

Nurses' Knowledge Regarding Pre and Postoperative Care for Morbidly Obese Patients Undergoing Laparoscopic Bariatric Surgery



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ABSTRACT

Background: Obesity is an important preventable disease of public health concern and is the fifth foremost cause for death. Morbidly obese patients are directed to carry out bariatric surgeries for weight loss. The bariatric specialist nurse is involved with others in educating patients on bariatric procedures, and explaining the bariatric pathway. **Aim** of the study was to assess nurses' knowledge regarding pre and postoperative care for bariatric patients. **Setting:** the study was carried out at general surgery units at Mansoura University Hospital; units 7 & 8 for males and 11 & 12 for females. **Method:** A descriptive research design was used. A convenience sample of 78 nurses and 39 patients participated in the study. Four tools were used for data collection; tool I: Demographic data and career characteristics of studied nurses, tool II: Nurses' knowledge questionnaire sheet regarding morbid obesity, gastric sleeve, gastric bypass. and pre and postoperative care for bariatric patients, tool III: Nurses' self-reported practice questionnaire sheet regarding needed procedures, and tool IV: Patients' satisfaction measurement tool to measure patients' satisfaction toward nurses' practice. **Results:** Majority of studied nurses (94.9%) were females. Nearly half of them 47.4% were in age group (20 to less than 30). Regarding morbid obesity and bariatric surgery, 60.3% of nurses had poor level of knowledge. Concerning self-reported practice for needed procedures, (80.8%) of nurses had poor level. Regarding Patients' satisfaction with nursing care, 53.8% of patients was dissatisfied. **Conclusion:** Nurses' knowledge related to morbid obesity and bariatric patients' care was poor, also they had poor level of self-reported practice that reflected on patients' satisfaction. **Recommendations:** Providing nursing staff with a reference guide or an instructional booklet, and continuous educational program care for bariatric patients.

Keywords: Bariatric Nurse, Bariatric Surgery, Morbid Obesity, Patient Education.

Introduction:

Being overweight or having obesity is a chronic disease and not solely due to privation of self-control. It comes from the past 70 years of research that has been progressively made the physiology directing body weight understood homeostatic mechanisms elaborated in changes of the body's internal metabolism, its sensation, and adapting, food availability, and levels of activity to maintain fat content and body (Puplampu, Alexis, Smith, & Simpson, 2023). The pathophysiology that leads to unwanted weight gain maintenance, weight stability, and the roles that excess weight and fat maldistribution (adiposity) play in contributing to such diseases as diabetes, heart disease, non-alcoholic fatty, dyslipidaemia, obstructive sleep apnea, and others (Purnell, 2023).

Selection of morbidly obese patients undergoing bariatric surgery depends on the following; surgical risk must be accepted by patient and family, bariatric surgery must be the last solution after unsuccessful nonsurgical treatments, psychological stability and absence of alcohol or drug addiction. The patient being well motivated and informed about the surgery and its sequelae, and Privation of medical problems that will interfere with increased life expectation after surgery. The most performed gastrointestinal surgeries for morbidly obese patients is bariatric surgery especially sleeve gastrectomy (Chen, Fan, Hao, & Li, 2023).

Sleeve gastrectomy became a worldwide stand-alone procedure, starting around 2008 as its performed with technical easiness, and has good outcome. It was first used by laparoscopy to reduce perioperative complications in high-risk patients. Weight loss was achieved in some patients with sleeve gastrectomy alone leading to reduction of meal volume as well as appetite without second-stage surgery (Tish & Corcelles, 2024) also for avoiding mal-absorption side-effects. Gastric sleeve has become the most frequently performed surgical approach representing 45.9% and 58.3% of all surgeries worldwide. Sometimes in certain cases gastric bypass which is considered restrictive as well as mal-absorptive procedure is needed for patients with increased body mass index (BMI) (Biter et al., 2024).

