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Nurses' Performance for Patient Undergoing Bariatric Surgery

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**ABSTRACT**

***Context:*** Bariatric surgery currently considered the most effective treatment option for morbid obesity; it results in more significant improvement in weight loss outcomes and obesity-related co-morbidities when compared with nonsurgical inter- ventions. The performance of bariatric nurse is very relevant for the quality and outcome of surgery.

***Aim:*** The study aimed to assess nurses' performance for a patient undergoing bariatric surgery.

***Methods:*** A descriptive exploratory design was followed to achieve the aim of this study. The study conducted at surgical units at Ain Shams University hospital Cairo-Egypt. A purposive sample of 30 nurses recruited in this study worked in bari- atric surgery units at Ain Shams University hospital. Tools of data collection were structured self-administered knowledge assessment questionnaire, and evaluation practice checklist used to collect data of this study.

***Results:*** The results of this study showed that 73.3% of studied nurses had inadequate knowledge and 70.0% of them had poor practice regarding management of the patient undergoing bariatric surgery. Furthermore, there was a statistically sig- nificant correlation between total knowledge and total practice of the studied nurses.

***Conclusion:*** The current study concluded that more than two third of the studied nurses had reduced level of knowledge and practice. The study emphasized the importance of implementing an educational training program to improve nurses' perfor- mance regarding caring for a patient undergoing bariatric surgery

***Keywords:*** Bariatric surgery, Nurses’ performance.

# Introduction

Obesity has rapidly become an increasing problem in many countries in which economic changes have led to more sedentary life and increased consumption of high caloric diet. It can affect all ages, genders, and eth- nicities; also it worsens individuals' health; the adoles- cent who are obese have a 70% increased risk to be obese in adulthood. Obesity can be defined as a patho- logical condition when there is too much adipose tissue for body size *(Khatab, 2016).*

Previous studies revealed that obesity negatively affects health outcomes and increase the risk for high blood pressure, diabetes, cancer, arthritis, heart disease, eating disorders, depression, poor self-esteem, sleep apnea, asthma, and premature death. Individuals who develop obesity are highly susceptible to develop one or more of the medical illness associated with obesity which called comorbid medical problems *(Perathoner, et al., 2013).*

The treatment of obesity includes primary preven- tion, dietary measures, behavior modification, pharma- cotherapy and bariatric surgery (BS). Bariatric treatment describes the medical treatment of severe overweight that is, obesity. Bariatric surgery is only employed when other methods of weight loss have been tried and failed (Mandal, 2014).

Bariatric surgery is an effective treatment provid- ing in permanent weight loss for obesity. Bariatric sur-

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gery techniques applied in various types. There are four main types of bariatric surgery: The Roux-en-Y, adjust- able gastric band, sleeve gastrectomy, and biliopancreat- ic diversion with duodenal switch. These procedures are options for patients who have tried unsuccessfully to lose weight by other means or who have chronic health problems related to obesity *(Dambaugh & Ecklund, 2016).*

Each procedure involves manipulation of the stom- ach or small bowel to achieve restriction, mal- absorption, or both; restricted food intake and absorption promote weight loss. Bariatric surgery is also extremely useful in ameliorating the comorbidities associated with severe obesity, such as diabetes, sleep apnea, and hyper- tension. In addition to long-term adherence to diet and exercise programs is the key to success *(Neil & Rob- erson, 2015).*

In bariatric surgery, patient care is becoming in- creasingly important at 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 the care of patients who are candidates for bariatric surgery, preventing the development of complications and supplying the recov- ery from illness as soon as possible *(Elian, Rabl, Khora- ki & Campos, 2016).*

A bariatric nurse provides holistic care to those pa- tients who have a diagnosis of morbid obesity. It also includes care of patients undergoing bariatric surgeries. A bariatric nurse practitioner provides either inpatient or outpatient care to patients who are morbidly obese. Aside from providing direct care, a bariatric nurse prac-

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titioner provides patient teaching, evaluates patient pro- gress after bariatric surgery and alters plan if needed, and prepares the patient for discharge in collaboration with the bariatric surgery team *(Earlywine, 2012).*

# Significance of the study

Bariatric surgery is designed to alter or interrupt the digestion process. A reduction in the amount of each nutrient and calories absorbed enables patients to lose weight and decrease their risk for obesity-related health risks or disorders. According to the *World Health Or- ganization (2015)* estimated that obesity in Egypt was 74% to 86% in women and 69% to 77% in men. These data indicate a much higher prevalence of obesity among adult women, while overweight is more marked among adult men. *Angrisani et al. (2015)* estimated that 5875 of the population in Egypt did bariatric surgery. According to *Ain shams university hospital statistical department (2015),* 500 patients are undergone bariatric surgery in this year. However, quality nursing care and effective patient teaching are essential to achieving positive patient outcomes.

# Aim of the study

The study aims to:

Assess nurses' performance for caring patient un- dergoing bariatric surgery through:

* Assess nurses' knowledge regarding the management of a patient undergoing bariatric surgery.
* Assess nurses' practice regarding the management of a patient undergoing bariatric surgery.

# Subjects and Methods

* 1. **Research design:**

A descriptive exploratory design conducted to achieve the aim of this study.

* 1. **Research setting:**

This study conducted in obesity surgery units at Ain Shams University Hospital affiliated to Ain Sham Univer- sity. Cairo-Egypt. Three units dedicated to obesity sur- gery, each unit contain approximately 18 beds. There is also an intermediate care unit in one of them which con- tains three beds.

* 1. **Subjects:**

A purposive sample of 30 nurses working in obesity surgery units at Ain Shams University Hospital. They were recruited to assess the nurses' performance for car- ing a patient undergoing bariatric surgery.

