Role of Surgical Nurses in Bariatric Surgery: Patient Care Protocols

Abduljawad, Manal Mohammed A [1], Kalthoum Ibrahim Ali Alhawsah [2], Ashwaq Dahwi Ali Al-Naziy [3], Hanadi Dabaan Abdullah Almuslet [4], Badrah Ibrahim Alzubaidi [5], Mashael Ali Alshaiky [6], Hanan Ahmed Hassan Sayyadi [7], Wejdan Mohammed Bakhashwain [8], Ghalia Awadh Najei [9], Hawazin Mohammed Alhariqi [10]

1- Senior Nursing Specialist , Al-Thager General Hospital, Jeddah, Saudi Arabia
2- Nursing specialist, Al-Thager General Hospital, Jeddah, Saudi Arabia
3- Nursing technician, North Medical Tower, Arar, Saudi Arabia
4- Nursing technician, Al-Jouf Health Cluster, Saudi Arabia
5- Nursing technician, Dawqah Second Health Center, Al-Qunfudhah, Saudi Arabia
6- Nursing technician, Health Center, Jeddah Islamic Seaport, Saudi Arabia
7- Nursing technician, Health Center, Jeddah Islamic Seaport, Saudi Arabia
8- Nursing, Al-Thager General Hospital, Jeddah, Saudi Arabia
9- Nursing, Al-Thager General Hospital, Jeddah, Saudi Arabia
10- Nursing, Al-Thager General Hospital, Jeddah, Saudi Arabia

Abstract:

Surgical nurses play a critical role in the multidisciplinary approach to bariatric surgery, ensuring comprehensive patient care throughout the surgical process. From pre-operative assessments to post-operative recovery, these nurses are responsible for educating patients about the surgical procedure, outlining the risks and benefits, and preparing them for the necessary lifestyle changes that follow. They facilitate communication between the patient and the surgical team, coordinating care and addressing any concerns that may arise. By conducting thorough evaluations, they help determine patient eligibility for surgery, closely monitoring for comorbidities such as obesity-related health issues that could impact surgical outcomes. In the post-operative phase, surgical nurses monitor patients for complications, manage pain levels, and provide essential guidance on nutrition and physical activity to ensure successful recovery and long-term results. They implement and follow evidence-based care protocols tailored specifically for bariatric patients, including routine assessments for nutritional deficiencies and psychological support. Their expertise in wound care and patient education plays a vital role in minimizing the risk of complications and supporting patients in adhering to their weight-loss journey. By fostering a supportive environment through continuous education and personalized care, surgical nurses contribute significantly to the overall success of bariatric surgery programs.

Keywords: Surgical Nurses, Bariatric Surgery, Patient Care Protocols, Pre-operative Assessment, Patient Education, Comorbidities, Post-operative Recovery, Complication Management, Nutrition Guidance, Evidence-based Care, Psychological Support, Weight Loss Journey, Wound Care, Multidisciplinary Approach, Lifestyle Changes

Introduction:

The increasing prevalence of obesity has emerged as one of the most significant public health challenges of the 21st century. Recent statistics indicate that obesity affects over 650 million adults worldwide, a figure that has more than tripled since 1975. This rampant rise in obesity is associated with a host of comorbidities, including diabetes, cardiovascular diseases, and certain types of cancer, prompting the need for effective intervention strategies. One of the most effective long-term treatments for morbid obesity is bariatric surgery, which has been shown to result in substantial weight loss and improvement in obesity-related conditions. However, the complexity of bariatric surgical procedures

necessitates a multifaceted approach to patient care, with surgical nurses playing a pivotal role in the multidisciplinary healthcare team [1].

Surgical nurses are integral to the perioperative process, tasked with ensuring patient safety, managing preoperative assessments, facilitating surgical interventions, and providing postoperative care. Their expertise is vital in optimizing patient outcomes, promoting recovery, and minimizing complications. In the context of bariatric surgery, the surgical nurse not only manages the technical aspects of surgery but also provides emotional and educational support to patients navigating the challenges of significant lifestyle changes post-operatively. Therefore, understanding the role of surgical nurses in bariatric surgery and their involvement in patient care protocols is crucial for delivering comprehensive and quality care [2].

In the perioperative phase, surgical nurses are responsible for conducting thorough preoperative evaluations that include the assessment of patients' medical histories, understanding their psychosocial situations, and identifying potential risks associated with surgery. This often involves collaboration with dietitians, mental health specialists, and anesthetists to formulate an individualized care plan. The surgical nurse is also knowledgeable about various bariatric procedures, such as gastric bypass, sleeve gastrectomy, and adjustable gastric banding, which enables them to provide informed patient education regarding expected outcomes, potential risks, and necessary lifestyle modifications [3].

Patient education is a cornerstone of the surgical nurse's role, particularly concerning nutrition, exercise, and behavioral changes after bariatric surgery. Patients must be equipped with the knowledge and skills to make significant lifestyle adjustments, as this is essential for achieving long-term success. Thus, surgical nurses often serve as the primary point of contact for patients, addressing their concerns and reinforcing education related to postoperative care. This includes guidelines for dietary restrictions, hydration, supplement intake, and exercise regimens, as well as strategies for coping with the psychological aspects of weight loss [4].

In addition to preoperative and educational roles, surgical nurses are also actively involved in postoperative care. Their responsibilities include monitoring vital signs, managing pain, and assessing for complications such as infections, pulmonary embolism, or anastomotic leaks. Effective communication skills are essential, as nurses must relay critical information to the surgical team during and after the procedure, ensuring that any issues are addressed promptly. Furthermore, surgical nurses also play a significant role in facilitating transitions from the hospital to home, advocating for follow-up appointments and ongoing support to enhance the patient's recovery [5].

Recent literature highlights the impact of nursing interventions on surgical outcomes in bariatric patients. Research suggests that effective nursing care can reduce postoperative complications, improve patient satisfaction, and enhance overall quality of life. For instance, preoperative education delivered by surgical nurses has been associated with improved adherence to dietary guidelines and decreased rates of weight regain after surgery. Enhanced recovery protocols increasingly recognize the surgical nurse's role in promoting early mobilization, appropriate pain management, and emotional support for patients, all of which contribute to a successful surgical experience [6].

Evaluation and education of the patient before the bariatric surgery procedure:

Bariatric surgery has increasingly become a viable option for individuals struggling with obesity, especially when other interventions, such as lifestyle modifications and pharmacotherapy, have failed. It is often the last resort for patients who suffer from severe obesity-related comorbidities, such as type 2 diabetes, hypertension, and sleep apnea. While the psychological and physical benefits of weight loss surgery are widely acknowledged, the journey towards the procedure involves meticulous preparation, including thorough evaluations and comprehensive patient education [7].