There are long-term risks associated with laparoscopic bariatric surgery despite its clinical profits, these include nutritional deficiencies, weight regain causing cardiomyopathy, night blindness, neuropathy, long-lasting disability or death. Nutritional deficiencies which result from changes in gastrointestinal anatomy and physiology could affect macro- and micro-nutrient absorption (Flores et al., 2022). Other early complications, such as bowel obstruction, bleeding, leakage, deep infections and abscesses occur in less than 1% , deep vein thrombosis, pulmonary embolus, other pulmonary and cardiovascular complications that considered as general complications occur in <0.5%. However, all of these complications can affect seriously on patients (Gambioli, Lepore, Biondo, Bertolani, & Unfer, 2023).

Poor follow-up care and adherence to supplements negatively affect surgery outcomes, so patients need long-term systematic lifestyle support, medical monitoring, and management for positive postoperative consequences and to improve quality of life (Khee et al., 2024). The bariatric specialist nurse involvement in patient care with others for conducting the initial assessment, educating patients on the types of bariatric procedures available, and explaining the bariatric pathway is decisive. The patients must understand their own vigorous role in preparation for the surgery, especially concerning the preoperative changes and required postoperative management (Nuzzo et al., 2023).

2.1 Significance of the Study

Bariatric surgery is designed to adjust or interrupt the process of digestion (Angrisani et al., 2015) estimated that 5875 of the population in Egypt did bariatric surgery. Nutrient and calories absorbed reduction helps patients in weight loss

and decrease their risk for obesity-related health disorders. According to the World Health Organization (2015) estimated that obesity in Egypt was from 74% to 86% in women and 69% to 77% in men. A much greater prevalence of obesity among adult women, while overweight is more marked among adult men found as indicated from these data. (Mansour, Abdellatif, & Mohammad, 2019).

patient care is becoming progressively important at before and after bariatric surgery due to the presence of related diseases in obese patients. During this period, there are particular nursing practices which include reducing the risks in bariatric patients, preventing development of complications and supplying the recovery from illness as soon as possible. Bariatric nurse provides holistic care to those patients who have diagnosed with morbid obesity. A bariatric nurse practitioner provides either inpatient or outpatient care to these patients (Mohammed, Refeai, Ghazawy, Kamal, & Sadek, 2023).

2.2 Aim of the Study

The aim of the study was to assess nurses' knowledge regarding pre and postoperative care for laparoscopic sleeve gastrectomy and gastric bypass patients.

2.3 Research Questions

To fulfill the aim of this study, the following questions are formulated

- Q1. What is the level of nurses' knowledge related to morbid obesity and its treatment?
- Q2. What is the level of nurses' knowledge about needed procedures?
- Q3. What is the degree of patients' satisfaction with nursing care?

3. Method

3.1 Research Design

This study used a descriptive explorative research design. This design is utilized to explore and describe nursing knowledge and practice regarding pre and postoperative care for morbidly obese patient undergoing sleeve gastrectomy and gastric bypass and also assess patients satisfaction

3.2 Setting

The study was carried out at general surgery units at Mansoura University Hospital; "units 7 and 8 for males and 11 and 12 for females".

3.3 Sample Size

- ✓ The study included a convenience sample of 78 nurses from the previously mentioned settings who provided direct care for morbidly obese patients.
- ✓ Also all morbidly obese patients who admitted the previously mentioned settings during the study to carry out gastric sleeve or gastric bypass (39 patients).

Inclusion Criteria for Studied Nurses

- Age from 20- < 60.
- Nurses were already dealing with patients undergoing bariatric surgery.
- Nurses who had more than one year for working in surgery units.
- Agreed to participate in the study and provided consent.

Exclusion Criteria

- Nurses who approached to retirement age.
- Nurses who never cared for bariatric patients.

3.4 Data Collection Tools

Four tools were used for data collection; These tools were developed by the researcher after reviewing the related old and recent, national, and international literatures, except patients' satisfaction scale which is only modified and translated.

Tool I: Demographic Data and Career Characteristics Questionnaire

This tool included questions about nurses' age, sex, marital status, level of education, years of experience in caring for bariatric patients, attending training courses related to morbid obesity and bariatric surgery. It also assess source of nurses data about morbid obesity and its surgeries, what are given information related to.

