

Intraoperative nursing in bariatric surgery: Integrative review

ENFERMAGEM TRANSOPERATÓRIA NAS CIRURGIAS DE REDUÇÃO DE PESO:
REVISÃO INTEGRATIVA DA LITERATURA

ENFERMERÍA INTRAOPERATORIA EN CIRUGÍA BARIÁTRICA: REVISIÓN
INTEGRADORA DE LA LITERATURA

Renata Tavares Franco Rodrigues¹, Rúbia Aparecida Lacerda², Rita Burgos Leite³, Kazuko Uchikawa Graziano⁴, Katia Grillo Padilha⁵

ABSTRACT

Integrative review of scientific literature study to identify and analyze the production of knowledge about clinical advances in security needs of patients during the intraoperative period of bariatric surgery. It was based on 12 selected studies in electronic databases, with descriptors previously defined. Except for two studies, the specific content of this production was composed of the general context of perioperative care. The studies highlight the possible state of the art of nursing activities on these needs, which are well established, including recommendations by several guidelines. However, they are fundamentally based on the science of traditional clinical practice through the development of rational judgments issued by experts. It concludes for the relevance of primary studies to evaluate the impact and resolution of the identified resources to answer those needs, as well as improving or generating other innovative features and identification of new needs.

DESCRIPTORS

Bariatric surgery
Intraoperative care
Perioperative nursing
Review

RESUMO

Estudo de revisão integrativa da literatura científica com a finalidade de identificar e analisar a produção de conhecimento sobre avanços clínicos em necessidades de segurança de pacientes no período transoperatório de cirurgia bariátrica, baseada em 12 estudos selecionados em bases eletrônicas, a partir de descritores previamente definidos. Com exceção de dois estudos, o conteúdo específico dessa produção compunha o contexto geral da assistência perioperatória. A análise dos estudos possibilitou evidenciar o estado da arte da atuação da enfermagem sobre essas necessidades, as quais já estão bem estabelecidas, inclusive por vários guias de recomendações, contudo, fundamentalmente baseadas na ciência da prática clínica tradicional, por meio da elaboração de juízos racionais teóricos de especialistas. Conclui-se pela pertinência de realização de estudos primários para avaliar, principalmente, impacto e resolutividade dos recursos identificados para atendimento dessas necessidades, assim como melhoria ou geração de outros recursos inovadores e identificação de novas necessidades.

DESCRITORES

Cirurgia bariátrica
Cuidados intraoperatórios
Enfermagem perioperatória
Revisão

RESUMEN

Investigación de revisión integradora de la literatura con el fin de identificar y analizar la producción del conocimiento sobre los avances clínicos en las necesidades de seguridad de los pacientes durante el período transoperatorio de la cirugía bariátrica. Está basado en 12 estudios seleccionados en bases de datos electrónicas, con descriptores definidos. A excepción de dos estudios, el contenido de esta producción se compuso por el contexto general de los cuidados perioperatorios. El análisis de los estudios ha puesto en evidencia el estado del arte de la actuación de enfermería sobre esas necesidades, que ya están bien establecidas. Sin embargo, este análisis está basado principalmente en la ciencia de la práctica clínica tradicional a través de la elaboración de juicios teóricos de expertos. Se concluye que estudios primarios son necesarios para evaluar el impacto y la resolución de los recursos identificados para satisfacer las necesidades de seguridad de estos pacientes.

DESCRIPTORES

Cirugía bariátrica
Cuidados intraoperatorios
Enfermería perioperatoria
Revisión

¹RN. Master student of the Graduate Program in Adult Health, University of São Paulo School of Nursing. São Paulo, SP, Brazil. tavares_re@yahoo.com.br
²RN. Associate Professor of the Medical-Surgical Nursing Department, University of São Paulo School of Nursing. São Paulo, SP, Brazil. rlacerda@usp.br
³RN. Ph.D., Professor of the Medical-Surgical Nursing Department, University of São Paulo School of Nursing. São Paulo, SP, Brazil. rboleite@usp.br
⁴RN. Full Professor of the Medical-Surgical Nursing Department, University of São Paulo School of Nursing. São Paulo, SP, Brazil. kugrazia@usp.br
⁵RN. Full Professor of the Medical-Surgical Nursing Department, University of São Paulo School of Nursing. São Paulo, SP, Brazil. kgpadih@usp.br