*Inclusion criteria:*

* Nurses were already dealing with patients undergoing bariatric surgery.
* Nurses had not less than one year for working in sur- gery units.
* Nurses who are willing to participate in the study.
	1. **Tools of data collection:**
		1. **A structured self- administered knowledge as- sessment questionnaire**

The self-administered questionnaire was used to assess nurses' level of knowledge regarding the management of patients undergoing bariatric surgery. The researcher de-

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veloped it after reviewing the related literature: *(Dewit, 2009; Ponstein, 2012; Thailer & Cohen, 2013; Provost, 2015; Rothrock, 2014; Centers for Disease Control and Prevention, 2015; American Society for Metabolic and Bariatric Surgery, 2016; Linton, 2016; DeMaria & Ansar, 2016; Wicker& Dalby, 2017).* The researcher translated it in the simple Arabic language. The study subjects filled it. The questionnaire consisted of 155 questions in the form of multiple-choice questions (MCQ), true/false questions, and open-end questions. This tool including seven parts as follows:

The 1st part: is concerned with nurses' socio- demographic characteristics, that included gender, age, educational level, and years of experience, training course, and training outcome. In addition to serial number and ward. The 2nd part: it included (6 MCQ questions) to assess nurses' knowledge about obesity. The 3rd part: it included (63 true and false questions) aimed to assess nurses' knowledge of bariatric surgery which encom- passes indications for bariatric surgery (6 questions), ben- efits of bariatric surgery (6 questions), nurses' knowledge of gastric bypass surgery (13 questions), nurses' knowledge of gastric sleeve surgery (12 questions), nurs- es' knowledge of gastric band surgery (13 questions) and nurses' knowledge of biliopancreatic diversion surgery (13 questions).

The 4th part: it included (21 MCQ & true and false questions) to assess nurses' knowledge regarding compli- cations of bariatric surgery which encompasses anatomi- cal complications (10 questions) and nutritional complica- tions (11 questions). The 5th part: It concerned with the assessment of nurses’ knowledge regarding pre-operative nursing management of patient undergoing bariatric sur- gery: it included (20 MCQ, true &false and open-end questions) designed to assess nurses’ knowledge for pa- tient pre-operative preparation (8 MCQ questions), pre- paratory education (6 true &false questions), dietary edu- cation (5 true &false questions) and nurses’ knowledge for universal precaution of infection control (one five points open- end question).

The 6th part: It concerned with the assessment of nurs- es’ knowledge regarding post-operative nursing manage- ment of patient after bariatric surgery: it included (25 questions MCQ and true &false questions) covering nurs- es’ knowledge for immediate post-operative nursing man- agement (6 true &false questions), late post-operative nursing management (6 MCQ questions), post-operative nutritional guidelines (5 true &false questions) and wound care (8 true &false questions). The 7th part: It concerned with the assessment of nurses’ knowledge regarding dis- charge plan of a patient after bariatric surgery (16 true &false questions).

The total score of knowledge was 155 marks. Each correct answer gave one mark, and the incorrect answer gave zero. (≥ 75% =Satisfactory level of knowledge = ≥ 117 marks correct answers, and < 75% = unsatisfactory level of knowledge = < 117 marks correct answers).

* + 1. **Evaluation practice checklist**

It was developed by the researcher to assess nurses' lev- el of practice regarding the management of patients un- dergoing bariatric surgery. This tool used in English lan- guage form based on the following literature*: (Dewit, 2009; Ponstein, 2012; Thailer & Cohen, 2013; Provost, 2015; Rothrock, 2014; Centers for Disease Control and*

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*Prevention, 2015; Burns, 2014; Cooper & Gosnel, 2015; American Society for Metabolic and Bariatric Surgery, 2016; DeMaria & Ansar, 2016; Wicker & Dalby, 2017).* This tool divided into two parts covering bariatric surgery caring procedures as follows:

The 1st part: pre-operative assessment checklist of patient clinical data, patient preparation night before sur- gery and patient preparation the day of surgery as the fol- lowing: Demographic data (name, age, hospital number, marital state, occupation and educational level), patient history (medical, surgical, allergic and family history), Check patients' body mass index, assessment of STOP- BANG score (8questions), assessment nurses’ practice for patient preparation night before surgery (13 questions) which included list allergy, check pre-anesthetic done, discontinuity of aspirin, sign informed consent, … etc., and assessment nurses’ practice for patient preparation the day of surgery (11questions) included: assess ABC, as- sess conscious level, assess vital signs, remove jewelry, dental prosthesis …etc.

The 2nd part: is concerned with post-operative assess- ment checklist of nurses' practice in Bariatric surgery unit which include: Immediate post-operative care that en- compass (maintenance of airway patency, evaluation of breathing, assessing conscious level…etc.), late postoper- ative care that include (assisting patient for recovery posi- tion, obtaining vital signs, assessing patient for respiratory status…etc.), and discharge planning which include (nam- ing performed procedure, identifying permanent changes in anatomic structure or function, description sign and symptoms of complications…etc.).

The total score of practice was159 marks, each cor- rect step was given one mark and zero for the step which was not done or incorrectly done. The total score was distributed as the following: ≥ 75% = Satisfactory level of the practice = ≥ 120 correct actions, and < 75%

=unsatisfactory level of the practice = <120 correct ac- tions.

* 1. **Procedures:**

The operational design included preparatory phase, ethical considerations, validity and reliability, pilot study, fieldwork and limitation of the study. Preparatory phase included reviewing of relevant literature to develop data collection tools. The ethical research considerations in this study included the following: The research approval of protocol obtained from Scientific Research Ethical Committee in Faculty of Nursing at Ain Shams Universi- ty before starting the study, the researcher clarified the objective and aim of the study to the nurses included in the study, anonymity, and confidentiality of the subjects' data is maintained, nurses were informed that they al- lowed choosing to participate or not in the study and they had the right to withdraw from the study at any time without giving any reasons, and ethics, values, culture, and beliefs were respected.