Bariatric surgery encompasses various surgical procedures aimed at facilitating weight loss through alterations to the digestive system. The most commonly performed types include Roux-en-Y gastric bypass, sleeve gastrectomy, and adjustable gastric banding. Each type of surgery operates on different principles, from restricting the volume of food the stomach can hold to altering nutrient absorption. The choice of the procedure is typically influenced by patient-specific factors, including

physiological characteristics and comorbidities. Hence, preoperative evaluation and education serve to create a tailored approach that increases the effectiveness of the intervention and reduces potential complications [8].

The Preoperative Evaluation Process

The preoperative assessment of candidates for bariatric surgery is a multifaceted process that typically includes medical, psychological, nutritional, and lifestyle evaluations.

1. **Medical Evaluation:** The primary goal of the medical evaluation is to assess the patient's overall health, identify existing comorbidities, and determine readiness for surgery. This phase often includes a series of diagnostic tests, physical examinations, and laboratory work, such as blood work to check for nutritional deficiencies, liver function, and hormonal imbalances. Obesity-related conditions like cardiovascular diseases, diabetes, and respiratory disorders must be carefully evaluated. In some cases, consultations with specialists, such as endocrinologists or cardiologists, may be warranted to ensure that any existing health issues are managed before surgery [9].

2. **Psychological Evaluation:** Psychological assessment is an essential component in determining a patient's emotional and mental fitness for bariatric surgery. Candidates are evaluated for psychiatric conditions such as depression, anxiety disorders, and eating disorders that may affect their ability to adhere to postoperative lifestyle changes. Psychologists employ standardized assessment tools and interviews to gauge a patient's motivation for surgery, support system, and readiness for the behavioral changes that are vital for sustained weight loss. It is crucial that candidates possess realistic expectations about the surgery's outcomes and are psychologically prepared for the challenges that postoperative life presents [10].

3. **Nutritional Evaluation:** Nutritionists or dietitians play a key role in preoperative education and evaluation by assessing dietary habits and nutritional status prior to surgery. Patients are often put on a specific preoperative diet that may include a calorie deficit or a medically-supervised weight loss program to reduce liver size and optimize surgical conditions. This period allows the surgical team to establish a baseline for the patient's eating patterns and to develop a tailored postoperative nutrition plan to help maintain weight loss and prevent deficiencies [11].

4. **Lifestyle Modifications:** A critical component of the preoperative process is evaluating the patient's readiness to change their lifestyle. This often includes a review of physical activity levels, substance use (e.g., tobacco, alcohol), and compliance with medical recommendations. Gradual implementation of healthier habits prior to surgery can improve surgical outcomes and increase the likelihood of long-term success post-surgery [11].

Education of the Patient

Patient education is an integral part of the preoperative process. Effective education addresses multiple facets such as the surgical procedure, possible risks, lifestyle changes, dietary modifications, and long-term follow-up care [12].

1. **Understanding the Procedure:** Patients need to have a solid understanding of the specific type of bariatric procedure they will undergo. Surgeons and healthcare providers should explain the mechanics of how the surgery works, including its risks, benefits, and expected outcomes. Knowledge about the procedure empowers patients to make informed decisions and aids in setting realistic expectations [13].

2. **Potential Risks and Complications:** Education about potential risks is essential for informed consent. While bariatric surgery can lead to significant weight loss and improvement in comorbid conditions, it comes with its own set of complications, including but not limited to infection,

bleeding, nutritional deficiencies, and the potential requirement for further surgeries [13]. Understanding these risks prepares patients for postoperative realities and reinforces the importance of adhering to follow-up appointments and lifestyle guidelines.

3. **Postoperative Lifestyle Changes:** A successful outcome following bariatric surgery is heavily reliant on the patient's ability to make long-term lifestyle changes. Education should focus on the importance of dietary adjustments, such as transitioning to smaller, high-protein meals and incorporating regular physical activity. Patients should also be informed about strict adherence to follow-up plans and potential long-term supplementation to prevent deficiencies. Preoperative educational programs may include skills training, such as reading nutrition labels, meal prepping, and dealing with social situations involving food [14].

4. **Support Systems:** The importance of a strong support system cannot be overstated. Patients should be educated on resources available, such as support groups, counseling, and nutrition workshops. Encouraging participation in support networks allows for the exchange of experiences, helps mitigate post-surgical challenges, and fosters accountability for the necessary lifestyle changes [14].

Multidisciplinary Collaboration in Bariatric Surgery:

Bariatric surgery has emerged as one of the most effective long-term solutions for treating obesity and obesity-related comorbidities. The rise in obesity prevalence worldwide, alongside its associated health complications such as Type 2 diabetes, hypertension, and sleep apnea, has intensified the need for effective surgical interventions. However, the success of bariatric surgery transcends the operative procedure itself. It requires a collaborative approach involving multiple disciplines to ensure optimal patient outcomes, encompassing preoperative evaluations, surgical interventions, and postoperative care [15].

The complexity associated with obesity treatment necessitates a holistic approach that addresses not only the physical but also the psychological, nutritional, and lifestyle factors that contribute to a patient's condition. A multidisciplinary team typically comprises surgeons, physicians, dietitians, psychologists, nurses, and exercise specialists. Each member brings specific expertise critical to the patient's surgical journey [15].

Preoperative Evaluation

Prior to undergoing bariatric surgery, patients must undergo thorough evaluations to determine their candidacy for the procedure. This evaluation process often involves multiple specialists.

1. **Surgeon**: The bariatric surgeon evaluates the patient's medical history, performs a physical assessment, and reviews diagnostic imaging studies. They educate the patient about surgical options, risks, and benefits, establishing a foundational understanding essential for informed consent [16].

2. **Physician**: An internist or primary care physician often evaluates comorbid conditions such as diabetes, cardiac disease, and pulmonary issues. They provide vital insight into the patient's overall health status and the potential need for additional management during and after the surgical process [16].

3. **Psychologist/Psychiatrist**: Patients may face emotional and psychological challenges related to obesity and the surgical procedure itself. Mental health professionals assess the patient's psychological readiness for surgery, potential eating disorders, and provide preoperative counseling to prepare them for lifestyle changes following surgery [17].

4. **Dietitian**: Dietary management is crucial in the treatment and long-term success of obesity interventions. A registered dietitian conducts a nutritional assessment, assists in preoperative weight loss plans, and educates patients about dietary changes that need to be adopted post-surgery [17].

5. **Nursing Staff**: Surgical nurses are essential in educating patients about the surgical process, recovery expectations, and postoperative care. They provide support to both patients and families throughout the healthcare continuum [18].

The Surgical Procedure

The surgical team's collaboration during the operating procedure highlights the importance of each member's role:

1. **Surgeon and Surgical Team**: The primary surgeon is responsible for the technical aspects of surgery while ensuring the sterile field. Surgical assistants and nurses play critical roles in maintaining equipment, managing anesthesia, and monitoring the patient's vital signs during the procedure [18].
2. **Anesthesiologist**: Proper sedation and management of anesthesia are critical for the patient's safety. The anesthesiologist collaborates closely with the surgical team to ensure the patient is stable throughout the surgery, adjusting medications as required based on intraoperative conditions [18] .

