Nursing diagnoses, related factors and risk factors during the postoperative period following bariatric surgery

DIAGNÓSTICOS DE ENFERMAGEM, FATORES RELACIONADOS E DE RISCO NO PÓS-OPERATÓRIO DE CIRURGIA BARIÁTRICA

DIAGNÓSTICOS DE ENFERMERÍA, FACTORES RELACIONADOS Y DE RIESGO EN EL POSTOPERATORIO DE CIRUGÍA BARIÁTRICA

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ABSTRACT

The objective was to identify the main diagnoses, related factors and risk factors regarding the cardiovascular/pulmonary responses class proposed by NANDA version 2009-2011. This case series descriptive study was performed with twenty patients who underwent bariatric surgery in a public hospital in Fortaleza-CE, Brazil. Data were collected by two intensive care unit nurse specialists through interviews, physical examinations and the reviewing of medical records, and analyzed through descriptive statistics and cross-mapping. The nursing diagnoses identified with a frequency greater than 50% were: decreased cardiac output (75%), ineffective breathing patterns (65%), dysfunctional ventilatory weaning response (55%) and ineffective peripheral tissue perfusion (75%); in addition, fourteen related factors and five risk factors were identified. We verified the need for further studies to better define the diagnostic profile of these patients in order to direct nursing care towards the early detection of complications.

DESCRIPTORS
Nursing diagnosis
Bariatric surgery
Perioperative nursing
Risk factors

RESUMO

Objetivou-se com esta pesquisa identificar os principais diagnósticos, fatores relacionados e de risco da classe resposta cardiovascular/pulmonar, propostos pela NANDA, versão 2009-2011. Trata-se de estudo de série de caso, descritivo, realizado com vinte pacientes submetidos à cirurgia bariátrica em hospital público de Fortaleza-CE, Brasil. Duas enfermeiras especialistas em unidade de terapia intensiva coletaram os dados por meio de entrevista, exame físico e leitura do prontuário, que foram analisados a partir de estatística descritiva e mapeamento cruzado. Os diagnósticos de enfermagem identificados com frequência maior que 50% foram: débito cardíaco diminuído (75%), padrão respiratório ineficaz (65%), resposta disfuncional ao desmame ventilatório (55%) e perfusão tissular periférica ineficaz (75%), dos quais 14 eram fatores relacionados e cinco, de risco. Reconhece-se a necessidade de outros estudos para melhor definir o perfil diagnóstico dessa clientela e, assim, direcionar a assistência de enfermagem para a detecção precoce de complicações.

DESCRITORES
Diagnóstico de enfermagem
Cirurgia bariátrica
Enfermagem perioperatória
Fatores de risco

RESUMEN

Se objetivó identificar los principales diagnósticos, factores relacionados y de riesgo del tipo respuesta cardiovascular/pulmonar, propuestos por la NANDA, versión 2009-2011.Estudio de serie de casos, descriptivo, realizado con veinte pacientes sometidos a cirugía bariátrica en hospital público de Fortaleza-CE, Brasil. Dos enfermeras especialistas en unidad de terapia intensiva recolectaron los datos mediante entrevista, examen físico y lectura de historia clínica, dichos datos fueron analizados mediante estadística descriptiva y mapeo cruzado. Los diagnósticos de enfermería identificados con frecuencia mayor al 50% fueron: gasto cardíaco disminuido (75%), patrón respiratorio ineficaz (65%), respuesta disfuncional al destete del respirador (55%) y perfusión tisular periférica inefectiva (75%), de los cuales 14 constituían factores relacionados, y 5 de riesgo. Se reconoce la necesidad de otros estudios para definir mejor el perfil diagnóstico de estos pacientes, y así enfocar la atención de enfermería en la detección precoz de complicaciones.