The testing validity of the proposed tools used face and content validity. It did by a jury of seven experts in medical- surgical nursing at the faculty of nursing, Ain Shams University. The experts reviewed the tools for clarity, relevance, comprehensiveness, simplicity, and applicability; minor modification was done. Testing relia- bility of proposed tools was done statistically by alpha Cronbach test for the following: As a general = 0.8681,

Questionnaire sheet = 0.806, Observational checklist = 0.791

A pilot study was conducted to test the feasibility and applicability of the study tools used in this study. It was carried out on 20% of total study subjects (6 nurses). There was no modification done on the study tool after the pilot study, so that, the nurses who included in the pilot study included in the main study group.

Field Work started by approval that obtained from the hospital directors and nursing directors of obesity units at Ain Shams University Hospital. Data were col- lected in three months, through the morning, afternoon and night shifts during actual nurses' work and document- ed steps of care for patients undergoing bariatric surgery. The observational checklist was used before to admin- istration of the questionnaire to ensure the maximal realis- tic observations and minimize the possibility of bias. The researcher assessed the nurses’ practice while they are caring for patients undergoing bariatric surgery. It took about 20-30 minutes for each period. The self- administered questionnaire sheet filled by the nurses providing the care for the patient undergoing bariatric surgery; it took 30-45 minutes. the nurses recorded the answer by themselves.

* 1. **Data analysis:**

The collected data were organized, tabulated and analyzed using appropriate statistical significance tests. The data were collected and coded. Then, the data ana- lyzed with the program (the statistical package for social science) (SPSS) under windows version 11.0.1. Number and percentage for qualitative variables done. For the re- lation between variables, Fisher's exact test and paired t- test used. Also, alpha Cronbach test used to test the relia- bility of tools. Test of significance used, and regarding the significance of the result, the observed differences and associations considered as follows: Non-significant (NS) p > 0.05, Significant (S) p < 0.05, Highly significant (HS) p < 0.001

# Results

Table 1 shows the distribution of the studied nurses ac- cording to their characteristics. Regarding gender, the results revealed that 66.7% of studied nurses were fe- males. As regards to age 66.7% of studied nurses were 30 to less than 40 years old. About educational level, 56.7% of studied nurses were secondary school diploma nurse. While regarding the years of experience 66.6% of studied nurses had experience ≥15 years. Regarding training courses and performance enhancement, 23.3% of studied nurses attended training courses, and six of studied nurses represented 85.7% had performance enhancement regard- ing management of a patient undergoing bariatric surgery. Table 2 shows that 86.7% of the studied nurses had inadequate knowledge regarding obesity. As regarding knowledge of bariatric surgery, 83.3%, 73.3% of them had poor knowledge level regarding indications and bene- fits of bariatric surgery consecutively. 86.7%, 80% of studied nurses had inadequate knowledge regarding bili- opancreatic diversion and adjustable gastric band respec- tively. Besides 86.7% and 80% of the nurses had poor knowledge regarding anatomical and nutritional compli-

cations.

Table 3 reveals that 76.7%, 73.3% of the studied nurs- es had poor knowledge regarding preparatory, and dietary

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education. Moreover, 63.3%, 53.3%, 53.3% of the studied nurses had inadequate knowledge regarding wound dress- ing, immediate and late postoperative care respectively. While 56.7% of studied nurses had adequate knowledge regarding post-operative nutritional instructions, also 53.3% of studied nurses had unsatisfactory knowledge of total knowledge regarding discharge plan.

Figure 1 shows that 73.3% of the studied nurses had unsatisfactory total knowledge regarding management of the patient undergoing bariatric surgery.

Table 4 shows that all the studied nurses had poor practice regarding assessing patient history as well as the assessment of obstructive sleep apnea. Regarding patient preparation for the night before surgery, it showed that 86.7%, 83.3%, 80%, 80% and 70% of the studied nurses had satisfactory practice regarding revising discontinuity of aspirin and anticoagulant as doctor order, signing in- formed consent, listing allergy as well as checking pre- anesthetic and applying identification band respectively. While 76.7% of studied nurses had poor practice regard- ing checking for diagnostic measures. While 70% of stud- ied nurses had poor practice regarding instructing for deep breathing and coughing exercise, also 63.3% of studied nurses had poor total practice regarding patient pre- operative preparation night before bariatric surgery.

Table 5 shows that, 86.7%, 80%, 80%, 76.7% and 63.3% of the studied nurses had satisfactory practice re- garding Connect patient to IV therapy, assessing vital signs as well as administering pre-operative medications, removing jewelries, dental prosthesis, eyeglasses and con- tact lenses and assessing conscious level respectively. while 76.7%, 70% and 63.3% of studied nurses had unsat- isfactory practice regarding prepare site for surgery, ele- vating side rails up and bed to the lowest level and in- structing for bed adjustment moving respectively. Moreo-

ver, 63.3% of studied nurses had poor total practice re- garding patient pre-operative preparation the day of sur- gery for bariatric surgery.

Table 6 showed that 76.7%, 70.0% and 56.7% of the studied nurses had poor practice regarding the assessment of circulation, reviewing of body systems and assessing conscious level. While 50.0% and 50% of studied nurses had a satisfactory level of practice regarding maintain airway patency as well as evaluating breathing, also 70.0% of studied nurses had poor total practice regarding patient immediate post-operative care for bariatric sur- gery. Regarding late postoperative nurses' practice, the table reveals that all of the studied nurses had poor prac- tice regarding promoting optimal comfort and relief for pain. In addition to 76.7%, 76.7% and 63.3% of studied nurses had poor practice regarding assessing the respirato- ry state, promoting optimal renal and urinary function, and applying wound care. While 63.3% of studied nurses had poor practice regarding obtaining vital signs, moreo- ver 76.7% of studied nurses had poor total practice re- garding late post-operative patient care after bariatric sur- gery.

Table 7 reveals that all of the studied nurses had poor total practice regarding patient discharge plan for bariatric surgery as well as promoting psychological support need and starting time and date of the follow-up appointment. In addition to 83.3% of studied nurses had poor practice regarding the interpretation of sampling and reporting lab investigation.