Tool II: Nurses' Knowledge Questionnaire Sheet

It assessed level of knowledge regarding morbid obesity, gastric sleeve, gastric bypass, and pre and postoperative care for bariatric patients. It contained multiple choice questions that covered patients' preoperative preparation before admission and extended to discharge as well as follow up instructions.

Tool III: Nurses' Self-reported Practice

This part concerned needed procedures; it included nurses' knowledge assessment for essential procedures that carried out for patients as questions related to steps of three main procedures; electrocardiogram, deep breathing and coughing exercise, and pulmonary function test around main

steps, as well as preparation that needed, things to be done, and things to be avoided.

Tool IV: Patients' Satisfaction Measurement Tool

This tool was modified and translated by the researcher from (Laschinger McGills Hall, Pedersen & Almost, 2005) to assess patients' satisfaction with nurses' performance that ranged from "1 to 5" as follow (poor=1, fair=2, good=3, very good=4, and finally excellent=5)

Scoring System for the Study Tools

The items discrete scores of each scale for tool II and III, and IV that included level of nurses' knowledge, and self-reported practice; as well as patients' satisfaction, were summed together then the sum of scores for each dimension and total score was calculated by summing the scores given for their responses. All scores were transformed into score % as follow $\text{Score \%} = (\text{the observed score} / \text{the maximum score}) \times 100$. Then score % was transferred into categories as follow: Regarding nurses' (knowledge and self-reported practice); low $\text{Score \%} < 50\%$, moderate $\text{Score \% } 50 - < 75$, and high $\text{score \%} \geq 75\%$. Regarding degree of patients' satisfaction; dissatisfied $\text{score \%} < 50\%$, nearly-satisfied $\text{score \% } 50 - < 75\%$, and more satisfied $\text{score \%} \geq 75$

3.5 Validity and Reliability of the Tools

Test validity was done for the developed tools to determine whether the study aim was covered. This stage was developed by a jury of five experts (three assistant professors from faculty of nursing and two lecturers from faculty of medicine, Mansoura University), reliability of the proposed tool was done by Cronbach's Alpha test for nursing staff providing direct care for morbidly obese patients undergoing sleeve gastrectomy and gastric bypass surgery. The Cronbach's alpha value of nurses' practice evaluation form for needed Procedures is 0.896, and Patients' satisfaction measurement is 0.902

3.6 Pilot Study

The pilot study was carried out on 10 % of nurses within the selected criteria to test the applicability and relevance of the tools. The data was analysed, no radical changes were done in the assessment tools so nurses shared in the pilot study were included in the actual study sample.

3.7 Ethical Considerations

Ethical approval was obtained from the Ethical Committee of the Faculty of Nursing, Mansoura University. An official approval was obtained from the hospital administrative were

informed about the study's nature and purpose, and their participation was voluntary and confidential, anonymity, privacy, safety, and confidentiality were assured throughout the study. Participants had the right to withdraw at any time. They provided informed consent before participating in the study, these measures ensure the rigor, reliability, and ethical conduct of the study, enhancing the validity of its findings and safeguarding the rights and well-being of the participants.

3.8 Data Collection Process

- Data collection: nurses were interviewed to assess their knowledge regarding morbid obesity, laparoscopic sleeve gastrectomy and gastric bypass surgery and the care given for bariatric patients who were assessed also regarding their satisfaction with nursing care over a period of 11 months that extended from the beginning of June 2020 to the end of April 2021.
- Regarding nursing staff: nurses were interviewed by the researcher three times weekly which was sometimes in the morning shift and others in the afternoon shift to complete study tools
- Assessing their socio-demographic data, career characteristics, years of experience, sources that used to increase their knowledge, any attended courses.
- Assessing their knowledge about morbid obesity, sleeve gastrectomy and gastric bypass, pre and postoperative care, also their knowledge about needed procedures (electrocardiogram, deep breathing and coughing exercise, and pulmonary function test).
- Each time two or three nurses were met for nearly (15-20 minutes) that regulated according to work conditions, and given procedures.
- Regarding patients; morbidly obese patients who admitted surgical unit to carry out gastric sleeve or gastric bypass were interviewed by the researcher to assess degree of their satisfaction toward nurses' practice, relation with them and their families, and degree of willingness to help patients to understand things related to surgical procedures.
- Every patient was met individually to assess degree of satisfaction toward given care, time allowed was nearly (15-20 minutes).