DESCRIPTORES
Diagnóstico de enfermería
Cirugía bariátrica
Enfermería perioperatoria
Factores de riesgo

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INTRODUCTION

The nursing care system (SAE), also known as the nursing process, is the method that directs the actions of nurses in everyday practice and provides structure consistent with the individualized needs of the client, family and community. The taxonomy of nursing itself involves not only standardization but also the need to act with scientific principles and thus offer quality care.

The SAE emerged in the 1950s as a tool of nursing work and was based on a theoretical and scientific method. It brought positive results for the quality of nursing care to the individual, meeting their real needs[1]. In Brazil, nurses' actions are supported by the 7498 Law of June 25th, 1986, on the practice of Nursing[2].

The nursing process consists of several steps that receive designations depending on the authors and the manner in which the process is organized. Among other factors, it has been dependent of steps. The Brazilian model proposes six steps: the history of nursing, nursing diagnosis, care planning, nursing prescription, evolution and prognosis[3].

This process has represented the main methodological tool for the systematic performance of professional nursing practice. Nursing diagnosis refers to the phase during which the nurse is responsible for providing the means to propose interventions for the detected health problems that are the exclusive responsibility of the nurse. In addition to being a working tool of nursing professionals, the nursing process provides its own language and facilitates communication with patients[4-5].

This study focused on nursing diagnosis grounded in *a clinical judgment about the responses of the individual, the family or community due to health problems, life processes and real or potential*. Nursing diagnoses (ND) consist of a title, a conceptual definition and defining characteristics (DCs). These characteristics include the latest clinical evidence that needs to be studied in relation to their representation in practice because they are *cues/inferences that are grouped as observable manifestations of a ND real or wellness*[6].

This study grew out of the daily monitoring of patients undergoing bariatric surgery and was motivated by the lack of identification of a diagnosis according to the NANDA taxonomy for those patients who tended to develop cardiopulmonary changes. Currently, this class includes 13 nursing diagnoses, 73 defining characteristics, 44 related factors and 78 risk factors.

Given the above, a question emerged: what are the main nursing diagnoses associated with cardiovascular/pulmonary-class changes and the related factors and risk factors observed in the practice of caring for obese patients undergoing bariatric surgery?

Special care is needed postoperatively for patients undergoing bariatric surgery because the condition of obesity and its associated comorbidities make these high-risk patients eligible for surgery, which requires adequate and timely identification of problems by nurses and early implementation of measures that are needed to remedy them.

Accurately assessing, diagnosing and treating medical problems is a challenge for professionals. When multiple symptoms are present, differentiating their causes is even more complex. Thus, the identification of the defining characteristics of patients who have undergone bariatric surgery will have many benefits in the provision of care because nurses will direct the investigation of clinical conditions and risk management, demonstrating the possibility of joining the organization, standardization and evaluation of the scientific language of nursing practice.

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Consequently, the identification of the main defining characteristics of the nursing diagnoses found in this class of patients will allow the construction of nursing objectives that are individualized to the real needs of this population with the tools necessary for satisfactory results.

In consultation with the database of the Coordination of Improvement of Higher Education Personnel (CAPES), using the keywords *bariatric surgery* and *nursing* we identified four surveys: one systematic review, two qualitative studies and one study addressing nursing diagnoses. In the region of north-northeast Brazil, the main Latin American database, BIREME, did not identify any studies on the topic.

Thus, this study aimed to identify the main diagnoses, related factors and risk factors according to NANDA, version 2009-2011[6], for the class of patients with cardiovascular or pulmonary changes after undergoing bariatric surgery.

METHOD

A descriptive study of a series of surgeries performed in a public hospital specializing in bariatric surgery in Fortaleza, Brazil, was carried out from April to August 2009 on patients in the post-anesthetic recovery unit.

The hospital was chosen because it is a bariatric surgery reference institution for the Unified Health System (SUS) of Brazil, in addition to its renown through international academic honors and awards. Bariatric surgery is performed twice a week at this institution by a multidisciplinary team that is responsible for outpatient care and inpatient preoperative and postoperative care for five years after the surgery.