Figure 2 shows that 70.0% of the studied nurses had poor total practice regarding management of the patient undergoing bariatric surgery.

Table 8 reveals that there was a significant correlation between total studied nurses’ knowledge and practice (r=0.398 at p < 0.05).

# Table1: Number and percentage distribution of demographic characteristics of the studied nurses (n =30).

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Character** | **N** | **%** |
| **Gender** |  |  |  |
| Males |  | 10 | 33.3 |
| Females |  | 20 | 66.7 |
| **Age** |  |  |  |
| ˂ 20- 29 | 6 | 20.0 |
| 30 - ˂ 40 | 20 | 66.7 |
| ≥ 40 | 4 | 13.3 |
| **Level of Education** |  |  |  |
| Secondary school diploma | 17 | 56.7 |
| Technical institute diploma | 6 | 20.0 |
| Bachelor’s degree in nursing | 7 | 23.3 |
| Post graduated | 0 | 0.0 |
| **Experience years** |  |  |
| <5 | 5 | 16.7 |
| 5-<15 | 5 | 16.7 |
| ≥15 | 20 | 66.6 |
| **Training course related to bariatric surgery care** |
| Yes | 7 | 23.3 |
| No | 23 | 76.7 |
| **Performance enhancement (n=7)** |  |  |  |
| Yes | 6 | 85.7 |
| No | 1 | 14.3 |

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# Table 2: Number and percentage distribution of studied nurses' knowledge regarding knowledge of obesity and bariatric surgery (n=30).

**Knowledge elements**

# Satisfactory

**N % N**

# Unsatisfactory

**%**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Knowledge of obesity** | 4 | 13.3 | 26 | 86.7 |
| **Knowledge of bariatric surgery** |  |  |  |  |
| Indication for bariatric surgery | 5 | 16.7 | 25 | 83.3 |
| Benefits from bariatric surgery | 8 | 26.7 | 22 | 73.3 |
| **Types of bariatric surgery** |  |  |  |  |
| Gastric bypass surgery | 13 | 43.3 | 17 | 56.7 |
| Sleeve gastrectomy | 10 | 33.3 | 20 | 66.7 |
| Adjustable gastric band | 6 | 20.0 | 24 | 80.0 |
| Biliopancreatic diversion | 4 | 13.3 | 26 | 86.7 |
| **Complications of bariatric surgery** |  |  |  |  |
| Anatomical complications | 4 | 13.3 | 26 | 86.7 |
| Nutritional complications | 6 | 20 | 24 | 80 |

# Table 3: Number and percentage distribution of studied nurses' knowledge regarding pre and post-operative nursing management, and discharge teaching for the patient undergoing bariatric surgery (n=30)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **N** | **%** | **N** | **%** |
| **pre-operative nursing management** |  |  |  |  |
| Patient preparation | 12 | 40.0 | 18 | 60.0 |
| Preparatory education | 7 | 23.3 | 23 | 76.7 |
| Dietary education | 8 | 26.7 | 22 | 73.3 |
| Universal precaution of infection control | 12 | 40.0 | 18 | 60.0 |
| **post-operative nursing management** |  |  |  |  |
| Immediate post-operative care | 14 | 46.7 | 16 | 53.3 |
| Late post-operative care | 14 | 46.7 | 16 | 53.3 |
| Postoperative nutritional instructions | 14 | 56.7 | 16 | 43.3 |
| Wound dressing | 11 | 36.7 | 19 | 63.3 |
| **Discharge teaching** | 14 | 46.7 | 16 | 53.3 |

**Knowledge elements Satisfactory Unsatisfactory**

# Table 4: Number and percentage distribution of studied nurses' practice regarding the preoperative assess- ment of patient undergoing bariatric surgery (n=30)

|  |  |  |  |
| --- | --- | --- | --- |
| **N** | **%** | **N** | **%** |
| **Assessment of patient clinical data** |  |  |  |
| Demographic data | 11 | 36.7 | 19 | 63.3 |
| Patient history | 0 | 0.0 | 30 | 100.0 |
| Body mass index | 11 | 36.7 | 19 | 63.3 |
| Assessment of obstructive sleep apnea. | 0 | 0.0 | 30 | 100.0 |

**Practice steps Satisfactory Unsatisfactory**

# Patient preparation (the night before surgery)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Listing allergy | 24 | 80.0 | 6 | 20.0 |
| Checking pre-anesthetic done | 24 | 80.0 | 6 | 20.0 |
| Revising discontinuity of aspirin and anticoagulant as doctor order | 26 | 86.7 | 4 | 13.3 |
| Signing informed consent | 25 | 83.3 | 5 | 16.7 |
| Type and crossmatch for units of blood | 13 | 43.3 | 17 | 56.7 |
| Applying the identification band (ID) | 21 | 70.0 | 9 | 30.0 |
| Checking for diagnostic measures | 7 | 23.3 | 23 | 76.7 |
| Instructing for deep breathing and coughing exercise | 9 | 30.0 | 21 | 70.0 |
| Instructing for performing leg exercise | 11 | 36.7 | 19 | 63.3 |
| Instructing for caring with shower and bath given with antiseptic solution | 15 | 50.0 | 15 | 50.0 |
| Explaining nursing procedures to the patient and his/ her family | 13 | 43.3 | 17 | 56.7 |
| Reassuring the patient | 13 | 43.3 | 17 | 56.7 |
| Assessing bowel preparation | 15 | 50.0 | 15 | 50.0 |
| **Total** | 11 | 36.7 | 19 | 63.3 |

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# Table 5: Number and percentage distribution of studied nurses' practice regarding patient pre-operative preparation the day of surgery of bariatric surgery (n=30)