3.9 Data Analysis

The collected data was coded, computerized and analyzed using the Statistical Package of Social Sciences version 20.0 (SPSS, Chicago, IL). Categorical data were expressed as number and frequency. While continuous data were normally distributed and were expressed as mean \pm standard deviation (SD).

4. Results

Findings of this study achieved the aim from the study which was to assess level of nurses' (knowledge, self-reported practice), as well as patients' satisfaction regarding nursing practice

Table 1 reveals that 47.4 % of studied nurses were in age group (20< 30) and (32.1 %) of them aged (30< 40). As regards to sex (94.9 %) of studied nurses were female. Married nurses represented 62.8 % of the study. Regarding education, 55.1 % of studied nurses had secondary nursing school.

Table 2 illustrates distribution of studied nurses related to their work conditions; There were 94.9 % cared for bariatric patients. In relation to attending training courses, (47.4 %) attended training courses. In relation to topics that included in education, 92.3 % of participant nurses their data related to preparation for surgery.

Table 3 states that 64.1 % of studied nurses could define morbid obesity and 94.9 % of them had enough information about bariatric surgery. On the other hand, very little nursing staff had information about causes of morbid obesity (7.7 %), and related to the purpose from bariatric surgeries, only 1.3 % of studied nurses had knowledge. Concerning barriers to carry out bariatric surgeries 61.5 % answered incorrectly.

Table 4 demonstrates that majority of nurses was easily able to define gastric sleeve surgery (91 %). In contrast, 85.9 % of them were unable to describe the procedure of gastric sleeve. 79.5 % of them stated patients' characteristics. Regarding surgery advantages 60.3 % of studied nurses had knowledge. Concerning procedure disadvantages only 12.8 % answered correctly. When asked about complications, 65.4 % of studied nurses had incorrect answers.

Table 5 includes items related to definition of gastric bypass as 42.3 % of studied nurses couldn't answer correctly, 100 % of them couldn't tell the researcher about how the procedure performed. When asked about patients characteristics, 16.7 % didn't have enough data. 79.5 % of studied nurses couldn't answer correctly

about advantages of gastric bypass, and 92.3 % of them answered incorrectly about complications.

Table 6 demonstrates that 60 % of studied nurses had poor level of knowledge, while 29.5 % had fair level, and 10.3 % of them had good level of knowledge in areas related to morbid obesity and its treatment.

Table 7 illustrates that 80.8 % of studied nurses had poor level of self-reported practice, while good level was found in 5.1 % and 14.1 % of them had fair level related to electrocardiogram, pulmonary function tests, and deep breathing and coughing exercise.

Table 8 shows that patient had low level of satisfaction as 53.8 % was dissatisfied, and only 7.7 % from patients were more satisfied.

Table 1: Participant Nurses' Demographic Data

Category	Participant Nurses (n= 78)	
	N	%
Age (Years)		
• 20 <30	37	47.4
• 30 < 40	25	32.1
• 40 < 60	16	20.5
Gender		
• Male	4	5.1
• Female	74	94.9
Marital Status		
• Single	4	5.1
• Married	49	62.8
• Divorced	10	12.8
• Widow	15	19.2
Educational Level		
• Bachelor degree	8	10.3
• High Institute of Nursing	27	34.6
• Secondary Nursing School	43	55.1

Table 2: Participant Nurses' Career Characteristics.

