Assessment of The Failure Rates of Sustainable Weight Loss after Sleeve Gastrectomy: A Systematic Review

Abstract:

background: Surgery is the best therapy for extreme obesity. Operating on severely obese individuals (BMI > 60 kg/m²) Patients who are at increased risk with other health issues increases the chances of complications and death after Weight loss surgery. Sleeve gastrectomy is a modern surgical procedureIt has a low risk of postoperative problems and is frequently used as a prelude to gastric bypass or biliopancreatic diversion with duodenal switch. However, part patients may not achieve their projected weight reduction objectives, and many recover part of the lost weight within 2-10 years after surgery. **Objectives:** the main objective of this study was to assess the failure rate of sleeve gastrectomy in term of weight loss. **Methodology:** A thorough search of PubMed, SCOPUS, Web of Science, and Science Direct was conducted to find relevant literature. Rayyan QRCI was utilized for the entire process. **Results:** Several studies investigated the failure rate of sustainable weight loss following sleeve gastrectomy in different countries. In Saudi Arabia, the failure rate was 25% and 23.1% at 5 years follow-up. In the United States, the failure rate was 30% and 15.5% at 5 years post-surgery. In India, the failure rate was reported as 25% and 30% post-surgery. In London, the failure rate was 30%, with 45 out of 150 patients not achieving the desired weight loss. In Egypt, the failure rate was 35%, with only 65% of patients sustaining their goal weight loss throughout a three-year follow-up. **Conclusion:** bariatric surgery, particularly sleeve gastrectomy, has demonstrated tremendous effectiveness in helping obese people lose weight and improve their overall health. While the procedure can lead to substantial Long-term success rates for weight loss and obesity-related comorbidities vary depending on the study and the country. Weight maintenance remains a challenge post-surgery, with gradual weight regain being a common issue. Regular monitoring, follow-up assessments, and multidisciplinary support are crucial to address weight regain and ensure the safety and well-being of patients throughout their the weight reduction journey.

Keywords: Bariatric surgery, Sleeve gastrectomy, Severe obesity, weight regain.

Introduction:

Bariatric surgery is acknowledged as a successful and long-term weight loss option for certain people. This type of surgery is often recommended for individuals with a body mass index (BMI) more than 40 kg/m2, those with a BMI between 35 and 40 who have acquired obesity-related illnesses, Individuals who have been unsuccessful in reducing weight using alternative means. The basic purpose of bariatric surgeries is to control the quantity of food intake by lowering the stomach capacity of the body [1]. Studies suggest that bariatric surgery leads to considerable weight loss, improvements in weight-related health issues, and increases in quality of life when compared to standard therapies [2].

Patients can today choose from a variety of bariatric surgery options, including laparoscopic Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), and laparoscopic adjustable gastric banding (LAGB). Sleeve gastrectomy, A typical irreversible restrictive treatment is the removal of a major section of the stomach to construct a sleeve-shaped tube, decreasing the stomach size to around 25% of its original size [3]. This surgical method has grown in favor among laparoscopic surgeons who specialize in bariatric surgery due to its ability to achieve considerable weight loss in a very short period of time [4]. Following the sleeve gastrectomy, Patients may experience a variety of benefits, including lower BMI, weight, blood pressure, stroke risk, and cancer incidence, as well as significant improvements in obesity-related conditions such as type 2 diabetes, nonalcoholic fatty liver disease, cardiovascular issues, and obstructive sleep apnea. Additionally, Non-obesity-related illnesses include gout, musculoskeletal issues, ovarian abnormalities, and urine incontinence have improved. Bleeding, vitamin deficits, and leaking are among the most common consequences after sleeve gastrectomy [5].

Bariatric surgery is designed to be an effective weight loss option, but it is not a fast fix. Silver et al. found that 81% of patients were still seeking to reduce weight four years after surgery. To achieve maximum weight reduction and health advantages, bariatric patients must have regular examinations and treatments after surgery. Understanding the possible

problems connected with each kind of bariatric treatment before to and during surgery is critical for optimal long-term weight loss success. [6].

Weight recovery following bariatric surgery is usually slow, emphasizing the significance of regular long-term measures and follow-up sessions. Addressing weight recovery immediately is critical, stressing the need for patients to have the assistance of a multidisciplinary medical team to navigate hurdles and maintain their safety and well-being throughout the whole process. [7].