In 2009, there were 76 surgeries, but the sample consisted of 20 patients in the immediate postoperative period following bariatric surgery. The inclusion criteria were as follows: being in the immediate postoperative period (72 hours post-surgery) and conscious, not being under the influence of anesthetic medication and having no clinical changes (heart and/or lung disease).

Data were collected by two specialist nurses in the Intensive Care Unit with experience in nursing care for critically ill patients. To validate the characteristics of the nursing diagnoses, the proposed method followed the clinical validation model[7], which is based on finding evidence for a specific diagnosis in the clinical environment in which the data are obtained through the direct evaluation the patient's responses.

The following procedure was followed: first, the two nurse clinical experts evaluated a number of patients with a pre-set list of characteristics to be tested; second, the two experts individually evaluated each of the patients for the presence or absence of each defining characteristics of the diagnosis; and third, the rate of reliability between the observers was calculated for each defining characteristic[7].

The nurses were chosen based on the adapted criteria suggested by Fehring[7]: the nurses' care practice was consistent with clinical experience in the area of interest for diagnostic study, and they were knowledgeable about the subject-of-care system. The nurse participants in this study had scores above 14 points on the adapted criteria, which is higher than the minimum of five points proposed by Fehring[7].

During the interviews, data were collected on sociodemographic, clinical and epidemiological characteristics; nursing diagnoses; related factors; and risk factors. After interviewing the patients, conducting a physical examination and reading the patients' charts, the nurses proceeded to fill out forms drawn from nursing diagnoses of the NANDA cardiovascular and pulmonary class, version 2009-2011[4].

Together, the nurses completed the identification of the nursing diagnoses and related factors and risk factors of this class. For the identification of a nursing diagnosis, the presence of at least two defining characteristics was required: a related factor and a risk factor.

The statistical analysis consisted of sociodemographic and clinical-epidemiological analysis of the cases and nursing diagnosis-identified risk factors and factors related to the diagnosis, gender, and frequency distributions for univariate and bivariate analyses. The differences between the proportions were verified by applying the statistical test Chi-square exact, Fischer, at the 5% level of significance ($P \leq 0.05$).

We used the Microsoft Excel program to create the database, and to process and analyze the data, we used the statistical package STATA v.8.0. The graph was generated using Harvard Graphics' 98 v.6.5.

The study was approved by the Research Ethics Committee of the institution where it was performed, as expressed in Opinion No. 294/2009. The study subjects agreed to participate in the study after signing the consent form. They were assured of their anonymity and their freedom to stop participating if they felt any discomfort or fatigue.

RESULTS

During the period of data collection, 28 surgeries were scheduled, equivalent to two surgeries per week. However, only 20 surgeries (71.4%) were performed, with five surgeries suspended for medical problems (33.4%) and three surgeries suspended for reasons related to the institution (44.4%). There were 19 conventional open surgeries and one laparoscopic surgery. The hospitalization was established by the team of seven days.

Important characteristics such as BMI are shown in Table 1. The participants were profiled as they presented for surgery, and 60% were diagnosed as morbidly obese based on a BMI above 40 kg/m², which was associated with a relatively young population.

Of the 20 patients who underwent surgery, 12 were female (60%) and 8 were male (40%). The minimum age of the patients was 17 years, the maximum age was 55 years, and the average age was 32.3 years (standard deviation (SD) = 8.9 years). The majority of the patients were in the 25- to 35-year-old age group (70%). The minimum BMI was 36.7, the maximum BMI was 64.5, and the average BMI was 45.2 (SD = 7.6).

With respect to the characterization of the patients based on their clinical and epidemiological descriptions, no significant differences related to medical diagnosis and the clinical and epidemiological characteristics were identified. Of the 20 cases, 15 cases (75%) had a diagnosis of morbid obesity, and five cases had a diagnosis of obesity and associated diseases (25%). Among the comorbidities found in the medical records, five patients were diagnosed with high blood pressure (hypertension). Of these, two patients were also diagnosed with diabetes mellitus. One diagnosis of hypercholesterolemia and another diagnosis of sleep apnea had also been made among the patients.