**Practice steps Satisfactory Unsatisfactory N % N %**

# Patient preparation (the day of surgery)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Assessing ABC | 15 | 50.0 | 15 | 50.0 |
| Assessing conscious level | 19 | 63.3 | 11 | 36.7 |
| Assessing vital signs | 24 | 80.0 | 6 | 20.0 |
| Removing jewelry, dental prosthesis, eyeglasses, and contact lenses | 23 | 76.7 | 7 | 23.3 |
| Helping the patient to wear a gown | 15 | 50.0 | 15 | 50.0 |
| Allowing the patient to void | 15 | 50.0 | 15 | 50.0 |
| Connecting patient to IV therapy | 26 | 86.7 | 4 | 13.3 |
| Administering pre-op medications | 24 | 80.0 | 6 | 20.0 |
| Preparing Site for surgery | 7 | 23.3 | 23 | 76.7 |
| Elevating side rails up and bed to lowest level | 9 | 30.0 | 21 | 70.0 |
| Instructing for bed adjustment moving | 11 | 36.7 | 19 | 63.3 |
| **Total** | 11 | 36.7 | 19 | 63.3 |

**Table 6: Number and percentage distribution of studied nurses' practice regarding patient immediate and late postoperative care after bariatric surgery (n=30)**

**N % N %**

# Practice steps Satisfactory Unsatisfactory

|  |  |
| --- | --- |
| **Immediate post -operative care** |  |
| Maintaining airway patency | 15 | 50.0 | 15 | 50.0 |
| Evaluating breathing | 15 | 50.0 | 15 | 50.0 |
| Assessing conscious level | 13 | 43.3 | 17 | 56.7 |
| Assessing circulation | 7 | 23.3 | 23 | 76.7 |
| Reviewing body systems | 9 | 30.0 | 21 | 70.0 |
| **Total****Late post-operative care** | 9 | 30.0 | 21 | 70.0 |
| Assisting the patient for recovery position | 15 | 50.0 | 15 | 50.0 |
| Obtaining vital signs | 19 | 63.3 | 11 | 36.7 |
| Assessing patient respiratory states | 7 | 23.3 | 23 | 76.7 |
| Promoting optimal cardiovascular function | 12 | 40.0 | 18 | 60.0 |
| Promoting optimal neurological functions | 14 | 46.7 | 16 | 53.3 |
| Promoting optimal renal and urinary function | 7 | 23.3 | 23 | 76.7 |
| Promoting optimal gastrointestinal and meet nutrition need | 11 | 36.7 | 19 | 63.3 |
| Promoting optimal comfort and relief for pain | 0 | 0.0 | 30 | 100.0 |
| Applying wound care | 7 | 23.3 | 23 | 76.7 |
| **Total** | 7 | 23.3 | 23 | 76.7 |

**Table 7: Number and percentage distribution of studied nurses' practice regarding patient discharge plan for bariatric surgery (n=30).**

|  |  |  |  |
| --- | --- | --- | --- |
| **N** | **%** | **N** | **%** |
| **Discharge planning**Naming performed procedures | 11 | 36.7 | 19 | 63.3 |
| Identifying any permanent change in anatomic structure or function | 11 | 36.7 | 19 | 63.3 |
| Describing signs and symptoms of complications | 11 | 36.7 | 19 | 63.3 |
| Describing ongoing postoperative regimen | 11 | 36.7 | 19 | 63.3 |
| Stating time and date of follow-up appointment | 0 | 0.0 | 30 | 100.0 |
| Interpretation of sampling and reporting lab investigation | 5 | 16.7 | 25 | 83.3 |
| Promoting psychosocial support need | 0 | 0.0 | 30 | 100.0 |
| **Total** | 0 | 0.0 | 30 | 100.0 |

# Practice steps Satisfactory Unsatisfactory

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# Table 8: Correlations between total studied nurses' knowledge and practice regarding management of the pa- tient undergoing bariatric surgery (n=30).

**Items Total practice**

# r P-value

**Total knowledge 0.398 0.030\***

*\*Significant p < 0.05*

**Total knowledge**

26.7%

73.3%

**Satisfactory**

**Unsatisfactory**

**Total practice**

30%

70%

**Satisfactory**

**Unsatisfactory**

# Figure 1: Percentage distribution of total studied nurses' knowledge regarding management of the patient undergoing bariatric sur- gery.

1. **Discussion**

Bariatric surgery is a medical procedure that produc- es weight loss by limiting how much the stomach can hold, and by limiting absorption of calories *(Dent, Chris- opoulos, Mulhall & Ridler, 2010)*. The nurse must ensure care and health education, with a view of preventing complications, determining well-being and helping the patient to adapt to the new way of living *(Ferreira, Felix & Galvao, 2014)*. The study was carried out aiming to assess nurses' performance for patients undergoing bari- atric surgery through assessing nurses̕ knowledge and practice regarding management of patient undergoing bariatric surgery.

The present studied nurses' sociodemographic charac- teristics revealed that two third of the study nurses were females. This finding is may be due to the greater fraction of the nurses in Egypt were females and may also be re- lated to the studying of nursing in Egyptian university were exclusive for females only till a few years ago. This finding is consistent with a study done by *Zhu, Norman & While (2013),* entitled: “Nurses’ self-efficacy and practic- es relating to weight management of adult patients in London" which revealed that 88.7% of the studied nurses were females, confirming the majority of females in the profession. *Tanaka & Peniche (2009)*, in their study enti- tled: “Peri-operative care for morbid obese patient under- going bariatric surgery: challenges for nurses in Brazil" stated that; there was a predominance of female nurses, (97.1%).

Concerning the educational level, the current study il- lustrated that more than half of the studied nurses were secondary school diploma and about only one-quarter of them had a bachelor’s degree in nursing. This finding might elaborate on the current condition of nursing quali- fication in Egypt. This result on the same line with *Farag (2008),* who assured in the study which was entitled: “Economic analysis of the nurse shortage in Egypt" that nursing education and the distribution of nurses approxi- mately 87- 93% of them had diploma nursing. As regards

# Figure 2: Percentage distribution of total studied nurses' practice regarding the manage- ment of patient undergoing bariatric sur- gery.

years of experience, the current study showed that two third of the study nurses had experienced more than 15 years because they had a certification and license to prac- tice their field as a nurse since graduated. This finding agrees with a study done by *Phillips, Wood & Kinnersley (2014),* entitled: “Tackling obesity: the challenge of obe- sity management for practice nurses in primary care in Oxford" which revealed that 61% of nurses had 10–20 years of experience.