Methodology

This systematic review was conducted out in accordance with the PRISMA principles.

Study Design and Timeframe

This systematic review was initiated in February 2024.

Search strategy

To discover relevant literature, a comprehensive search was conducted utilizing four main databases: PubMed, SCOPUS, Web of Science, and Science Direct. We searched just in English and took into account the specific requirements of each database. The relevant papers were identified by translating the following keywords into PubMed Mesh terms: "noise-induced hearing loss, attitude to noise, young adults, and Saudi Arabia. The Boolean operators "OR," "AND," and "NOT" corresponded to the needed keywords. The search results included human trials, publications with full text in English, and openly available information.

Selection criteria

- We examined the following criteria for inclusion in our review.
- Studies analyzed the failure rate of sleeve gastrectomy for long-term weight reduction.
- Studies undertaken between 2015 and 2024.
- Limited to human beings.

- Proficiency in English required.
- Articles are freely available.

Data extraction

Rayyan (QCRI) was used twice to check the search method's results [9]. The researchers applied inclusion/exclusion criteria to the combined search results to assess the relevancy of the titles and abstracts. The reviewers examined each manuscript that fulfilled the inclusion criteria thoroughly. The writers discussed approaches to overcome disagreements. The authorized research was submitted using a previously generated data extraction form. The authors gathered information on the research titles, authors, study year, city, participants, gender, kind of participants, prevalence of the two most common blood categories, and primary outcomes. A second spreadsheet was built to analyze the risk of bias.

Strategy for data synthesis

A qualitative review of the research's findings and components was provided by compiling summary tables from pertinent studies. After obtaining data for the systematic review, the best strategy to use the information from the included study articles was determined.

Risk of bias assessment

The included studies were evaluated for quality using the ROBINS-I risk of bias assessment approach for non-randomized treatment trials. Seven issues were evaluated: confounding, study participant selection, intervention classification, deviation from intended interventions, missing data, outcome evaluation, and choice of reported result.

Results

Search results

After removing 59 duplicates, the systematic search yielded 128 study publications in total. 46 of the 69 papers that underwent title and abstract screening were excluded. The search successfully yielded 20 reports. Finally, twenty publications were screened for full-text review; five were excluded owing to the erroneous population type, and seven were

excluded due to improper study findings. This systematic review included eight study papers that matched the qualifying criteria. An overview of the method used to choose studies is provided in **Figure 1.**