INTRODUCTION

As a chronic disease, obesity has lately been labeled as a relevant global phenomenon in the public health area. The prevalence of the disease doubled over the last 30 years and it is now being considered as the 21st century epidemics⁽¹⁾. In 2008, the WHO estimated that nearly 2.3 billion adults were overweight, and over 700 million people could be considered as obese in the world⁽²⁾. The enhancement of such phenomenon is also observed in Brazil. In the last 30 years, the country left historical rates of malnutrition behind in order to play a prominent role in the world obesity ranking. Recent information disclosed by the Ministry of Health points out that overweight problems affect more than 50% of the Brazilian population⁽³⁾.

In face of such global epidemics, the resulting impacts are not only bound to the health risks experienced by those who suffer from the disease, but also to the costs related to the direct (prevention actions, diagnosis and treatment) and indirect (morbidity, mortality, reduced productivity due to activity restrictions, absenteeism and loss of future income as a result of premature deaths) care.

In addition to genetic or hereditary causes, no one can deny the social determination involved in the occurrence of the disease. Allied to the current sedentarism, the contemporary society's lifestyle has settled unfavorable dietary standards to the health of populations at large⁽⁴⁾. Add to that equation the advancement of anxiety and depression originated from a distressed and stressing daily life, the demands for higher and higher performance, competition, especially in the field of productive activities, and also the permissive stimulus toward an unrestrained consumerism, which has in edible products one of its highlights.

Obesity is now included in the agendas of governmental healthcare policies. In 2006, the Brazilian Ministry of Health published the 12th edition of the Primary Health Care Handbook, specifically addressing such issue⁽⁴⁾. Nonetheless, preventive measures are still far from presenting positive results, especially in populations that have reached severe obesity levels. One of the most employed resources, the weight loss surgery, technically named gastropasty or bariatric surgery, has exponentially grown in the country. Between 2001 and 2010, the figures of this surgery observed only in hospitals accredited by the Brazilian Unified Health System (Sistema Único de Saúde - SUS) increased nearly 800%. In the same period, private institutions recorded lower figures – around 300%; however, their absolute numbers outdo in 13 times the numbers seen in the SUS. These figures caused Brazil to carry out 64.4 thousand surgeries in 2010, leaving only the US ahead, where 300 thousand surgical interventions of such type are performed annually⁽³⁾.

Despite the relevance of the bariatric surgery in the improvement of the life conditions of needy populations, it is not at all a risk-free medical intervention. Obesity, as well as its consequent comorbidities, is constituted by a group of patients that presents special needs regarding any other type of surgery besides the bariatric procedure. Such conditions require specific safety actions to be taken toward a secure proceeding, beginning with the definition of criteria and finishing with the provision of adequate human and material resources throughout the perioperative period⁽⁵⁾.

Led by the WHO, a world movement in search of health care safety measures – named *Global Challenges* – has been seen in recent years. The challenge in 2007-2008 was related to the *Safe Surgery Saves Lives*⁽⁶⁾ initiative. Although this action has already been implemented in hospitals all around the world, it is aimed at surgeries at large. The empirical practice still lacks human and material resources that are able to both identify and assist specific special needs, among them the weight loss surgeries.

In spite of the relevance of the nursing performance toward the safety of patients in the perioperative period, it is not yet widely recognized whether and in what ways the practice has been gathering knowledge aimed to favor bariatric surgery patients. The objective of this present study was to identify and analyze the production of knowledge on the clinical advancements regarding a nursing care pattern that can meet the needs of obese bariatric surgery patients in their intraoperative period. The intraoperative period starts counting from the time the patient is admitted into the surgical unit, includes his length of stay in and discharge from the surgery room, and is finalized after his transference to the anaesthetic recovery center⁽⁷⁾.

The empirical practice still lacks human and material resources that are able to both identify and assist specific special needs, among them the weight loss surgeries.

