recommendations for weight loss. Moreover, discomfort for some patients may increase due to dramatic and abrupt changes in their body weight as well as being noticed by others due to the changes in their bodies. The experience of small size body can also lead to their sensitive vulnerability. Thus, these factors may result in self-damage and regain of weight immediately after bariatric surgery. Therefore, it is important on the part of the concern surgeon to refer the patients to the psychologists so they can seek appropriate counseling for encountering these issues so maximum outcome of the surgical procedure can be achieved [22]. Recently, the construct of a "food addiction" has also been studied [39]. Certain foods like sugars are believed for triggering an addictive process in the brain of individuals, thus similar "food-dependence" criteria may be considered for them. Though the psychosocial bariatric assessment programs should commonly consider the inclusion of addiction component, but this does not mean that all patients seeking bariatric surgical interventions would have addiction or would be necessarily engage in postoperative addictive behaviors. If such condition is identified in the patients, it should be treated completely and surgery should be recommended after the condition of the patients becomes stable [27].

Uncontrolled eating or mood disorders, psychosis, active substance abuse, major life stressors, disagreement about binge eating disorder and history of problematic adherence are considered widely accepted psychiatric contraindications to bariatric surgery [19, 27]. To conclude the discussion, clinical experience and research reveal that a psychiatric disorder may not be necessarily contradictory to bariatric interventions, pre and postoperative psychological interventions and further interpersonal support are recommended for achieving maximum clinical outcomes of the bariatric interventions. Furthermore, other health care professionals such as diabetic's clinicians should work closely with psychologists for formulating individualized, creative and practically supported treatment strategies for bariatric patients with certain diseases.

Evaluation of available social support

Dramatic and abrupt lifestyle changes experienced by obese patients undergoing bariatric interventions do not occur only

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within their bodies but occur also within the social network that surrounds these patients. The experience of such patients is greatly impacted by immediate family members, extended friends and family and associates and colleagues at working place [28, 40]. Such patients should be asked for describing the people that live with them in their homes as well as the reaction of those people to their bariatric surgery decision. They should also be asked for their eating behavior, weight issues and the people who will be there for helping them soon after the surgery. Similarly, they should also be informed of the possible social consequences after surgery including negative expressions from other people, sabotage, jealousy and inconveniences on the part of spouse. They should also be educated about their inability for drinking or eating similar to others during holidays or when they are on an outing. Depending on the history and network of patients, appropriate examples in this regard should be presented to the patients so they can efficiently handle such challenging situations. It has been observed that the patients often have never thought of such challenges, thus, the psychologists should educate them properly so that they can be proactive rather than reactive when situations unfold [22].

Evaluation of appropriate bariatric procedure

When an obese individual has been selected for bariatric surgery upon the evaluation of various parameters, then the selection of procedure is decided best by the candidates' objectives and by how they want to live their lives after surgery [41]. As bariatric surgery is mainly aimed at weight loss, so each procedure adopted for bariatric surgery should be assessed for its efficacy in achieving maximum weight loss. Bariatric surgery carried out through RYGB results in increased weight loss as compared to AGB. Maximum weight loss can also be possible with AGB when postoperative care of good quality is ensured. Moreover, postoperative complications are always lower with bariatric surgery carried out through AGB procedure; however, this procedure is associated with a higher rate of re-operation due to decreased weight loss. The mortality rate with RYGB is 0.3% that is higher than that associated with AGB [41, 42]. Weight loss is comparable between RYGB and SG in the short term [43, 44]. It has also been found that more patients are prone to weight regaining in the medium-term after SG [45]. On other hand, the BPD/BPD-DS procedures result in maximum weight loss, but the postoperative complications associated with these procedures are more prominent as compared to RYGB [46]. However, maximum weight loss with BPD/BPD-DS is not generally agreed. BPD/BPD-DS procedures are also said to be not suitable for high-risk operative candidates. Furthermore, results of some randomized controlled trials show no additional benefit of the extra weight loss above RYGB [47].

In case of obese patients with current diabetes treatment, bariatric surgery with RYGB procedure offers greater benefits of diabetes remission than AGB [48]. SG has a remission rate comparable to RYGB in the short-term, but a higher rate of relapse in the medium-term [49]. Similarly, BPD-DS and BPD can offer a higher rate of diabetes remission as compared to AGB and RYGB [50-52]. Though AGB is not much effective in inducing diabetes remission, however, it offers substantial improvements in diabetes control, which are greater than those offered by medical therapy in obese cohorts [53, 54]. Moreover, there are some other factors that can be considered for selection a suitable bariatric surgical procedure. Loss in body weight can significantly improve respiratory diseases [55]. Thus, bariatric surgery through RYGB and BPD/BPD-DS can prove more efficacious for obese individuals having asthma or obstructive sleep apnea (OSA). On the contrary, AGB and

SG have been found associated with deteriorations in gastro-esophageal reflux disease (GERD), thus, they should not be carried out in this cohort [41, 56]. In GERD, RYGB is getting wider acceptance as it can remediate the GERD due to prevention of esophageal reflux and reduction in the stomach pouch [57].

Conclusion

Obesity is one of the major health issues affecting population of both developed and developing countries, resulting in various physiological and socio-psychological conditions and premature mortality. Limitations associated with other methods of treatment have made bariatric surgery attractive for decreasing the obesity related mortality. Clinical experience and research studies reveal that the obese individuals should be properly investigated for various issues before subjecting them to bariatric surgery. Obese individuals with severe psychological disorders should be suggested specific psychological interventions before surgery so maximum clinical outcomes can be achieved without postoperative complications. The patients should also be properly assessed and educated for their eating behavior, lifestyle changes, and available social support so safety and efficacy of bariatric surgery remains well intact. Moreover, rational selection of bariatric surgery method also makes bariatric surgery highly productive and safe. Assessment of pre-bariatric psychiatric aspects, available social support and rational selection of method of surgery is, thus, suggested for making bariatric surgery successful and safe.

Declaration of Conflicting Interests

The Authors declare that there is no conflict of interest

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