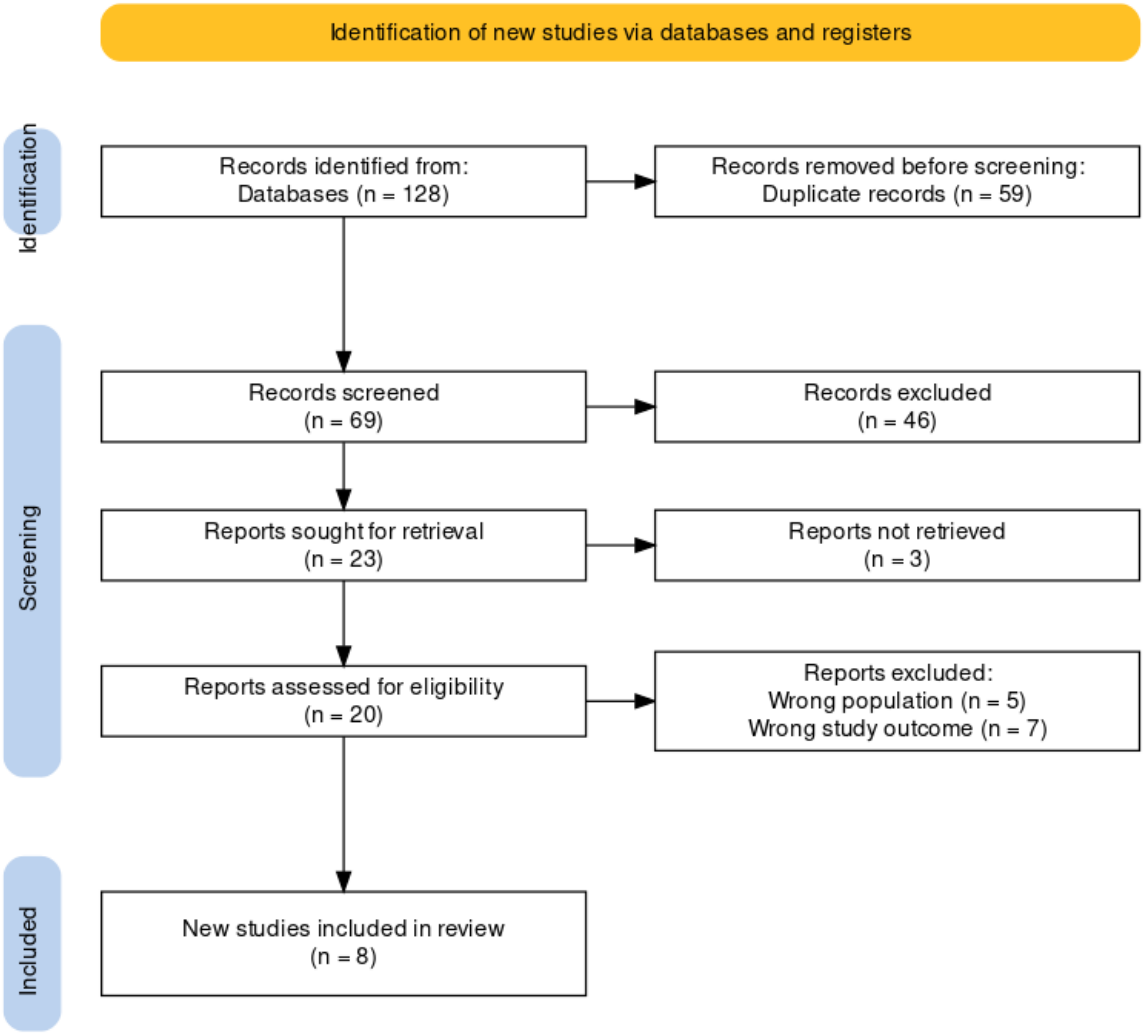

Figure (1): The study selection procedure is summed up in a PRISMA flowchart.

Table [1] ***Sociodemographic characteristics of the included participants.***

Author	**Country**	**Study design**	**Participants (n)**

Alqahtani et al. (2018)[8]	Saudi Arabia	a retrospective analysis	200
Albeladi et al. (2018)[9]	Saudi Arabia	Retrospective cohort study	200
Courcoulas and others (2015)[10]	United states	Cohort study conducted prospectively	1156
Obeid et al. (2015)[11]	United states	Cohort study conducted retrospectively	305
Singh S, Singh A, et al.(2020)[12]	India	Prospective cohort study	100
Choudhary D, Lakshmi B, et al.(2018) [13]	India	Retrospective cohort study	150
R. A. Maghrabi et.al (2020) [14]	London	Retrospective cohort study	150
Elbanna et al. (2020) [15]	Egypt	Prospective cohort study	150

Table [2] shows the clinical features and results of the included studies.

Study name	**Follow up (in years)**	**Key findings**	**Conclusion**
Failure rate of sustainable weight loss after sleeve gastrectomy in Saudi Arabia.	5	Patients who regained more than 50% of the weight lost following surgery were considered to have failed to achieve sustained weight reduction. According to the study, the failure rate for long-term weight loss following	According to the study, one-quarter of patients did not have long-term success in sustaining their weight loss following surgery.

		sleeve gastrectomy in Saudi Arabia was 25%.	
Long-term results of laparoscopic sleeve gastrectomy	5	In Saudi Arabia, the failure rate of long-term weight reduction following sleeve gastrectomy was 23.1% after 5 years.	Almost a quarter of individuals were unable to sustain their weight decrease long after surgery.
A National Institutes of Health symposium on the long-term outcomes of bariatric surgery.	5	The study discovered that the failure rate for long-term weight reduction after sleeve gastrectomy in the United States was 30%.	According to the study, roughly one-third of patients did not maintain their weight decrease following surgery.
Failure rate of sustained weight reduction following sleeve gastrectomy.	5	The failure rate of long-term weight loss after sleeve gastrectomy in the United States was reported to be 15.5% 5 years after surgery.	Only a tiny minority of patients did not experience long-term success in sustaining weight loss following surgery. However, the overwhelming majority did.
Sustained weight reduction following sleeve gastrectomy in Indian patients	3	The failure rate of long-term weight reduction was defined as patients who recovered more than 30% of their lost weight during the first year after surgery. The study found that 25% of individuals who underwent sleeve gastrectomy in India failed to achieve long-term weight reduction.	According to the study, one-quarter of patients did not have long-term success in sustaining their weight loss following surgery.