METHOD

This study is an Integrative Review of scientific literature. The applied methodology presents a broad scope of purposes⁽⁸⁻¹⁴⁾. Among them, predominantly aimed to the goals of the research, we seek to draw synthetic evidences that can intervene or improve care practices, as well as identify knowledge gaps that indicate the need of further investigations and build an agenda of research priorities.

Due to its wide array of purposes, the publications to be inserted here can eventually embody other types of studies, including theoretical and empirical ones, in addition to primary research. In the integrative review, whenever a broader comprehension of any given phenomenon is sought, pertaining issues do not elicit quantitative responses, as opposed to the systematic review. Notwithstanding, in accordance with Ganong⁽⁹⁾, the establishment of a rigorous analysis requires indispensable stages to be

met toward the development of such type of review. The stages of this present review were backed-up by the following question, *Are there any evidences of clinical advancements in the nursing production toward the safety needs of bariatric surgery patients in the intraoperative period?*

In order to determine the studies to be analyzed, inclusion criteria corresponded to those of scientific publications available in electronic databases of health literature on bariatric surgery in adults, in any language and period, related to the nursing safety aspects in the intraoperative period, comprised of primary studies, recommendations, experience reports and critical reflections on the issue.

Exclusion criteria refer to unrecorded situations, repeated publications and other types of unavailable publication in those electronic sources. We see a restriction here. It is highly probable that the specific knowledge one may be searching for about bariatric surgery can be located in books, book chapters, theses and ongoing or concluded dissertations, studies published in the annals of scientific events and other types of publications related to surgery at large; however, it is definitely not easily identifiable, both nationally and internationally.

The following sources were employed in this research: electronic databases massively used in review studies (PubMed/ MEDLINE, CINAHL); the Latinamerican database (LILACS); the Brazilian database (SciELO); and three databases that publish review-related finished studies - one general database (the Cochrane Library) and two databases that gather nursing-based reviews (Moby's Nursing Consult and The Joanna Briggs Institute). Another applied source was comprised of other bibliographic references inserted into the searched publications that could somehow be connected to the issue of this present research.

The search was carried out between January and April 2012. The used indexed and non-indexed descriptors concerning the issue were: bariatric surgery, gastroplasty, weight loss surgery, and gastric reduction surgery. The used indexed and non-indexed descriptors concerning the nursing interventions were: nursing, nursing care, perioperative nursing, and intraoperative care. Control group and outcome-related descriptors were not used. Comparative and non-comparative primary studies, as well as theoretical studies, were taken into account, as the research aimed to reach not only the results of the interventions, but also the produced knowledge.

Chart 1 presents the search strategy.

Chart 1 – Results of the search in the electronic literature databases - São Paulo, 2012

Descriptors	Database								
	Pub Med	Med line	Lilacs	Scielo	CINAHL	Cochrane	Nursing Consult	Joanna Briggs	Total
bariatric surgery OR gastroplasty OR weight loss surgery OR gastric reduction surgery AND perioperative nursing	17	0	1	1	132	0	0	0	151
bariatric surgery OR gastroplasty OR weight loss surgery OR gastric reduction surgery AND intraoperative nursing	0	0	0	0	23	0	0	0	23
bariatric surgery OR gastroplasty OR weight loss surgery OR gastric reduction surgery AND nursing	125	36	3	1	187	11	0	0	363
bariatric surgery OR gastroplasty OR weight loss surgery OR gastric reduction surgery AND nursing care	12	0	1	1	27	11	0	0	52
Total	154	36	5	3	369	22	0	0	589

The selection process of the publications dealt with in the search went through three steps, namely: 1) repeated publications in the database were excluded; 2) the title and the abstract of remaining publications were read - those texts that clearly did not meet the demand of the review were excluded; and 3) each pertaining full-length publication was exhaustively read and included as part of

the research – those who ultimately did not meet the demand of the review were excluded. Steps 2 and 3 were simultaneously carried out by two researchers.