Postoperative Care and Follow-Up

Post-surgery, patients continue to benefit from multidisciplinary involvement:

1. **Nurses**: Postoperative nursing care is essential for monitoring recovery and managing complications. Nurses are pivotal in educating patients about pain management, wound care, dietary changes, and regular follow-up protocols [19].
2. **Dietitian**: The dietitian works with patients to develop a personalized post-operative meal plan that ensures adequate nutrition while adhering to the new dietary restrictions imposed by the surgery. This ongoing dietary counseling is crucial for promoting healthy eating habits and preventing complications [19].
3. **Psychologist**: Emotional and mental health support remains paramount after surgery. Patients may experience a range of emotions, including anxiety and depression, as they adjust to their new lifestyles. Continuous conversations with psychologists can help in addressing these challenges [20].
4. **Exercise Specialists**: Encouraging physical activity is a vital component of postoperative care. Exercise specialists can develop individualized exercise plans, motivating patients to gradually increase their physical activity levels to promote weight loss and improve overall well-being [21].
5. **Follow-Up Care**: Regular follow-up visits involving the multidisciplinary team are essential for monitoring the patient's progress, adjusting treatment plans, and facilitating interventions for any arising complications or challenges. Data from these follow-up interactions can provide valuable insights to shape future practices in bariatric surgery [22].

Challenges in Multidisciplinary Collaboration

While multidisciplinary collaboration in bariatric surgery holds immense potential, certain challenges can impede effective teamwork. Among these challenges are communication barriers, differences in professional perspectives, and logistical issues related to scheduling multiple appointments with various specialists. To address these challenges, healthcare institutions must foster a culture of collaboration, enhance communication channels, provide training to team members on working in interdisciplinary settings, and develop streamlined processes that facilitate coordinated care [22].

Implementation of Evidence-based Patient Care Protocols:

Bariatric surgery has emerged as a pivotal intervention for patients struggling with severe obesity, offering a potential pathway to significant weight loss and a reduction in obesity-related comorbidities. However, to maximize the benefits and minimize the risks, it is crucial that healthcare providers implement evidence-based protocols throughout the entire surgical journey [23].

The rising prevalence of obesity globally has necessitated the development of effective surgical

interventions. According to the World Health Organization, the prevalence of obesity has more than tripled since 1975. It is associated with various health complications, including type 2 diabetes, hypertension, sleep apnea, and several types of cancers. Bariatric surgery provides not only a means for substantial weight loss but also a significant improvement in related health conditions [24].

Implementing evidence-based patient care protocols is critical because they systematically incorporate the latest research findings into clinical practice, ensuring that all patient interactions and treatments are grounded in the best available evidence. Standardized protocols reduce variability in patient care, enhance communication among healthcare providers, and facilitate a patient-centered approach that tailors interventions to individual needs [25].

Stages of Patient Care in Bariatric Surgery

Implementing evidence-based protocols in bariatric surgery requires a comprehensive approach that spans multiple stages of patient care:

1. **Preoperative Assessment and Preparation**: This stage involves a thorough evaluation of the patient's physical, psychological, and nutritional status. Evidence suggests that a multidisciplinary team should conduct preoperative assessments, comprising surgeons, dietitians, psychologists, and physical therapists. Each component of this team plays a vital role in preparing patients for surgery. Research highlights the need for preoperative education about the risks and benefits of surgery, lifestyle modifications, and postoperative expectations [25].
2. **Surgical Intervention**: The choice of surgical technique—whether sleeve gastrectomy, gastric bypass, or adjustable gastric banding—should be based on the most current clinical guidelines and the individual patient's profile. Evidence-based protocols emphasize surgical education and training for the surgical team, as well as minimizing complications through high-compliance protocols that adhere to best practices [26].
3. **Postoperative Care and Monitoring**: The postoperative period is as critical as the surgical procedure itself. Evidence-based guidelines advocate for structured follow-up protocols that include regular follow-ups for the first year, then annually thereafter. Monitoring should assess not only weight loss but also resolution of comorbid conditions and nutritional deficiencies. Protocols should include nutritional supplementation and guidance on lifelong dietary changes, which are often essential for sustaining weight loss and preventing complications [26].
4. **Behavioral and Psychological Support**: Recognizing that obesity often has a psychological component is essential for comprehensive care. Evidence supports the inclusion of behavioral therapy as a critical aspect of postoperative recovery and weight maintenance. Patients should have access to counseling services that help them modify unhealthy behaviors that contributed to their obesity and develop strategies for dealing with challenges post-surgery [27].

Key Components of Evidence-Based Protocols

1. **Standardized Assessment Tools**: These tools help evaluate the surgical appropriateness of candidates and anticipate potential postoperative challenges. Instruments like the Body Mass Index (BMI), the Obesity Surgery Mortality Risk Score (OS-MRS), and psychological assessments provide a structured way to gauge patient readiness [28].
2. **Nutritional Protocols**: Adhering to guidelines that advocate for high-protein diets, low carbohydrates, and gradual food reintroduction can significantly improve postoperative outcomes. Evidence shows that patients who engage with registered dietitians are more successful in their weight loss journeys [28].
3. **Patient Education**: Comprehensive educational materials are crucial for informing patients about their journey.

Evidence suggests that structured education sessions can improve understanding and adherence to dietary modifications and follow-up care [29].

4. **Multidisciplinary Approach**: Engaging a variety of specialists—surgeons, nurses, dietitians, psychologists, and exercise physiologists—ensures that all aspects of patient health are considered. Team conferences can discuss challenging cases and devise tailored interventions for complex patients [29].
5. **Regular Monitoring and Quality Improvements**: Continuous assessment of outcomes and adherence to protocols fosters a culture of quality improvement. Utilizing databases to collect outcome data allows bariatric programs to benchmark against established standards and implement necessary changes based on real-world performance [29].

Impact on Patient Outcomes

The implementation of evidence-based bariatric surgery protocols leads to significantly improved patient outcomes. Studies have demonstrated that facilities adhering to these protocols report lower complication rates, enhanced rates of weight loss, and better quality of life measures. Furthermore, the comprehensive support structures fostered by evidence-based care facilitate sustained weight loss, which is often difficult for patients to achieve on their own [30].

In addition to clinical outcomes, these protocols translate to cost savings in the healthcare system by reducing the incidence of obesity-related health conditions, hospital readmissions, and complications. Providing a coordinated, evidence-based pathway not only enhances individual patient experiences but also contributes to the overall sustainability of bariatric programs [30].

Managing Patient Expectations and Psychological Support:

Surgical procedures, regardless of their complexity, involve an intricate interplay of physical, emotional, and psychological dimensions. For patients, the prospect of surgery often triggers a myriad of concerns, ranging from fear and anxiety about the procedure itself to uncertainty regarding the outcomes and postoperative recovery. In this milieu, surgical nurses play a pivotal role not only in managing clinical aspects but also in influencing patient expectations and providing psychological support [31].