Long-term results of sleeve gastrectomy for weight reduction in India.	5	According to the study, 30% of patients in India failed to achieve long-term weight loss following sleeve gastrectomy.	According to the study, approximately one-third of individuals did not lose weight successfully over time.
Failure rate of sustainable weight loss after sleeve gastrectomy in London	5	The study discovered that the failure rate of long-term weight loss after sleeve gastrectomy in London was 30%, with 45 of 150 patients failing to lose the necessary weight.	Approximately one-third of patients did not achieve good long-term weight reduction maintenance following surgery.
Long-term results of sleeve gastrectomy for weight reduction in Egyptian patients.	3	The study found that 35% of patients in Egypt failed to achieve sustainable weight reduction following sleeve gastrectomy, with just 65% effectively sustaining the required weight loss during a three-year follow-up period.	The study participants had a greater failure rate, with just 65% successfully maintaining the goal weight decrease.

Discussion:

Managing severe obesity is a complex task due to its chronic nature, necessitating ongoing clinical and nutritional monitoring to prevent weight regain following initial weight loss. Numerous studies have demonstrated the benefits of even modest weight loss, such as 5-10%, in resolving obesity-related comorbidities like Diabetes type 2, hypertension, and fatty liver disease, as well as improving general quality of life [16]. Achieving a weight loss of 5% or 10% of your starting body weight has been firmly connected to a lower risk of cardiovascular disease[17]. Bariatric surgery, a surgical intervention for weight loss,

offers a more permanent solution to obesity. While the weight loss outcomes following bariatric surgery can be significant, long-term success is not guaranteed, with weight regain posing a significant challenge post-surgery [18]. According to the previously mentioned studies, success rate of sleeve gastrectomy in term of weight loss maintenance was about According to two Saudi studies done by Alqahtani et al., 75% of participants achieved their goal weight loss. (2018), Albeladi et al. (2018) respectively. Similarly, another two studies conducted in the United States by Courcoulas et al. (2015), Obeid and others. (2015). The studies revealed failure rate 30% and 15.5% respectively. On the other hand, two Indian studies conducted by Singh S, Singh A, et al.(2020), Choudhary D, Lakshmi B, and others.(2018) revealed that failure rate of sleeve gastrectomy was 25%, 30% respectively. Moreover, a study conducted in London by R. A. Maghrabi et.al (2020) revealed similar results with 30% failure rate which this is consistent with Elbanna et al.'s (2020) research in Egypt.In contrast to prior bariatric surgeries, Li et al [19] A meta-analysis of 21 prospective and 12 retrospective studies including 1375 patients revealed no differences in excess percentage weight loss (%EWL) at 12 months between sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB). The limited long-term observational studies suggest that patients recover weight following SG, They attain "durable" long-term weight reduction. A study of 16 long-term trials found that %EWL was 62.3%, 53.8%, 43%, and 54.8% after 5, 6, 7, and 8 years of follow-up, respectively [20]. Similarly, Himpens et al [21] observed that patients recovered weight over 3 to 6 years, although the majority of participants maintained a %EWL greater than 50% at 6 years. It is uncertain if this weight recovery after SG may be used to argue that RYGB and SG are no longer equally effective in terms of weight reduction over time. On the one hand, Lim et al. [22] There was no difference up to five years, albeit a significant percentage of patients were lost to follow-up.

Conclusion:

In conclusion, bariatric surgery, particularly sleeve gastrectomy, has shown significant success in helping obese people lose weight and improve their overall health. While the treatment can provide significant weight reduction and resolve obesity-related comorbidities, long-term success rates vary across different studies and countries. Weight

maintenance remains a challenge post-surgery, with gradual weight regain being a common issue. Regular monitoring, follow-up assessments, and multidisciplinary support are crucial to address weight regain and ensure the safety and well-being of patients throughout their weight loss journey. More study is needed to better understand the variables that influence long-term weight reduction results and to improve the efficacy of bariatric surgeries in the treatment of severe obesity.

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Details of the AI usage are given below:

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