Data were displayed in two stages: 1) selection of publications in their specific databases; and 2) analysis of included studies related to their data, type of publication,

methodological aspects, scopes, content extraction of the nursing practice in the intraoperative period, and assessment of the level of evidence. Aiming to support this assessment, we decided to employ the Melnyk, Fineout-Overholt evidence-based diagram⁽¹⁵⁾ aimed to address nursing-related and other general health issues. The data analysis process led to a discussion about the existence of types and conditions for the nursing performance in the intraoperative period following a bariatric surgery, as well as whether they were sufficient or lacked evidences, left questionable gaps or were in need of a new investigative agenda.

The publications included in the analysis were given alphanumeric codes: letter S (from Study) and numbers from 1 through 12 (the sequence in which they were read, selected and finally included in the research).

RESULTS

In the first stage, 589 publications were found – 369 in the CINAHL database (62.64%) and 154 in the PubMed

database (26.14%), followed by MEDLINE with 36 (6.11%), Cochrane with 22 (3.7%), LILACS with five (0.8%) and Scielo with three (0.5%). No publication was found in the Nursing Consult and Joanna Briggs databases.

In the second phase, following the exclusion of repeated publications, the number of publications was reduced to 130 out of the total achieved amount (589). In the reading process of titles and abstracts, the amount dropped to 31. On this stage, texts that only addressed the surgical technique or the postoperative period, or that lacked specific nursing production on the issue, were excluded.

In the third stage, following the full-length reading of the studies, only 12 publications were definitely included in the research. These studies were codified from S1 through S12, as they approached contents pertaining to the intra-operative period. From this universe, 11 (91.6%) studies were found in American electronic databases published in the English language from 2003 onwards, and one (8.3%) was produced in Brazil, in the Portuguese language (Chart 2).

Chart 2 –Studies included according to publication data sets - São Paulo, 2012

- E1 - Association of perioperative registered nurses (AORN). Bariatric surgery Guideline. *AORN J.* 2004;79(5):1026-52.
- E2 - Ide P, Farber ES, Lautz D. Perioperative nursing care of the bariatric surgical patient. *AORN J.* 2008;88(1):30-58.
- E3 - Tanaka DS, Peniche ACG. Assistência ao paciente obeso mórbido submetido à cirurgia bariátrica: dificuldades do enfermeiro. *Acta Paul Enfer.* 2009; 22(5):618-23.
- E4 - Mulligan AT, McNamara AM, Boulton HW, Trainor LS, Raiano C, Mullen A. Best practice updates for nursing care in weight loss surgery. *Obesity.* 2009;17(5):895-900.
- E5 - Walsh A, Albano H, Jones DB. A perioperative team approach to treating patients undergoing laparoscopic bariatric surgery. *AORN J.* 2008;88(1):59-64.
- E6 - Mulligan A, Young LS, Randall S, Raiano C, Velardo P, Breen C, Bushee L. Best Practices for perioperative nursing care for weight loss surgery patients. *Obes Res.* 2005;13(2):267-73.
- E7 - Garza SF. Bariatric weight loss surgery: patient education, preparation and follow-up. *Crit Care Nurs Q.* 2003;26(2):101-4.
- E8 - Lautz DB, Jiser ME, Kelly JJ, Shikora SA, Partridge SK, Romanelli JR, Cella RJ, Ryan JP. An update on best practice guidelines for specialized facilities and resources necessary for weight loss surgical programs. *Obesity.* 2009;17(5):911-7.
- E9 - McGlinch BP, Que FG, Nelson JL, Wroblewski DM, Grant JE, Collazo-Clavell ML. Perioperative care of patients undergoing bariatric surgery. *Mayo Clin Proc.* 2006;81(10suppl):S25-S33.
- E10 - Farshad AMD; Robert BMD. Assessment and Management of the Obese Patient. *Critical Care Medicine.* 2004;32(4Supl):S87-S91.
- E11 - Owens TM. Bariatric surgery risks, benefits and care of the morbidly obese. *Nurs Clin North Am.* 2006;41:249-263.
- E12 - Thompson J, Bordi S, Boytim M, Elisha S, Heiner J, Nagelhout J. Anesthesia Case Management for Bariatric Surgery. *AANA Journal.* 2011;79(2):147-60.