In this study, we analyzed the nursing diagnoses identified in 13 or more patients, i.e., those that affected more than 65% of the patients.

We identified seven diagnoses with frequencies ranging from 15% to 75%. The diagnoses with a frequency greater than 50% included decreased cardiac output (75%), ineffective respiratory pattern (65%), dysfunctional response to ventilatory weaning (55%) and ineffective peripheral tissue perfusion (75%). In contrast, the diagnoses with a frequency of 50% or less included impaired spontaneous ventilation (45%), activity intolerance (45%) and risk of activity intolerance (50%).

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Table 1 - Clinical and epidemiological characteristics of patients undergoing bariatric surgery according to medical diagnosis - Fortaleza, Brazil, 2010

Characteristic	Medical Diagnosis				P* value
	Obesity (n=5)		Morbid obesity (n=15)		
	n	(%)	N	(%)	
Gender					
Male	2	40.0	6	40.0	1.000
Female	3	60.0	9	60.0	
Age Group					
Under 24 years old	-	-	2	13.3	
25 - 35 years old	4	80.0	10	66.7	
36 - 45 years old	-	-	1	6.7	
46 and older	1	20.0	2	13.3	
IMC					
35 – 39	-	-	6	40.0	
40 – 44	2	40.0	3	20.0	
45 – 50	2	40.0	3	20.0	
> 50 or more	1	20.0	3	20.0	
Smoking					
Yes	-	-	2	13.3	
Not	5	100.0	5	86.7	1.000
HAS					
Yes	1	20.0	4	26.7	
Not	4	80.0	11	73.3	1.000
DMII					
Yes	1	20.0	1	6.7	
Not	4	80.0	14	93.3	0.447
Hypercholesterolemia					
Yes	-	-	1	6.7	
Not	5	100.0	14	93.3	1.000
Use belt					
Yes	4	80.0	11	73.3	
Not	1	20.0	4	26.7	1.000

*p-values were obtained by applying Fisher's exact test (n = 20).

The nursing diagnosis of decreased cardiac output showed a high frequency and may have been causally related to altered contractility and preload changes, which showed the same statistical frequencies. It is possible that the identification of these diagnoses was related to the unstable hemodynamic condition of the patients during the immediate postoperative period.

When evaluating the identified related factors, the following factors were found to be the most frequent (greater than 50.0%): obesity (100%), altered contractility (75.0%), altered preload (75.0%), fatigue (55.0%) and episodic energy demands and uncontrolled (55.0%). Changes related to the two groups were as follows: factors related to clinical status due to surgery and post-operative condition and subject to control or change (altered contractility, altered heart rate, altered preload, altered afterload, respiratory muscle fatigue, anxiety, fatigue, imbalance between supply and demand of oxygen, bed rest) and factors resulting from the preoperative condition of the patient (diabetes mellitus, hypertension and smoking). The related factors identified in the research participants were subject to control and guaranteed the creation of active nursing care plans.

The relative frequency of the risk factors ranged between 5% and 45%. The highest incidence (45%) was a previous history of intolerance to and inexperience with activity. A deconditioned state and the presence of circulatory problems closely followed at 35%. These risk factors were related to the previous history of the patient, especially an inactive condition. Respiratory problems had a lower frequency at 5%; these problems can be prevented preoperatively and, with greater focus, postoperatively. The risk factors showed similar incidences in both sexes.

The age group with the highest incidence of identified nursing diagnoses of the cardiovascular and pulmonary response class was predominantly the young (25 to 35 years old). For this age group, the diagnosis of activity intolerance risk presented most frequently, at 90%. Decreased cardiac output and ineffective peripheral tissue perfusion also presented substantial incidence rates of 73.3%. Ineffective breathing pattern (76.9%), activity intolerance (66.7%), dysfunctional response to weaning (63.6%) and impaired spontaneous ventilation (44.4%) had lower frequencies for this group; however, the incidences were higher compared with the other age groups.