Managing patient expectations is crucial for several reasons. First and foremost, realistic expectations can significantly influence patient satisfaction. When patients have a clear understanding of what to expect, they are more likely to approach their surgical experience with a sense of calm. Conversely, inflated expectations can lead to disappointment and dissatisfaction, regardless of the surgical outcome. Thus, surgical nurses must engage in transparent, honest communication with patients about what the procedure entails, potential risks, and expected recovery timelines [32].

Furthermore, educating patients about the surgical process can mitigate anxiety in several ways. Knowledge serves to empower patients, instilling a sense of control over their healthcare journey. This empowerment is particularly significant in surgical contexts where patients may feel helpless or vulnerable. By providing comprehensive preoperative education, surgical nurses help demystify surgery, transforming a daunting experience into one that is navigable and predictable. Informing patients about the role of anesthesia, the surgical techniques involved, and the postoperative care they will receive is instrumental in demystifying the surgical experience [33].

Effective communication is a cornerstone of managing patient expectations. Surgical nurses are uniquely positioned to facilitate discussions that clarify the goals of surgery, anticipated recovery times, and possible outcomes, including complications. Active listening is equally important; nurses must encourage patients to express their fears and concerns, offering reassurance and educating them about the support systems in place [34].

In addition to verbal communication, surgical nurses can utilize educational materials, such as brochures and videos, to reinforce key messages. These resources can serve as valuable tools in helping patients visualize their surgical journey and understand the intricacies involved. Overall, this dual approach of verbal and visual education can promote a more comprehensive understanding of the

surgery, thereby aligning patient expectations with realistic outcomes [35].

Psychological preparedness is crucial in the surgical context. Anxiety and fear can significantly impact a patient's experience and outcomes. High levels of preoperative anxiety have been shown to correlate with increased pain perception, prolonged recovery times, and even higher rates of postoperative complications. Surgical nurses can implement several strategies to address these psychological aspects effectively [35].

One approach involves preoperative counseling, where nurses engage patients in discussions about their mental state, address potential fears, and provide coping strategies. Techniques such as visualization exercises, breathing techniques, and guided imagery can help patients develop a sense of calm as they approach surgery. Moreover, providing a consistent point of contact for patients to voice their concerns allows surgical nurses to build rapport and trust, thereby creating a supportive environment [35].

Family involvement in the educational process is also essential. Surgical nurses should encourage family members to be actively involved in discussions regarding the surgical procedure. Engaging families can not only bolster the support network for patients but also alleviate collective anxiety, as loved ones become informed and empowered to provide emotional support throughout the surgical process [36].

Postoperative care does not solely focus on the physical healing of surgical sites but also encompasses the psychological well-being of the patient. Consequently, surgical nurses must remain vigilant in addressing the emotional ramifications of surgery well into the recovery phase. Patients may experience a range of feelings post-surgery, including disappointment, frustration related to recovery timelines, or anxiety stemming from the implications of their surgical outcomes [37].

Nurses can play a key role in supporting patients as they navigate these emotional challenges. This involves regular check-ins after surgery, facilitating conversations about their feelings, and providing reassurance during recovery. Encouraging patients to express any postoperative concerns immediately can help catch issues early, whether they pertain to physical discomfort or emotional distress, ultimately fostering a healthier recovery trajectory [37].

Moreover, the nurse-led initiatives, such as support groups or forums for patients undergoing similar procedures, can facilitate peer support. These support systems promote an environment that normalizes the emotional burdens of surgery, allowing patients to connect with others who share similar experiences. The shared understanding and sense of community can be incredibly therapeutic, mitigating feelings of isolation and hopelessness [38].

Post-operative Care: Monitoring and Complication Management:

Post-operative care is a critical component of the surgical process, encompassing the period immediately following surgery up until the patient's full recovery. This phase is not merely a routine follow-up but a vital phase wherein the patient's recovery trajectory is established and managed. Efficient post-operative care is pivotal in minimizing complications, ensuring patient comfort, and facilitating a speedy recovery [39].

Understanding Post-operative Care

Post-operative care begins once a patient is moved from the operating room to the recovery area, and it typically involves several multifaceted domains: monitoring vital signs, managing pain, preventing infection, facilitating mobility, and ensuring psychosocial support. Each of these domains requires a systematic approach to ascertain that patients are adequately attended to during their recovery [39].

1. **Monitoring Vital Signs**

The beginning of post-operative care is often marked by the continuous monitoring of vital signs, including heart rate, blood pressure, respiratory rate, and temperature. These parameters provide essential information about the patient’s physiological stability. Abnormal vital signs can often indicate complications such as bleeding, inadequate oxygenation, or shock [40].

For instance, hypotension may signal significant blood loss, while tachycardia could indicate pain or anxiety. Nurses and nursing staff play a crucial role

in implementing early detection protocols to alert physicians when vital sign deviations occur [40].

2. **Pain Management**

Pain control is a central aspect of post-operative care. Effective management of pain not only enhances patient comfort but also plays a role in reducing stress responses and preventing chronic pain syndromes. The postoperative period may involve the administration of analgesics, which can be either oral or intravenous, depending on the severity of pain and the type of surgery performed [41].

The use of regional anesthesia techniques, such as nerve blocks or epidurals, can also be employed for effective pain relief while minimizing systemic opioid use. Regular assessment of pain levels through validated scales enables medical staff to adjust pain management strategies in real-time, promoting an optimal recovery environment [41].

3. **Preventing Infection**

Surgical wounds are at risk for infection, making meticulous wound care paramount in post-operative nursing. Healthcare providers should educate patients about hygiene practices, monitor the surgical site for signs of infection—including redness, swelling, warmth, and discharge—while adhering to evidence-based protocols for wound dressing changes [42].

Prophylactic antibiotics may be indicated based on the type of surgery performed and the patient's individual risk factors. Furthermore, aseptic techniques should be strictly observed to mitigate the risk of nosocomial infections during dressing changes and other post-operative procedures [42].

4. **Facilitating Mobilization**

Early mobilization can significantly enhance recovery after surgery. It helps to prevent complications such as deep vein thrombosis (DVT), pulmonary embolism, and muscle atrophy, which can occur when a patient remains immobile for extended periods. Encouraging patients to engage in gradual mobility—starting with simple leg exercises, sitting up, and progressing to walking—is a cornerstone of effective post-operative care [43].

Physiotherapists often work in conjunction with nursing staff to create a tailored mobilization plan that aligns with the patient's surgical procedure, level of pain, and overall condition. Early assessment of mobility not only aids physical recovery but also reinforces the patient's confidence during the healing process [44].

5. **Psychosocial Support**

The psychological impact of surgery should not be underestimated. Patients may experience anxiety, fear, and depression in the post-operative phase. Addressing these emotional needs through psychological support, education about the recovery process, and fostering open communication can significantly enhance patient satisfaction and compliance [45].

Supported discharge programs and integrating social work into post-operative care can assist in addressing any home care requirements, emotional support, and providing resources for further assistance [45].