Regarding training course and performance enhance- ment, the present study finding showed that more than three-quarter of the studied nurses did not attend any train- ing courses related to bariatric surgery. This finding may be due to the lack of programs or conferences about the role of nursing regarding bariatric surgery within the hos- pital. This finding is consistent with *Tanaka & Peniche (2009)* who added that more than half of the studied nurs- es did not receive training courses and the specific content regarding bariatric surgery is not uniformly inserted into the undergraduate courses, limiting the experience and practice in this specialized service.

While, this result is contradicted with *Nolan, Deehan, Wylie & Jones (2012)*, who emphasized in the study which was entitled: “Practice nurses and obesity: profes- sional and practice-based factors affecting role adequacy and role legitimacy in London" that nurses who felt posi- tively about their role were those who had received train- ing on obesity surgery and had the time to use this knowledge and skills with patients within consultations or in a group.

The results of the current study indicated that the ma- jority of the studied nurses had inadequate knowledge regarding obesity. This inadequacy of nurses' knowledge in this area might be as a result of lack of educational training programs and resources that provide them with knowledge about obesity care. This finding is in congru- ence with a study done by *Blackburn, Stathi, Keogh & Eccleston (2015)*, entitled “Raising the topic of weight in general practice: perspectives of GPs and primary care nurses in England" which confirmed that nurses had inad-

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equate knowledge regarding obesity due to lack of content that makes them not recognizing obesity as a complex medical problem and uncertainty about obesity. Also, high lightened that the bariatric nurse must understand the procedures to guide nursing actions to get the best patient outcomes.

While, this result contradicted with a study done by *Miller, Alpert & Cross (2008)* entitled: “Overweight and obesity in nurses, advanced practice nurses, and nurse educators in United State" which revealed that the majori- ty of nurses had adequate knowledge related to obesity. In addition to providing weight-related health information to the public which suggests that they may benefit from con- tinuing education on obesity and its risks.

The present study findings showed that the majority of the studied nurses had poor knowledge regarding the indi- cation of bariatric surgery. In addition to about three- quarter of the studied nurses had inadequate knowledge regarding the benefits of bariatric surgery. This finding may due to lack of materials and resources about bariatric surgery as well as this topic are not incorporated in the curriculum of nursing. This result contradicted with *Phil- lips, Wood & Kinnersley (2014)* who showed that more than three-quarter of studied nurses had a satisfactory level of knowledge regarding indication and benefits of bariatric surgery.

The present study findings showed that the majority of the studied nurses had poor knowledge regarding bilio- pancreatic diversion. This finding may due to that this type is less commonly performed compared to the other type of bariatric surgery in the study setting, so nurses had lack of awareness about those surgical techniques which affected on their knowledge. This result in the same line with a study done by *Neff, Olbers & le Roux (2013)*, enti- tled: “Bariatric surgery: the challenges with candidate selection, individualizing treatment and clinical outcomes in Sweden" which intensified that nurses had inadequate knowledge about biliopancreatic diversion surgery which less commonly performed.

While this result is contradicted with *Dunham (2012),* who assured in the context entitled: “The Increasing Inci- dence of the Biliopancreatic Diversion with Duodenal Switch as a Surgical Weight Loss Option: Implications for Nursing Care in Pennsylvania" that biliopancreatic diversion becomes more prevalent so, it is essential for the nurses to be knowledgeable about the anatomy of this surgical option. Understanding the anatomical changes created by the surgeon will help the nurse anticipate any potential immediate complications, provide education about self-care on discharge, and highlight the importance of long-term follow-up with the patient’s bariatric team.

The present study findings showed that the majority of the studied nurses had inadequate knowledge regarding anatomical and nutritional complications of bariatric sur- gery. This finding might due to lack of caring protocol for the patient undergoing bariatric surgery and most of the patient discharged after a day or a few days from surgery and follow-up carrying out at the out-patient clinic. These results are contradicted with a study done by *Gagnon & Shef (2012),* entitled for “Outcomes and complications after bariatric surgery in United States" who assured that; nurses are providing intervention for bariatric surgery patient according to guidelines to prevent possibility of complication so, they have an significant role to optimize care for patients with bariatric surgery by improving self-

management skills, prevention/treatment of nutritional deficiencies, and optimizing nutritional status.

The present study findings showed that around three-quarter of the studied nurses had poor knowledge regarding the preparatory and dietary education of bari- atric surgery and less than two third of them had inade- quate knowledge regarding patient preparation. This find- ing might be due to lack of continuous educational pro- gram and nurses' preparation courses for caring patients undergoing bariatric surgery and lack of their awareness about the importance of these aspects. This finding goes in the same line with *Still, Sarwer & Blankenship (2014)* who mentioned in the context entitled for “Motivations for and expectations about bariatric surgery in New York" that, the nurses had a reduced level of knowledge regard- ing pre-operative nursing management of the patient with obesity.

Concerning the results of the current study, it found that more than half of the studied nurses had inadequate knowledge regarding immediate postoperative care as well as late post- operative care. This finding may be due to that the nurses did not have enough information, train- ing courses about it and absence of standard nursing care related to immediate and late postoperative care for such patient. Also, the current study nurses reported difficulties encountered by a large number of patients and lack of resources for the nursing staff.

This finding goes in the same line with *Marquis & Huston (2009)* who reported that each medical organiza- tion and profession must set standards and objectives to guide team and practitioners in performing safe and effec- tive care. Also, *de Oliveira Serra et al. (2015)* empha- sized in a study which was entitled: “Nursing care in the immediate postoperative period: a cross-sectional study in Fortaleza, Ceará, Brazil " that nursing care is not fully offered, lack of resources and nurses have difficulties in using nursing care systematization post-operatively.