DISCUSSION

Obesity has reached epidemic levels, and bariatric surgery appears to be an increasingly prevalent intervention. Projections are that 51.5% of adults will be obese by 2030, and 100% of adults will be obese in 2102[8]. As this epidemic spreads, the number of bariatric surgeries will increase.

The rate of bariatric surgeries increased from 26.8 to 43.7 per 100,000 covered lives between 2001 and 2006. In 2006, the estimated frequency of bariatric surgery was approximately 180,000, and it is expected to increase gradually. Several studies have demonstrated the safety and efficacy of bariatric surgery in the treatment of morbid obesity, as indicated by a meta-analysis in 2005[9-10].

Nurses should know understand surgical proposals, the advantages and disadvantages of the different techniques, and the triggers of each because nursing care is fundamental in the postoperative recovery of the patient[11].

In this study, the majority of cases did not receive a diagnosis of hypertension; however, one must consider that these data are not common in people who are overweight and have not been assessed in this way in the literature. In contrast, the prevalence of overweight in the general population has contributed to the increase in diseases that are currently the most frequent causes of death. Therefore, the attention of nurses to the realms of primary and/or secondary health is important.

Table 2 - Identified cases of specific nursing diagnoses by gender with related factors and risk factors for each diagnosis for patients undergoing bariatric surgery - Fortaleza, Brazil, 2010

Variable	Total cases n (%)	Gender	
		Male n (%)	Female n (%)
Nursing Diagnosis: Diminished cardiac output	15 (75.0)	6 (40.0)	9 (60.0)
Altered contractility	15 (75.0)	6 (40.0)	9 (60.0)
Altered cardiac frequency	3 (15.0)	1 (33.3)	2 (66.7)
Altered precharge	15 (75.0)	2 (20.0)	8 (80.0)
Altered postcharge	10 (50.0)	6 (40.0)	9 (60.0)
Nursing Diagnosis: Ineffective peripheral tissue perfusion	15 (75.0)	6 (40.0)	9 (60.0)
Sedentary lifestyle	9 (45.0)	4 (44.4)	6 (55.6)
Diabetes mellitus	2 (10.0)	1 (50.0)	1 (1.0)
Hypertension	9 (45.0)	4 (44.4)	5 (55.6)
Smoking	8 (40.0)	2 (25.0)	6 (75.0)
Nursing Diagnosis: Ineffective respiratory average	13 (65.0)	6 (46.2)	7 (53.8)
Fatigue of the respiratory muscles	9 (45.0)	3 (33.3)	6 (66.7)
Anxiety	2 (10.0)	0 (0.0)	2 (100.0)
Fatigue	11 (55.0)	6 (54.6)	5 (45.4)
Obesity	20 (100.0)	8 (40.0)	12 (60.0)
Nursing Diagnosis: Dysfunctional response to ventilatory weaning	11 (55.0)	6 (54.6)	5 (45.4)
Anxiety	2 (10.0)	0 (0.0)	2 (100.0)
Nursing Diagnosis: Risk of intolerance to activities	10 (50.0)	4 (40.0)	6 (60.0)
Deconditioned physical state	7 (35.0)	3 (42.9)	4 (57.1)
Previous history of intolerance	9 (45.0)	4 (44.4)	5 (55.6)
Inexperience with activities	9 (45.0)	4 (44.4)	5 (55.6)
Presence of circulatory problems	7 (35.0)	4 (57.1)	3 (42.9)
Presence of respiratory problems	1 (5.0)	0 (0.0)	1 (100.0)
Nursing Diagnosis: Impaired spontaneous ventilation	9 (45.0)	3 (33.3)	6 (66.7)
Fatigue of the respiratory muscles	9 (45.0)	3 (33.3)	6 (66.7)
Nursing Diagnosis: Intolerance to activities	9 (45.0)	4 (44.4)	5 (55.6)
Imbalance between oxygen supply and demand	8 (40.0)	3 (37.5)	5 (62.5)
Sedentary lifestyle	9 (45.0)	4 (44.4)	6 (55.6)
Bed rest	9 (45.0)	4 (44.4)	5(55.6)