The majority of these studies (seven, or 56.6%) is comprised of opinions, reflections and/or information (S2, S5, S7, S9, S10, S11, S12), followed by four (33.3%) researches (S3, S4, S6, S8), and four (33.3%) recommendation guidelines or recommendation updates (S1, S4, S6, S8). Composed of guidelines and recommendation updates, studies S3, S4 and S8 were also considered as researches due to the systematic search methodology employed by the

researchers, and finally ranked in levels of evidence. Although Study S11 also carried out a literature review, it did not disclose the employed methodology; therefore, it was included as a simple knowledge update review. Study S3, on its turn, was found to be a primary research addressed by a descriptive exploratory outline. Chart 3 briefly shows the contents of those publications regarding their scopes, types of approach and conclusions.

Chart 3 – Included studies, according to their scopes, contents and types of approach - São Paulo, 2012

E1 – AORN Bariatric Surgery Guideline, 2004.
<p>This extensive document was produced by the Association of Perioperative Registered Nurses (AORN). The paper intends to serve as a recommendation guideline for nurses and other professionals who work with morbid obese patients in the perioperative period. The guideline is based on available research and in the opinions of experts and was developed in order to aid professionals toward the creation and maintenance of an optimum care-giving environment for patients assigned to weight loss surgery. The study's content is presented in four parts: I – Global overview. It defines the terms related to such treatment, describing the epidemiologic, physiopathologic and comorbidity aspects of the affected population, as well as the historical evolution record of the surgeries, criteria for patient selection processes, surgical techniques, and expected results. II – Application in the Nursing Process. It recommends the application of a standardized vocabulary aimed to the assessment, diagnosis and results of the surgery, as well as planning, pre, intra and postoperative implementation processes and result assessment. III – Development of a Bariatric Surgery Program. It justifies its relevance and impact by describing the various phases of the procedure, including the necessary human and material resources, etc. IV – Conclusion. It confirms the objective of the guideline and its advantages toward the development of specific policies, procedures and protocols concerning the bariatric surgery and the care of morbid obese patients.</p>
E2 - Perioperative Nursing Care of the Bariatric Surgical Patient, 2008.
<p>This extensive AORN paper was directed to continuing education processes and addresses several nursing-related care-giving aspects for bariatric surgery patients. It begins by defining terms, such as obesity epidemics, associated risks, historical record of the bariatric surgery, most used techniques and their benefits and disadvantages, as well as criteria for the selection of patients. As for the care-giving process, the document includes several actions related to the initial assessment and preoperative preparation process, anaesthesia, intra-operative period, potential complications, anaesthetic recovery, admittance unit, diet, medication instructions, and surgery results. All interventions include physical and psychological care. On the final pages, the paper makes available an assessment examination to the course, counting on several questions related to the content dealt with by the document.</p>
E3 - Assistência ao Paciente Obeso Mórbido submetido à Cirurgia Bariátrica: Dificuldades do Enfermeiro, 2009.