Recognizing and Managing Complications

Despite optimal post-operative care, complications may still arise. The healthcare team must be vigilant in recognizing signs and symptoms of potential complications to ensure prompt intervention.

1. **Common Post-operative Complications**
    - **Infection**: As discussed, surgical site infections can develop despite the best precautions. Signs might include localized pain, fever, and wound drainage. Early identification allows for timely antibiotic therapy.
    - **Hemorrhage**: This condition can occur due to surgical manipulations. Sudden drops in blood pressure or changes in vital signs can be indicative of hemorrhage. Immediate surgical intervention may be necessary to control the bleeding.
    - **Thromboembolic Events**: DVT and pulmonary embolism are significant risks associated with immobility post-surgery. Symptoms such as swelling in the legs, pain, or sudden shortness of

breath necessitate swift diagnostic measures and possible anticoagulation therapy.

- **Respiratory Complications**: These may manifest as atelectasis or pneumonia, particularly in patients who had thoracic or abdominal surgery. Monitoring oxygen saturation and respiratory patterns aids in early identification [46].

2. **Management Strategies**

Effective management of post-operative complications requires a coordinated effort from the surgical team, nursing staff, and sometimes, other specialists. Treatment may involve:

- **Antibiotic therapy** for infections.
- **Fluid resuscitation and transfusions** for bleeding.
- **Pharmacological interventions** (such as anticoagulants) for thromboembolic events.
- **Respiratory supportive measures**, including incentive spirometry to promote lung expansion [47].

In severe cases, further surgical intervention may be required to rectify complications.

Nutritional Guidance and Lifestyle Counseling:

Nutritional guidance and lifestyle counseling play crucial roles in promoting health and well-being in individuals and communities. In a world where chronic diseases and lifestyle-related conditions are on the rise, it is imperative to understand the significance of a balanced diet and a healthy lifestyle [48].

Nutritional guidance refers to the systematic approach of providing individuals with the knowledge and tools needed to make informed dietary choices. Nutrition does not exist in a vacuum; it comprises a multitude of factors including individual health status, cultural influences, socioeconomic status, and personal preferences. Effective nutritional guidance is comprehensive, emphasizing whole foods, balanced meals, and the importance of variety in the diet [49].

The Food and Nutrition Board of the National Academies of Sciences outlines several dietary reference intakes (DRIs) that serve as benchmarks for nutrient intake levels that are adequate for most healthy individuals. These guidelines are essential for health practitioners to tailor advice to meet the needs of their clients. They typically cover macronutrients such as carbohydrates, proteins, and fats, along with micronutrients like vitamins and minerals. To this end, nutritional guidance is often categorized based on age, gender, activity level, and specific health conditions [49].

While nutritional guidance provides the framework for healthy eating, lifestyle counseling encompasses a broader scope of health-promoting behaviors. Lifestyle counseling focuses on individual habits that affect physical, mental, and emotional well-being. Key components include physical activity, sleep hygiene, stress management, and maintaining social connections, all of which can substantially impact an individual's health landscape [49].

One of the most effective aspects of lifestyle counseling is its personalized approach. It takes into account the unique circumstances, challenges, and motivations of each individual. For example, a person may struggle with weight management not solely because of diet, but also due to emotional eating, lack of physical activity, or insufficient support systems. Lifestyle counseling empowers individuals to identify these patterns and adopt strategies to alter them [50].

In many cases, professionals such as registered dietitians, nutritionists, and health coaches work collaboratively with individuals to create tailored nutrition and lifestyle plans. This collaboration provides individuals with accountability and guidance as they navigate changes. Moreover, lifestyle counseling often emphasizes behavior modification techniques, including goal-setting, self-monitoring, and problem-solving skills, to promote sustainable change [50].

Research shows that dietary habits and lifestyle choices are interrelated. A balanced diet not only provides the necessary nutrients for bodily functions but also influences energy levels, mood, and physical capabilities, which in turn affect an

individual's ability to adhere to a physically active lifestyle. For instance, a well-nourished individual is more likely to engage in regular exercise, while also benefiting from the mood-enhancing effects of physical activity, thus creating a positive feedback loop [51].

Incorporating both nutritional guidance and lifestyle counseling can enhance overall health outcomes. For example, individuals diagnosed with type 2 diabetes benefit significantly from interventions that address not just their food choices, but also their physical activity levels, stress management, and sleep patterns. This comprehensive approach can lead to improved glycemic control, weight management, and a decreased risk of complications associated with the disease [51].

Strategies for Effective Counseling

To maximize the effectiveness of nutritional guidance and lifestyle counseling, several strategies can be employed:

1. **Personalized Assessments**: Conducting thorough assessments including dietary recalls, physical exams, and lifestyle inventories allows practitioners to identify individuals' specific needs and challenges [52].
2. **Education and Empowerment**: Providing educational resources and tools empowers individuals to make knowledgeable choices. This may include workshops, cooking classes, and informational materials on reading food labels.
3. **Motivational Interviewing**: Employing motivational interviewing techniques helps facilitate conversations that motivate clients toward change. This approach fosters a non-judgmental environment where individuals can express their ambivalence towards making changes.
4. **Support Systems**: Encouraging individuals to cultivate support systems with family, friends, or community groups can enhance motivation and accountability. Group counseling sessions can also promote shared experiences and foster camaraderie among participants.
5. **Monitoring Progress**: Regular follow-ups to monitor individuals' progress can help maintain motivation and make necessary adjustments to their plans. This also reinforces the importance of ongoing commitment to lifestyle changes [52].

Evaluating Outcomes and Continuous Quality Improvement:

Obesity is a multifaceted health condition characterized by excessive body fat, which significantly increases the risk of chronic diseases such as diabetes, cardiovascular disorders, and musculoskeletal issues. The World Health Organization (WHO) categorizes obesity as a global epidemic, prompting medical researchers and healthcare providers to seek effective interventions to combat this issue. Among several treatment options, obesity surgery, or bariatric surgery, has gained recognition for its effectiveness in achieving substantial weight loss, improving health outcomes, and enhancing quality of life for patients suffering from severe obesity. However, as with any surgical intervention, the continuous evaluation of results and quality improvement is paramount for safeguarding patient welfare and optimizing surgical practices [53].

Evaluation of Outcomes in Obesity Surgery

The efficacy of obesity surgery is typically assessed through various metrics, including weight loss, comorbidity resolution, patient satisfaction, and overall health improvements. The most common surgical procedures include gastric bypass, sleeve gastrectomy, and adjustable gastric banding. Each of these techniques presents specific benefits and long-term outcomes, which necessitate thorough post-operative evaluation [54].

1. Weight Loss Metrics

The primary outcome of bariatric surgery is weight loss, largely measured using the percentage of excess weight loss (EWL) or body mass index (BMI) reductions. Studies have demonstrated that patients undergoing gastric bypass can expect a loss of 60-80% of their excess weight within the first two years post-surgery, while sleeve gastrectomy has shown similar findings. Evaluating weight loss over time allows healthcare providers to identify trends, patient adherence to lifestyle modifications, and

potential complications associated with inadequate weight loss [55].