Note: (n = 20)
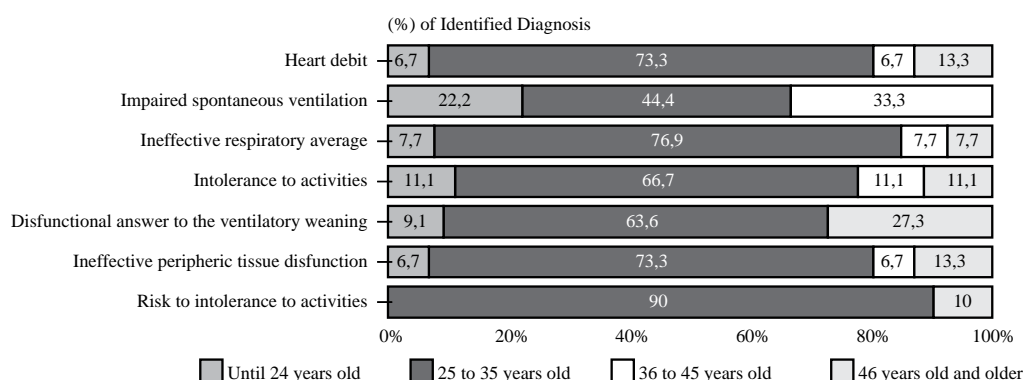
Figure 1 - Percentage distributions of the nursing diagnoses according to age group

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A diagnosis of decreased cardiac output, defined as an insufficient amount of blood pumped by the heart to meet the metabolic demands body[6], was very frequent in this study. Factors related to altered contractility and pre-load changes showed the same statistical frequency. It is possible that the identification of these diagnoses is related to the unstable hemodynamic condition of the patient in the immediate postoperative period[12].

Risk factors such increased BMI and age predisposed patients to cardiovascular comorbidities because a high BMI increases the circulating blood volume and cardiac output with consequent ventricular hypertrophy, leading to more severe heart problems such as cell death, infarction and contractile dysfunction[13].

Obese people have one or more comorbidities such as dyslipidemia, sleep apnea, type 2 diabetes and heart disease. The conditions associated with obesity significantly increase the length of hospital stay, mortality and health care costs. Moreover, psychosocial factors such as general welfare and social stigmatization are also affected[14-15].

Ineffective peripheral tissue perfusion refers to reduced blood flow to the periphery, which can compromise health[4]. The related factors in this study were diabetes mellitus, hypertension and smoking. In bariatric patients, this diagnosis was present in a significant number of the sample population.

Regarding the diagnosis of pulmonary class, there was an emphasis on an ineffective breathing pattern, which occurs when inspiration and/or expiration does not provide adequate ventilation. The related factors in this study were respiratory muscle fatigue, obesity, imbalance between oxygen demand and supply and anxiety. There are several factors that affect the respiratory mechanics of obese patients, which result in reduced volumes and lung capacities (mainly the expiratory reserve volume and functional residual capacity). Excess adipose tissue causes mechanical compression of the diaphragm, lungs and chest wall, causing severe restriction of the lungs. Obesity promotes further reductions in total respiratory compliance and increased airway resistance.

Due to the ineffectiveness of the respiratory muscles, their strength and endurance can be reduced when compared to those of non-obese patients. These factors motivate overload, increasing the work of breathing, oxygen consumption and energy cost of breathing. Thus, when undergoing upper abdominal surgery one would expect that obese individuals are more susceptible to pulmonary complications from anesthesia and the surgical procedure itself[16].