The present study showed that all of the studied nurses had poor practice regarding the assessment of patient his- tory and assessment of obstructive sleep apnea. This find- ing may be due to staff shortage and work overload as well as they did not have enough time to complete patient assessment, also their lack of knowledge about a standard of STOP-BANG scoring system that represented nega- tively in nurses' practice. This result is in agreement with a study done by *Keogh (2014)* entitled for “Nurses say patients still neglected because of inadequate staff levels in UK" which emphasized that 65% of nurses said they do not have enough time because of understaffing, 54% of nursing care was being left undone, 45% of survey re- spondents said they were caring for eight or more patients on ward settings and rising to 51% for night staff. All of these reasons impact negatively on pre-operative patient assessment and quality of care. This result also, in the same way with *Seet & Chung (2010)* who affirmed in a study entitled “Obstructive sleep apnea: preoperative as- sessment in Singapore and Canada" that obstructive sleep apnea (OSA) is the most prevalent breathing disturbance during sleep especially in obese patients and nurse may greatly be assisted if screening tools are on hospital wards to enhance awareness of OSA and identify other less ob- vious risk factors.

While this is contradicted with *Van Klei et al. (2004),* who mentioned that, the majority of nurses had the expe- rience to complete patient health assessment which may

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improve the quality of peri-operative care. In the other hand *Malley, Kenner, Kim & Blakeney (2015)* assured in the study which was entitled: “The accuracy of trained nurses in pre-operative health assessment in University Medical Centre Utrecht, Netherlands" that the majority of nurses had the skills to provide appropriate nursing care and provide education as well as obtained information related to pre-operative period.

Based on the results of the current study, it found that the majority of the studied nurses had satisfactory practice regarding revise discontinuity of aspirin and anti- coagulant, signing informed consent, listing allergy, checking pre-anesthetic and applying identification band. This finding may due to those procedures are routine care done for all surgical patient and considered everyday rou- tine for any surgical nurse in any surgical word. These findings were in the same line with *Perry, Potter, & Os- tendorf (2016)* who stated that medications revise, and diagnostic measures are essential steps of patient prepara- tion before surgery in patient checklists for nursing. In addition to *Punder (2005)* who reported in the context entitled for “perioperative assessment: Nursing the surgi- cal patient in the USA" that nurses revise patient before the day of operation through a preoperative checklist which includes listing allergy, informed consent, fitness for anesthesia as well as the identification band.

Contradicting to satisfactory performance in doing routine care, nurses showed unsatisfactory performance in checking diagnostic measures and instructing patient for deep breathing and coughing techniques. This finding could be explained that nurses consider checking diagnos- tic measures is the role of the physician and underestimate the benefits of deep breathing and coughing techniques among their daily workload. This result was not in agree- ment with *Cassidy, Rosenkranz, McCabe, Rosen & McAneny (2013)* who revealed that most of the nurses had the ability to re-demonstrate coughing and breathing ex- ercise with their patients after receiving a training pro- gram

Concerning to the nurses practice regarding patient preparation the day of surgery, the results of the current study clarified that, the majority of the studied nurses had satisfactory practice regarding connecting patient to IV therapy, assessing vital signs as well as administering pre-operative medication, also more than three quarter of them had satisfactory practice regarding removing jewel- ry, dental prosthesis, eyeglasses, and contact lenses and about two-third of them exhibit satisfactory practice re- garding assessing conscious level for patient preparation the day of surgery. This finding may be due to their be- lieves that is considered the daily routine of nurses' duties. This result had an agreement with *Christoforo & Car- valho (2009)* who reported in the study which was enti- tled: “Nursing care applied to surgical patient in the pre- surgical period in Brazil" that almost nurses had per- formed all care procedures as (96.1%) regarding assessing vital signs, (72.9%) regarding removing jewelry, dental prosthesis, eyeglasses, and contact lenses, near half of them, had satisfactory practice regarding pre-anesthetic medication and assessing conscious level at the day of surgery.

The current study revealed that more than three- quarter of the studied nurses had poor practice regarding prepare site for surgery. Also, more than two third of the studied nurses had unsatisfactory level regarding the pa-

tient safety of elevating side rails up and bed to the lowest level. In addition to more than half of them had poor level regarding instructing for bed adjustment moving. This finding may be due to lack of nurses' awareness and knowledge about the importance of some aspects on pa- tient preparation for surgery, in addition to their depend- ence on nurses' aid and relatives till reach operating room. This result on the same with *Penalver-Mompean, Saturno-Hernandez, Fonseca-Miranda & Gama (2012)* who pointed to the most nurses lack updates through evi- dence-based information, as they even delegate practices that increase infection and safety risks. This finding re- veals a clear need to improve the planning of the care process assigned to staff especially nurses, to reach better results in terms of patient safety quality and quantity. Pri- oritizing these efforts can be useful to reduce the unwant- ed effects of surgical site preparation surgical site infec- tion (SSI) and reduce the risk of fall and other safety haz- ards.

Postoperative nursing assessment reveals another sig- nificant shortcoming as half of the studied nurses had poor practice regarding maintaining airway patency as well as evaluating breathing, and more than half got un- satisfactory performance in assessing conscious level for patients' immediate post-operative care. This finding may be due to lack of nurses' training and awareness about the primary approach for assessing immediate post-operative patients. This result on the same line with *Van Huyssteen & Botha (2009)* who reported that the majority of nurses in the study (85, 4%) indicated that they never had the opportunity to be trained. In order for them to be able to assess patient after surgery and did not have the necessary knowledge and competencies needed to render quality nursing care to postoperative patients. Also, *Singh & Chong (2016)* mentioned in the study which was entitled: “Assessing Nurses Knowledge of Glasgow Coma Scale in the Emergency and Outpatient Departments of a Tertiary Medical Centre" that 55.56% had poor knowledge of Glasgow coma scale. This finding raises concerns about the importance of knowledge and skill in assessing GCS. Continuing education and practice on the use of the GCS are essential.