2. Resolution of Comorbidities

Beyond weight loss, a crucial aspect of evaluating obesity surgery is its impact on obesity-related comorbidities. Conditions such as type 2 diabetes, hypertension, and obstructive sleep apnea can significantly diminish quality of life and overall well-being. Research suggests that bariatric surgery can lead to the remission of type 2 diabetes in approximately 50% to 80% of patients, with considerable reductions in blood pressure and improvements in sleep apnea symptoms. Evaluating comorbidity resolution is essential for ascertaining the long-term health benefits of surgical intervention, thereby reinforcing the necessity of rigorous follow-up protocols [55].

3. Patient Quality of Life and Satisfaction

Patient-reported outcomes are another vital component in assessing the results of obesity surgery. Quality of life (QoL) measures, often captured through validated surveys, are essential to understanding the patient experience post-surgery. Studies indicate that individuals often report significant improvements in psychological well-being, social functioning, and overall life satisfaction following bariatric procedures. Evaluating patient satisfaction not only serves to ensure that surgeons are meeting the expectations of their patients but also informs surgeons about the holistic effects of their interventions, extending beyond mere physical health [56].

Challenges in Evaluating Outcomes

While the assessment of obesity surgery outcomes is crucial, it comes with critical challenges that can impede the effectiveness of evaluations. First and foremost, patient variability poses a significant hurdle. Different demographic factors, such as age, sex, ethnicity, and comorbidity presence, can influence both surgical outcomes and patient recovery trajectories. Moreover, patients' adherence to post-operative lifestyle changes, including diet and exercise, plays a decisive role in the results, leading to variability in success rates [56].

Additionally, the evolving nature of bariatric surgery techniques necessitates ongoing education and training for surgical teams. The advent of new technologies and surgical methods can complicate the assessment of historical data on surgical outcomes, leading to challenges in establishing standardized benchmarks for success [57].

Continuous Improvement of Quality in Obesity Surgery

To address these challenges and to ensure that bariatric surgical practices remain effective and safe, a structured approach to continuous quality improvement (CQI) is essential. CQI involves systematic evaluation and consistent refinement of surgical practices based on evidence-based data, actively seeking methods to bolster patient outcomes and safety [57].

1. Data Collection and Analysis

An integral component of CQI is robust data collection and analysis systems that monitor surgical outcomes, patient adherence, and satisfaction levels. Healthcare providers should utilize registries and databases to gather longitudinal data. Such databases facilitate comparative analyses both within single institutions and across multiple centers, allowing for benchmarking against best practices and outcomes [58].

2. Standardized Protocols and Guidelines

Implementing standardized protocols and clinical pathways can enhance consistency in care delivery. Organizations such as the American Society for Metabolic and Bariatric Surgery (ASMBS) provide extensive guidelines that encompass pre-operative evaluations, surgical techniques, and post-operative care. Establishing adherence to such established protocols can minimize discrepancies in practice, improve outcomes, and reduce complication rates [59].

3. Multidisciplinary Team Collaboration

Bariatric surgery necessitates a collaborative approach involving surgeons, dietitians, psychologists, and other healthcare professionals. Building a multidisciplinary team fosters comprehensive care that addresses both the physiological and psychological aspects of obesity. Continuous education and training for team members can enhance the synergy of these roles, ultimately leading to improved patient experiences and outcomes [60].

4. Patient Engagement and Education

Engaging patients in their care pathway can greatly influence outcomes. Pre-operative education programs that communicate expectations, potential complications, and long-term lifestyle alterations are vital in preparing patients. Involving patients in shared decision-making also fosters a sense of ownership over their health outcomes, encourages adherence to post-operative regimes, and promotes lasting behavioral changes [61].

Conclusion:

In conclusion, surgical nurses play an indispensable role in the comprehensive care of bariatric surgery patients, significantly influencing both the immediate and long-term success of their weight-loss journeys. Through their expertise in pre-operative assessment, education, and collaboration with multidisciplinary teams, these nurses ensure that patients receive holistic and personalized care tailored to their unique needs. Their proactive involvement in post-operative monitoring, complication management, and nutritional guidance underlines the critical nature of their responsibilities, not only in achieving positive clinical outcomes but also in enhancing the overall patient experience.

As the prevalence of obesity continues to rise, the demand for effective bariatric surgical solutions will increase, emphasizing the need for skilled surgical nurses who are well-versed in patient care protocols. Continuous education, evidence-based practices, and a compassionate approach are essential for surgical nurses to optimize patient outcomes. By advocating for patients and facilitating lasting lifestyle changes, surgical nurses are pivotal in transforming the lives of individuals undergoing bariatric surgery, ultimately contributing to the reduction of obesity-related health risks and improving the quality of life.

References:

1. Magro DO, Geloneze B, Delfini R, Pareja BC, Callejas F, Pareja JC. Long-term weight regain after gastric bypass: a 5-year prospective study. Obes Surg. 2008;18(6):648-651. doi:10.1007/s11695-007-9265-1.
2. Kataoka K. Indices of obesity derived from body weight and height. Nippon Rinsho Japanese J Clin Med. 1995;53(Suppl(3)):147-153.
3. Robinson AH, Adler S, Stevens HB, Darcy AM, Morton JM, Safer DL. What variables are associated with successful weight loss outcomes for bariatric surgery after one year? Surg Obes Relat Dis. 2014;10(4):697-704. doi:10.1016/j.soard.2014.01.030.
4. Welbourn R, Hopkins J, Dixon JB, et al. Commissioning guidance for weight assessment and management in adults and children with severe complex obesity. Obes Rev. 2018;19(1):14-27.
5. O'Brien PE, Hindle A, Brennan L, et al. Long-term outcomes after bariatric surgery: a systematic review and meta-analysis of weight loss at 10 or more years for all bariatric procedures and a single-centre review of 20-year outcomes after adjustable gastric banding. Obes Surg. 2019;29(1):3-14. doi:10.1007/s11695-018-3525-0.
6. Toussi R, Fujioka K, Coleman KJ. Pre- and postsurgery behavioral compliance, patient health, and postbariatric surgical weight loss. Obesity (Silver Spring). 2009;17(5):996-1002.
7. Silva LB, Oliveira BMPM, Correia F. Evolution of body composition of obese patients undergoing bariatric surgery. Clin Nutr ESPEN. 2019;31:95-99.
8. Khosla T, Lowe CR. Indices of obesity derived from body weight and height. Br J Prev Soc Med. 1967;21(3):122.
9. Sarwer DB, Dilks RJ, West-Smith L. Dietary intake and eating behavior after bariatric surgery: threats to weight loss maintenance and strategies for success. Surg Obes Relat Dis. 2011;7(5):644-651.
10. Marshall S, Mackay H, Matthews C, Maimone IR, Isenring E. Does intensive multidisciplinary intervention for adults who elect bariatric surgery improve postoperative weight loss, co-morbidities, and quality of life? A systematic review and meta-analysis. Obes Rev. 2020;21(7):e13012. doi:10.1111/obr.13012.
11. Christou NV, Look D, LD ML. Weight gain after short- and long-limb gastric