Moreover, because upper abdominal surgery (CAA) in non-obese patients often leads to postoperative changes in respiratory mechanics, respiratory patterns, gas exchange and pulmonary defense mechanisms resulting in the onset of postoperative pulmonary complications

(PPC)[16], it seemed reasonable to expect that these changes would be more intense in morbidly obese patients undergoing bariatric surgery, which may also lead to a higher incidence of postoperative pulmonary complications.

Due to the increase in the number of bariatric surgeries, the flow of obese patients in the ICU has increased and has become a challenge in clinical practice because such patients experience various physiological changes. Knowing these particularities helps to promote improved care because the postoperative complications are numerous and challenging, including intubation, aspiration, hypoxemia, myocardial infarction, hyperglycemia, acute renal failure, hemorrhage, wound infection, dehiscence, nerve injury, urinary tract infections, deep vein thrombosis, pulmonary embolism, and respiratory failure[13,17-18]. Moreover, a diagnosis of activity intolerance risk or a history of activity intolerance or sedentary lifestyle can lead to circulatory problems, prolonged surgical procedures and/or immobilization.

Bariatric surgery has become an accepted approach to weight control and has the added benefit of solving various comorbidities. However, nursing care throughout the perioperative period contributes significantly to the positive results of the surgery. During the selection process, nurses can explain the necessary diagnostic tests and their justifications and conduct a complete nursing history to obtain relevant information. It is important to start following the guidelines for the patient and family in the preoperative period because bariatric surgery causes major changes, including weight loss and changes in eating patterns, body image and the perceptions of others. Thus, it is evident that the patient and family need to go home with specific information about drinking and eating, taking care of drainage tubes, skin and wound care, ambulation, self-care, and signs and symptoms that require medical attention and nursing. At the same time, nurses should assess the psychological condition of the patient in his new way of life[19].

It is important that nurses develop customer surveys of bariatric patients and publish their results because the work of these professionals is crucial in this important moment in the life of a candidate for bariatric surgery. It is through the nursing process that diagnoses and interventions are identified to prevent possible complications. Tied to this fact, there is international consensus that studies on diagnosis are necessary for the improvement of nursing care because they are the basis for the choice of interventions by nurses[6].

The systematization of nursing (SAE) may lead to questioning the risks of surgery and the development of care plans for patients in the perioperative period of bariatric surgery. The nursing diagnoses found in this phase, regardless of class, can highlight specifics that need to be watched for by the nurses who are on service. Therefore, adopting the SAE for these patients should become

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common practice, especially because this therapeutic modality should be increasingly frequent in the context of the obesity epidemic.

CONCLUSION

The results found in this study identified a young population in both sexes. The majority of the sample had a diagnosis of morbid obesity prior to surgery, and there was no significant difference regarding gender or whether the patient was a smoker, hypertensive, had been diagnosed with hypercholesterolemia or made use of a brace. There was a statistically significant association between being diabetic and having a diagnosis of morbid obesity.

The data reviewed in this study confirmed the need for strategic planning for the systematization of nursing care in the postoperative period following bariatric surgery for obese patients because of the high statistical frequency of nursing diagnoses in this population. We suggest that the identification of these diagnoses should be understood as routine work, with a view toward ensuring individualized care to meet the real needs of the patient.

It is known that obesity is associated with changes in cardiovascular and pulmonary function. It is therefore important that the nursing staff monitor the progress of patients after surgery, especially during the immediate postoperative period, which is the period during which they encounter the most serious complications: pulmonary embolism, deep vein thrombosis and atelectasis.

It is vital to implement the nursing process to identify nursing diagnoses and prepare care plans. Nursing care is essential during the postoperative period because it is the first moment of the patient's adaptation to the new lifestyle.

Of particular importance is the identification of empirical indicators that can be applied consistently and that will result in better care plans and direct a program of health education to thus better prepare candidates for bariatric surgery or perhaps establish protocols for screening patients for the procedure.

Among the limitations of this study, the most salient is the small sample size. Therefore, further investigations are recommended to improve the nursing practice needed to provide comprehensive care to this type of client.

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