Concerning the nurses' practice regarding the assess- ment of circulation after bariatric surgery, the current study revealed that more than three-quarters of the studied nurses had poor practice. Also, more than two third of the studied nurses had inadequate practice regarding review- ing of systems. This result reflects the nurses' neglecting of the most important part of nursing care through which the nurses provided life-saving measures and believed that is a physician's role. This result was not on an agree- ment with Williams, Bailey, *Bulstrode, Love, & O'Con- nell (2008)* who stated that assess patient circulation should be included on initial assessment so; nurses put it into their consideration during immediate postoperative care.

Regarding total immediate postoperative care after bariatric surgery, more than two third of the study nurses had unsatisfactory total. This result may be due to lack of training courses, lack of job description, motivation, in- terest and the shortage of nursing staff and resources lead- ing to work overload. The above finding contradicted with *Zeitz (2008)* who stated that the majority of nurses had satisfactory practice regarding immediate postopera- tive care for bariatric surgery patient.

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While more than half of the studied nurses had poor practice regarding promoting optimal cardiovascular function, renal and urinary function. This finding may be due to lack of nurses' knowledge that impacts on their skills and makes them incompetent in their career. This result had not an agreement with *Oakey & Slade (2006)* who mentioned that general care nurses would most likely have great impact on the postoperative outcomes of these patients. The challenges to the nurses are to be knowl- edgeable of bariatric operations and complications and to plan carefully for the care of bariatric patients to achieve optimal outcomes.

The current study revealed that all of the study nurses had inadequate practice regarding promoting optimal comfort and relief for pain. This result may be due to nurses’ pain assessment is mostly constrained by; lack of guidelines and protocols, assessment tools, documentation charts and education on assessment tools, inadequate doc- umentation of pain assessment and management and poor communication of pain assessment priorities at the unit.

These findings are on the same line with *Milutinovic, Milovanovic, Pjevic, Martinov-Cvejin & Cigic (2009)* who showed a lack of regular assessment of pain intensity and follow-up of effects of analgesic therapy in profes- sional nursing care. Nurses trust in patients when they report pain and cooperation with doctors in postoperative pain management, as well as, surgical clinic as a setting for pain management, gender and existence of worse pain than expected comprise significant factors which influ- ence score on quality of acute postoperative care man- agement.

The present study showed that more than three-quarter of the studied nurses had poor practice regarding wound care. It was found that nurses did not give any care to the wound and they only assist the surgeon in the dressing procedure. The wound care is mainly the surgeon duties in the unit, and this may be referred to the hospital regula- tion. *Aiken, Clarke & Sloane (2009)* found that nurses were performing non-nursing tasks such as delivering and retrieving food trays, carrying out housekeeping work, ordering ancillary services, and transporting patients; while nursing activities such as comforting patients, de- veloping and updating care plans providing oral hygiene and skin care, and teaching patients and their families had been left undone.

Concerning nurse practice regarding patient discharge planning for bariatric surgery patients, all of the studied nurses had poor practice regarding stating time and date of follow-up appointments as well as promoting psycho- logical support need. In addition to the majority of the studied nurses had poor practice regarding the interpreta- tion of sampling and reporting lab investigation. This finding may be due to lack of educational program about discharge and follow-up for bariatric surgery patient. This result on the same line in a study done by *Barth & Jenson (2006),* entitled for “Postoperative nursing care of gastric bypass patients at the American Association of Critical- Care Nurses National Teaching Institute, New Orleans" who stated that most of the healthcare team members es- pecially nurse will require a multidisciplinary educational approach related to the disease, type of operation per- formed, and accompanying postoperative care.

Concerning the correlation between nurses' total knowledge and total practice, these study findings clari- fied that there is weak positive statistically significant

relation between studied nurses' total knowledge and their entire practice; where the nurses who have adequate total knowledge are competent in their whole practice, which means that the level of nurses' practice affected by the nurses' knowledge.

This study result is consistent with *Istomina, Su- onminen, Razbadauskas, Martinkenas, Kuokkanen, Lein- Kilpi (2012)* who mentioned that there was a positive cor- relation between knowledge and practice of the study nurses. Surgical nurses feel empowered at their work when they have higher education and have completed the continuing education courses. While *Saleh (2008)* re- vealed that there was a positive statistically significant relation between nurses’ knowledge with their entire prac- tice, but this correlation was not statistically significant.

In summary, the results of this study revealed that there is a need to focus on the development of nursing staff knowledge, skills, and attitude, so effort should be directed towards enhancing creativity among nurses. Nurses must have access to updated information, learn- ing resources, and endless educational opportunities. The nurses must continuously seek better ways to improve their care to patients undergoing bariatric surgery through acquiring knowledge and through implementing the established standards of care which must be updated periodically.

# Conclusion

Based on this study findings, it can be concluded that:

The study revealed that about three-quarter of the studied nurses had unsatisfactory knowledge. While more than two third of the studied nurses had poor prac- tice regarding management of the patient undergoing bariatric surgery, in addition to, there was a statistically significant correlation between studied nurses' knowledge, practice.

# Recommendation

* Bariatric surgery units should be supplied by a pro- tocol regarding nurses' performance for the patient undergoing bariatric surgery.
* Further study is recommended to evaluate the re- flection of educational training program regarding the management of patients undergoing bariatric surgery on nurses' performance and consequently on the patient’s outcomes.
* The study should be replicated on a large sample and in different hospital settings in order to general- ize the results.
* Implementing an educational training program for nurses to improve their performance regarding man- agement of a patient undergoing bariatric surgery.
* Developing a clear and comprehensive booklet, in- cluding guidelines on nursing management for the patient undergoing bariatric surgery (pre and post).
* Close supervision and teaching on the spot is need- ed to ensure that quality of care is provided by nurs- es while managing patients undergoing bariatric surgery.

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