bypass in patients followed for longer than 10 years. Ann Surg. 2006;244(5):734-740. doi:10.1097/01.sla.0000217592.04061.d5.
12. Bendor CD, Bardugo A, Pinhas-Hamiel O, Afek A, Twig G. Cardiovascular morbidity, diabetes and cancer risk among children and adolescents with severe obesity. Cardiovasc Diabetol. 2020;19(1):1-14. doi:10.1186/s12933-020-01052-1.
13. Pi-Sunyer X. The medical risks of obesity. Postgrad Med. 2009;121(6):21-33. doi:10.3810/pgm.2009.11.2074.
14. Alberti KGMM, Eckel RH, Grundy SM, et al. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. Circulation. 2009;120(16):1640-1645. doi:10.1161/CIRCULATIONAHA.109.192644.
15. King WC, Hinerman AS, Belle SH, Wahed AS, Courcoulas AP. Comparison of the performance of common measures of weight regain after bariatric surgery for association with clinical outcomes. JAMA. 2018;320(15):1560-1569.
16. Voorwinde V, Steenhuis IHM, Janssen IMC, Monpellier VM, van Stralen MM. Definitions of long-term weight regain and their associations with clinical outcomes. Obes Surg. 2020;30(2):527-536.
17. Fried M, Hainer V, Basdevant A, et al. Interdisciplinary European guidelines on surgery of severe obesity. Obes Facts. 2008;1(1):52-59.
18. Chang SH, Stoll CRT, Song J, Varela JE, Eagon CJ, Colditz GA. The effectiveness and risks of bariatric surgery: an updated systematic review and meta-analysis, 2003-2012. JAMA Surg. 2014;149(3):275
19. Angrisani L, Santonicola A, Iovino P, Ramos A, Shikora S, Bariatric KL, Survey S. Similarities and disparities among the 5 IFSO chapters. Obes Surg. 2018;2021:1–12. doi: 10.1007/s11695-020-05207-7.
20. Egbert LD, Battit GE, Welch CE, Bartlett MK. Reduction of postoperative pain by encouragement and instruction of patients. a study of doctor-patient rapport. N Engl J Med. 1964;270:825–827. doi: 10.1056/NEJM196404162701606.
21. Hathaway D. Effect of preoperative instruction on postoperative outcomes: a meta-analysis. Nurs Res. 1986;35(5):269–275.
22. Burgess LC, Arundel J, Wainwright TW. The effect of preoperative education on psychological, clinical and economic outcomes in elective spinal surgery: a systematic review. Healthcare Basel. 2019;7(1):48. doi: 10.3390/healthcare7010048.
23. Parisi A, Desiderio J, Cirocchi R, Trastulli S. Enhanced recovery after surgery (ERAS): a systematic review of randomised controlled trials (RCTs) in bariatric surgery. Obes Surg. 2020;30(12):5071–5085. doi: 10.1007/s11695-020-05000-6.
24. Koet LL, Kraima A, Derksen I, et al. Effectiveness of preoperative group education for patients with colorectal cancer: managing expectations. Support Care Cancer. 2021;29(9):5263–5271. doi: 10.1007/s00520-021-06072-5.
25. Guyatt GH, Oxman AD, Kunz R, et al. Going from evidence to recommendations. BMJ. 2008;336(7652):1049–1051. doi: 10.1136/bmj.39493.646875.AE.
26. Thorell A, MacCormick AD, Awad S, et al. Guidelines for perioperative care in bariatric surgery: enhanced recovery after surgery (ERAS) society recommendations. World J Surg. 2016;40(9):2065–2083. doi: 10.1007/s00268-016-3492-3.
27. Schauer DP, Arterburn DE, Livingston EH, et al. Impact of bariatric surgery on life expectancy in severely obese patients with diabetes: a decision analysis. Ann Surg. 2015;261(5):914–919. doi: 10.1097/SLA.0000000000000907.
28. Waller A, Forshaw K, Bryant J, Carey M, Boyes A, Sanson-Fisher R. Preparatory education for cancer patients undergoing surgery: a systematic review of volume and quality of research output over time.

Patient Educ Couns. 2015;S0738–3991(15):00229–233. doi: 10.1016/j.pec.2015.05.008.
29. Devine EC, Cook TD. A meta-analytic analysis of effects of psychoeducational interventions on length of postsurgical hospital stay. Nurs Res. 1983;32(5):267–274.
30. Mechanick JI, Youdim A, Jones DB, et al. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient–2013 update: cosponsored by american association of clinical endocrinologists, the obesity society, and american society for metabolic & bariatric surgery. Obesity (Silver Spring) 2013;21(Suppl 1):S1–27. doi: 10.1002/oby.20461.
31. Geubbels N, Evren I, Acherman YIZ, et al. Randomized clinical trial of an enhanced recovery after surgery programme versus conventional care in laparoscopic Roux-en-Y gastric bypass surgery. BJS Open. 2019;3(3):274–281. doi: 10.1002/bjs5.50143.
32. Klaiber U, Stephan-Paulsen LM, Bruckner T, et al. Impact of preoperative patient education on the prevention of postoperative complications after major visceral surgery: the cluster randomized controlled PEDUCAT trial. Trials. 2018;19(1):288. doi: 10.1186/s13063-018-2676-6.
33. Sundbom M, Hedberg J, Marsk R, et al. Substantial decrease in comorbidity 5 years after gastric bypass: a population-based study from the scandinavian obesity surgery registry. Ann Surg. 2017;265(6):1166–1171. doi: 10.1097/SLA.0000000000001920.
34. Guyatt GH, Oxman AD, Kunz R, Vist GE, Falck-Ytter Y, Schünemann HJ. What is "quality of evidence" and why is it important to clinicians? BMJ. 2008;336(7651):995–998. doi: 10.1136/bmj.39490.551019.BE.
35. Khoo CK, Vickery CJ, Forsyth N, Vinall NS, Eyre-Brook IA. A prospective randomized controlled trial of multimodal perioperative management protocol in patients undergoing elective colorectal resection for cancer. Ann Surg. 2007;245(6):867–872. doi: 10.1097/01.sla.0000259219.08209.36.
36. Brindle M, Nelson G, Lobo DN, Ljungqvist O, Gustafsson UO. Recommendations from the ERAS® Society for standards for the development of enhanced recovery after surgery guidelines. BJS Open. 2020;4(1):157–163. doi: 10.1002/bjs5.50238.
37. Porras-González MH, Barón-López FJ, García-Luque MJ, Morales-Gil IM. Effectiveness of the nursing methodology in pain management after major ambulatory surgery. Pain Manag Nurs. 2015;16(4):520–525. doi: 10.1016/j.pmn.2014.09.013.
38. Soleimanpour H, Safari S, Sanaie S, Nazari M, Alavian SM. Anesthetic Considerations in Patients Undergoing Bariatric Surgery: A Review Article. Anesth Pain Med. 2017 Aug;7(4):e57568.
39. Shafiee G, Qorbani M, Heshmat R, Mohammadi F, Sheidaei A, Motlagh ME, Mahdavi-Gorabi A, Ardalan G, Ahadi Z, Kelishadi R. Socioeconomic inequality in cardio-metabolic risk factors in a nationally representative sample of Iranian adolescents using an Oaxaca-Blinder decomposition method: the CASPIAN-III study. J Diabetes Metab Disord. 2019 Jun;18(1):145-153.
40. Guzmán HM, Sepúlveda M, Rosso N, San Martin A, Guzmán F, Guzmán HC. Incidence and Risk Factors for Cholelithiasis After Bariatric Surgery. Obes Surg. 2019 Jul;29(7):2110-2114.
41. Blackburn GL, Hutter MM, Harvey AM, Apovian CM, Boulton HR, Cummings S, Fallon JA, Greenberg I, Jiser ME, Jones DB, Jones SB, Kaplan LM, Kelly JJ, Kruger RS, Lautz DB, Lenders CM, Lonigro R, Luce H, McNamara A, Mulligan AT, Paasche-Orlow MK, Perna FM, Pratt JS, Riley SM, Robinson MK, Romanelli JR, Saltzman E, Schumann R, Shikora SA, Snow RL, Sogg S, Sullivan MA, Tarnoff M, Thompson CC, Wee CC, Ridley N, Auerbach J, Hu FB, Kirle L, Buckley RB, Annas CL. Expert panel on