Category	Participant Nurses (n= 78)	
	N	%
How many times did you care for bariatric patients?		
• 4 – 5 times	4	5.1
• 6 times or more	74	94.9
Attending training courses		
• No	41	52.6
• Yes	37	47.4
What is your source of information about obesity and its surgeries?		
• TV programs	63	80.8
• Internet	15	19.2
Information that given to patient includes:		
• Preparation for surgery	72	92.3
• Complications after surgery	5	6.4
• Lifestyle modification after surgery	1	1.3

Table 3: *Assessment of Nurses' Knowledge Regarding Obesity and Its Surgeries.*

Category	Participant Nurses Answers (n= 78)			
	Correct		Incorrect	
	N	%	n	%
• Equivalent used to measure body mass index (BMI)	45	57.7	33	42.3
• Morbid obesity definition	28	35.9	50	64.1
• Causes of morbid obesity	72	92.3	6	7.7
• Morbid obesity complications	56	71.8	22	28.2
• Bariatric surgeries	4	5.1	74	94.9
• What is the purpose of bariatric surgery?	77	98.7	1	1.3
• Barriers to carry out bariatric surgeries	48	61.5	30	38.5

Table 4: *Assessment of Nurses' Knowledge Regarding Sleeve Gastrectomy.*

Category	Participant Nurses Answers (n= 78)			
	Correct		Incorrect	
	N	%	n	%
• Gastric sleeve definition	7	9.0	71	91.0
• Procedure of gastric sleeve	67	85.9	11	14.1
• Characteristics of patients undergoing gastric sleeve	16	20.5	62	79.5
• Advantages of gastric sleeve	31	39.7	47	60.3
• Disadvantages of gastric sleeve	68	87.2	10	12.8
• Complications of gastric sleeve	51	65.4	27	34.6

Table 5: *Assessment of Nurses' Knowledge Related to Gastric Bypass*

Category	Participant Nurses Answers (n= 78)			
	Correct		Incorrect	
	N	%	n	%
• Gastric bypass definition	33	42.3	45	57.7
• Procedure of gastric bypass	78	100.0	0	0.0
• Characteristics of patients undergoing gastric bypass	13	16.7	65	83.3
• Advantages of gastric bypass	62	79.5	16	20.5
• Complications of gastric bypass	72	92.3	6	7.7

Table 6: *Total Nurses' Knowledge Regarding Obesity and Its Surgeries.*

Category	Participant Nurses (n= 78)	
	n	%
• Poor knowledge	47	60.3
• Fair knowledge	23	29.5
• Good knowledge	8	10.3

Table 7: Total Level of Nurses' Self-reported Practice Regarding Needed Procedures.

Category	Participant Nurses (n= 78)	
	n	%
• Poor self-reported practice	63	80.8
• Fair self-reported practice	11	14.1
• Good self-reported practice	4	5.1

Table 8: Level of Patients' Satisfaction Regarding Nursing Intervention.

Category	Participant Patients (n= 39)	
	n	%
• Dissatisfied	21	53.8
• Nearly-satisfied	15	38.5
• More satisfied	3	7.7

5. Discussion

In bariatric surgery, patient care is becoming increasingly important before and after surgery due to the presence of concomitant diseases in obese patients. During this period, there are particular nursing practices which include reducing the risks in caring for bariatric patients, preventing development of complications and supplying the recovery from illness as soon as possible **Montonen and Ache (2021)**.

In relation to demographic data and career characteristics, the results of current study revealed that nearly half of the studied nurses were in age group (20< 30) and one third of them aged (30< 40). Which came in the same line with **Tiryag, Atiyah, and Jassim (2021)** in their study as age groups (20-24) was nearly quarter and (25-29) was one third which were summed to give nearly half like study results. It was in contrary with **Elsayed (2022)** in a study barriers of critical care bariatric nurse that showed about nearly half of them aged from 30- years old.

Concerning sex, the current study demonstrated that majority of the studied nurses were females, which came in the same line with **Aziz and Mohammed (2022)** in their study about nurses knowledge related to bariatric surgery more than half were females. It also was in agreement with **Ali (2019)** in a study about effect of nursing guidelines on postoperative complications. The majority of sample of both study and control group were females. On the other hand it was in disagreement with the study by **Abraham, Shah, Levine, and Graham (2019)** at Oxford University, who found that females nurses were only one tenth of study sample.