<p>This exploratory, descriptive, quantitative-based research was aimed to identify the difficulties surgical center nurses have toward assisting bariatric surgeries of morbid obese patients in the intraoperative period by means of a questionnaire composed of open and closed questions that were directed to 750 nurses with long experience in surgical centers and perioperative care to obese patients during a Brazilian Congress of Surgical Center Nurses, Anaesthetic Recovery and Material Center. The final universe of nurses who responded to the questionnaire was segmented by gender (97% females), age (average of 37 years old), academic history (70% for over five years), post-graduation degree (47%), type of institution (61% private), and experience in assisting bariatric surgery procedures (63%). The difficulties related to the physical, material and equipment-based areas refer to the absence of the following special resources: dimension of the surgery room (48), transfer stretcher (46), operating table and accessories (41), boot gaiter (41), anaesthesia materials (41), and safety belt (37). The difficulties related to the intraoperative care were composed of: transference, mobilization, positioning and displacement of the patient (42), lack of equipments and special materials (23), lack of psychological proceedings (3), vesical catheterization technique (3), and patient satisfaction (3). The document also presents, among other aspects, the lack of coverage of used special resources by health insurance plans, and the need of improvisation during the procedures. Besides the difficulties pertaining to the area of the physical and material resources, the paper also addresses the insufficiency of the theoretical basis for nurses to assist the special needs of these types of patients, so that they can be offered comfort, physical and emotional security.</p>
E4 - Best Practice Updates for Nursing Care in Weight Loss Surgery, 2009.
<p>The research, in the English language, is defined in the scientific literature as a systematic search, and aims to update a series of best practice recommendations based upon the nursing care in the bariatric surgery regarding the following areas: 1) communication and interdisciplinary planning; 2) perioperative management; 3) prevention of eventual complications; 4) perianaesthesia; 5) postoperative analgesia; 6) team and patient-related safety; and 7) post-discharge follow-up. The search took into account publications produced between 2004 and 2007 in the PubMed, MEDLINE and Cochrane Library databases based on the following descriptors: weight loss surgery; perioperative, preoperative and postoperative nursing; anaesthesia; and post-discharge follow-up. The paper applied a classification system to the levels of evidence (A, B, C, D). The levels of evidence were drawn from over 54 studies. The 46 most relevant of them, including a randomized controlled clinical essay, prospective and retrospective cohort studies, meta-analyses, case studies, systematic reviews and opinions of experts, were then thoroughly revised. Among the recommendations presented for each of the aspects dealt with in the document, however, none was based on a level A evidence, only one showed a level B, and the others displayed both a level C and mainly a level D evidence. The leading recommendation level (B) was related to the employment of an ergonomics program that could include a special patient transfer device. The bibliographic sources that grounded the recommendations were not acknowledged.</p>
E5 - A Perioperative Team Approach to Treating Patients Undergoing Laparoscopic Bariatric Surgery, 2008.
<p>This opinion-based article focuses on the multiprofessional team aimed to care for patients who had undergone endoscopic bariatric surgeries. The paper's introduction describes the aspects of the surgery, as well as the criteria applied for its recommendation. Next, the document deals with team-related aspects and its relevance toward the guidance and continuous care for patients, establishing that the team must be comprised of a bariatric surgeon, a nutritionist, bariatric nurses, a psychiatrist, an anaesthesiologist, a surgery room circulating nurse, and a surgical technologist. The paper also elaborates on the relevance of the bariatric nurse and the performance stages of the team, namely: the coordination of the care-giving process; elaboration and provision of the educational guideline to the patient, including the presence of a checklist; need of special accommodations; elaboration and follow-up of perioperative routines by a nurse who holds abilities such as planning, support, management and follow-up in all care-based phases, including the need of providing physical accommodations, specific pre, intra and postoperative care, strong communication and education skills toward providing patients with high-quality, safe and careful care aiming at positive outcomes.</p>