weight loss surgery: executive report update. Obesity (Silver Spring). 2009 May;17(5):842-62.
42. Moon TS, Fox PE, Somasundaram A, Minhajuddin A, Gonzales MX, Pak TJ, Ogunnaike B. The influence of morbid obesity on difficult intubation and difficult mask ventilation. J Anesth. 2019 Feb;33(1):96-102.
43. Juvin P, Lavaut E, Dupont H, Lefevre P, Demetriou M, Dumoulin JL, Desmonts JM. Difficult tracheal intubation is more common in obese than in lean patients. Anesth Analg. 2003 Aug;97(2):595-600.
44. Thorell A, MacCormick AD, Awad S, Reynolds N, Roulin D, Demartines N, Vignaud M, Alvarez A, Singh PM, Lobo DN. Guidelines for Perioperative Care in Bariatric Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations. World J Surg. 2016 Sep;40(9):2065-83.
45. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity among adults: United States, 2011-2012. NCHS Data Brief. 2013 Oct;(131):1-8.
46. Desogus D, Menon V, Singhal R, Oyebode O. An Examination of Who Is Eligible and Who Is Receiving Bariatric Surgery in England: Secondary Analysis of the Health Survey for England Dataset. Obes Surg. 2019 Oct;29(10):3246-3251.
47. Apovian CM. Obesity: definition, comorbidities, causes, and burden. Am J Manag Care. 2016 Jun;22(7 Suppl):s176-85.
48. Clavellina-Gaytán D, Velázquez-Fernández D, Del-Villar E, Domínguez-Cherit G, Sánchez H, Mosti M, Herrera MF. Evaluation of spirometric testing as a routine preoperative assessment in patients undergoing bariatric surgery. Obes Surg. 2015 Mar;25(3):530-6.
49. Labarca G, Valdivia G, Oñate A, Navarrete C, Araya J, Fernandez-Bussy I, Dreyse J, Jorquera J. Prevalence of STOP BANG questionnaire and association with major cardiovascular events in hospitalized population: is it enough with currently used cardiovascular risk measurements? Sleep Med. 2019 Sep;61:82-87.
50. Grover BT, Morell MC, Kothari SN, Borgert AJ, Kallies KJ, Baker MT. Defining Weight Loss After Bariatric Surgery: a Call for Standardization. Obes Surg. 2019 Nov;29(11):3493-3499.
51. de Paris FGC, Padoin AV, Mottin CC, de Paris MF. Assessment of Changes in Body Composition During the First Postoperative Year After Bariatric Surgery. Obes Surg. 2019 Sep;29(9):3054-3061.
52. Berry RB, Budhiraja R, Gottlieb DJ, Gozal D, Iber C, Kapur VK, Marcus CL, Mehra R, Parthasarathy S, Quan SF, Redline S, Strohl KP, Davidson Ward SL, Tangredi MM. American Academy of Sleep Medicine. Rules for scoring respiratory events in sleep: update of the 2007 AASM Manual for the Scoring of Sleep and Associated Events. Deliberations of the Sleep Apnea Definitions Task Force of the American Academy of Sleep Medicine. J Clin Sleep Med. 2012 Oct 15;8(5):597-619.
53. Gil-Rendo A, Muñoz-Rodríguez JR, Domper Bardají F, Menchén Trujillo B, Martínez-de Paz F, Caro González MDP, Arjona Medina I, Martín Fernández J. Laparoscopic Sleeve Gastrectomy for High-Risk Patients in a Monocentric Series: Long-Term Outcomes and Predictors of Success. Obes Surg. 2019 Nov;29(11):3629-3637.
54. Rometo D, Korytkowski M. Perioperative Glycemic Management of Patients Undergoing Bariatric Surgery. Curr Diab Rep. 2016 Apr;16(4):23.
55. Radhakrishnan K. The efficacy of tailored interventions for self-management outcomes of type 2 diabetes, hypertension or heart disease: a systematic review. J Adv Nurs. 2012;68(3):496-510.
56. Dos Santos C, Gregório J. A nurse-led intervention for the management of bariatric surgery patients. Prospero. 2022.
57. Morales-Asencio JM, Cuevas-Fernández-Gallego M, Morilla-Herrera JC, et al. Characteristics of the provision of case management services in the community setting in Andalusia based on the RANGECOM registry. Enfermeria Clinica (English Edition). 2019;29(2):67-73.

58. Willmott TJ, Pang B, Rundle-Thiele S, Badejo A. Weight management in young adults: systematic review of electronic health intervention components and outcomes. J Med Internet Res. 2019;21(2):e10265.
59. Fastenau J, Kolotkin RL, Fujioka K, Alba M, Canovatchel W, Traina S. A call to action to inform patient-centred approaches to obesity management: development of a disease-illness model. Clin Obes. 2019;9(3):e12309.
60. Yu B, Chen Y, Qin H, Chen Q, Wang J, Chen P. Using multi-disciplinary teams to treat obese patients helps improve clinical efficacy: the general practitioner's perspective. Am J Transl Res. 2021;13(4):2571-2580.
61. Schaeffer R, Bieber D, Naumann S, et al. Influence of case management on quality of life in patients undergoing bariatric surgery. Obes Surg. 2020;30(5):1715-1722.