Study findings stated that more than half of studied nurses had nursing secondary school, which was in agreement with **Mansour, Abdellatif, and Yassien (2019)** in a study about nurses performance for bariatric patients, as more than half of studied nurses had secondary school diplomat. On the other hand, **Moyo and Felix (2023)** demonstrated contrast results in their study about nurses' knowledge related to bariatric surgery, as more than half of nurses had their highest education.

In this study, majority of studied nurses cared for bariatric patients which was in the same line with **Dockrell and Hurley (2021)** in their study about moving and handling bariatric patients, found that the majority of (clinical nurse managers) provided care for bariatric patients. But different results stated by **Ponstein (2012)** as nearly two thirds of studied nurses had no previous experience of caring for bariatric surgical patients. In the current study, there was noticeable decrease in nurses' knowledge related to morbid obesity and its treatment which was in agreement with **Fan et al. (2020)** in their study about knowledge and attitudes towards obesity and bariatric surgery in Chinese nurses, as most of nurses had little basic knowledge about obesity.

Describing the study results related to nurses knowledge about sleeve gastrectomy, nurses had poor level of knowledge, another study by **Jabr (2022)** which was about nurses' knowledge toward sleeve gastrectomy gave similar results which were the majority of the nurses have poor knowledge about sleeve gastrectomy, and only one tenth of them have good knowledge.

Concerning pre and post-operative care, there was poor level of knowledge which came in the same line with **Aziz and Mohammed (2022)** who demonstrated that studied nurses' knowledge increased in intervention group in post test phase. Another study with the same results carried by **Bogiatzis, Wicking, and Birks (2020)** which confirmed there is a gap in available education for metabolic/bariatric nurses in Australia.

Study findings demonstrated that in relation to different items concerning discharge related knowledge, nursing staff need further education which was in agreement with **Mahedy, Mohamed, and Mustafa (2021)** who revealed that more than half of the studied nurses had unsatisfactory level of general knowledge which contained discharge plan. Similar results also found in a study concerning factors affecting post-operative nursing care that carried by **Gouda, Mohammed and Ameen (2019)** who stated that majority of studied nurses' level of knowledge was unsatisfactory

In area concerning the practical part related to needed procedures, nurses self-reported practice are varied according to each one, regarding electrocardiogram (ECG), the following were found, studied nurses had high level of knowledge; nearly majority as well as all of them answered correctly. In contrary came the study carried by **Elawadi, Sanad and Soliman (2023)** who illustrated that nurses exhibit a higher knowledge score regarding ECG post the educational intervention.

As regards to pulmonary function test, nurses had decreased knowledge concerning things to avoid, things recommended before the test, as well as steps that must be followed during the test which corresponded with a study carried by **Montonen and Ache (2021)** demonstrated that nurses staff doesn't provide any data about pulmonary function test and spirometer as its not found in place of work.

In relation to patients' satisfaction, more than half of patients were dissatisfied, and only less than one tenth were more satisfied. Study carried by **Abd EL-Naby and Elmetwaly (2023)** gave the same results that average more than half of patients were very satisfied with given data related to bariatric surgery. The same results were given by **Cheng, Hu, and Niu (2021)** in their study about the effect of the clinical nursing pathway on gastrectomy bariatric surgery patients as the following was displayed, patients satisfaction with nursing practice was decreased.

6. Limitations

Nursing staff working conditions, as researcher sometimes couldn't spend a lot of time with nurses, or couldn't interview more than 2 nurses, also period of interview sometimes affected. Barriers that related to patient was sometimes shortage number due to Corona virus, as sometimes surgical units receive only urgent surgeries.

7. Conclusion and Recommendations

Based on the present study findings, it can be concluded that nursing staff who are caring for morbidly obese patients undergoing sleeve gastrectomy or gastric bypass had poor level of knowledge as well as poor self-reported practice in relation to needed procedures which reflected on patient satisfaction. The following recommendations are suggested, a reference guide for all nursing staff providing direct care for bariatric patients must be developed and implemented to provide all needed information. Continuous educational programs are require to elevate level of knowledge and practice for nursing staff. A similar study should be replicated on a large sample and other place to generalize the study findings.

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9. Declaration of Conflicting Interests

The authors declared no potential conflicts of interest regarding the research or publication of the article.

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