Continued...

...Continuation

E6-Best Practices for Perioperative Nursing Care for Weight Loss Surgery Patients, 2005.
This systematic review of the scientific literature was aimed to describe the exclusive responsibilities of the nursing practice involved in the care of bariatric surgery patients, as well as develop evidence-based guidelines toward a safe care. The search was restricted to specific nursing periodicals published between 1985 and 2004 in the MEDLINE and CINAHL databases, including 16 pertinent articles that were used within the context of recommendations. The evidence quality of the studies was classified according to the standard employed by the US Preventive Task Force (1996) Guide to Clinical Preventive Services, which takes 4 levels (A, B, C, D) into account. Two considered studies corresponded to randomized clinical essays; however, no evidence based on nursing perioperative care research was obtained, as all elaborated recommendations were ranked in level D in the following areas: patient safety; preoperative care; circulating nurse in the preoperative environment; perioperative care; surgery room; anaesthetic recovery room; discharge and follow-up; strategies toward reducing medical malpractices; accreditation; and professional improvement and care systems. The paper also elaborates on adequate mechanisms and postures in order to prevent the team of acquiring occupational diseases. Although the recommendations did not lead to any evidence, the document reflexively discusses how important it is for the nurse to be trained toward recognizing physical, medical and psychosocial needs of patients, thus identifying future fields of research.
E7 - Bariatric Weight Loss Surgery, 2003.
This opinion-based article concludes that the education and comprehension of the patient on each phase of the process is the key for the success of the bariatric surgery. It reports on the preparation of the surgical and nursing teams, the needs for the execution of the surgery, and also on the quality of life of the patient following the discharge, including the follow-up during medical appointments, dietary guidelines, lab exams, and participation in support groups aimed to exchange information on the various phases of the process of maintaining the weight loss.
E8 - An Update on Best Practice Guideline for Specialized Facilities and Resources Necessary for Weight loss Surgical Programs, 2009.
This research was defined as a systematic search in the scientific literature and was aimed to update evidence-based best practice guidelines regarding specialized installations and weight loss-related resources. The paper focuses on the surgery's long-term results and also on patient safety. The publications were produced between 2004 and 2007 in the PubMed, MELINE and Cochrane Library databases, based on the following descriptors: weight loss surgery; and equipments, installations and resources. The levels of evidence (A, B, C, D) were based on the Lehman Center Weight Loss Surgery Expert Panel. Recommendations include: training of the multidisciplinary team, equipments, surgery room, radiology devices, physical layout, economic investment, reduction of occupational risks, reduction of medical malpractice, and creation of quality indicators. All recommendations were based on level of evidence D. To sum up, the paper recognizes that some restrictions found in the review need to be properly addressed in future research.
E9 - Perioperative Care of Patients Undergoing Bariatric Surgery, 2006.
This informative study was carried out by means of a review of the multidisciplinary management provided to bariatric surgery patients admitted into the Mayo Clinic. The paper elaborates on: a) pre-operative medical assessment; b) the role of obesity in perioperative risks, such as the administration of intravenous fluids, physiologic responses of the pneumoperitoneum during laparoscopic procedures, anaesthetic considerations, peripheric nerve injuries and risk of thrombosis; c) morbidity and perioperative mortality, such as patient-related factors, cardiopulmonary complications, surgery-related factors, complication of the surgical wound, hernia, thrombotic disorders, death, skills of the surgeon, and installations; d) nursing care; and e) nutritional therapy. The document concludes that specific considerations toward caring for these patients ought to be made, aiming to decrease the risks of complications and reflecting on the multidisciplinary participation in the planned care, preparation, communication and coordination of services.
E10 - Assesment and Management of the Obese Patient, 2004.
This update study was aimed to provide professionals with subsidies regarding the assessment and management of obese bariatric surgery patients, in order to reduce perioperative risks and complications. The paper is based on a literature search carried out in the MEDLINE database, applying the following descriptors: perioperative care; and morbid obesity. The document elaborates on the preoperative assessment of obese patients, intraoperative and postoperative management, as well as surgical techniques applied in the treatment of severe obesity. It also elaborates on the challenges of managing such care practices and the need of a planned multidisciplinary approach comprised of a surgeon, an anaesthesiologist, an assisting doctor, and a nursing team so that an optimum result is achieved in all phases of the treatment process.
E11 - Bariatric Surgery Risks, Benefits, and Care of the Morbidly Obese, 2006.
This informative/reflective study is aimed to indicate the causes, the treatment and the perioperative nursing care toward severely obese patients. The paper elaborates on the following issues: obesity as the major emerging public health crisis, counting on the presentation of epidemiologic data on its occurrence and describing the comorbidities of the disease; surgical technique alternatives, developing their historical evolution and procedures; the benefits of the bariatric surgery; and perioperative nursing care. The document also points out, among other aspects, the relevance and the responsibility of the nursing practice, whose performance must include competences and skills aimed to meet special clinical, psychological and surgical needs.
E12 - Anesthesia Case Management for Bariatric Surgery, 2011.
The study is a compilation of a course elaborated by the American Association of Nurse Anesthetists aimed to improve professional care-giving practices toward patients during bariatric surgeries. The document addresses information on physiopathology, drug pharmacology and anaesthetics offered to obese patients, surgical procedure, types of surgical techniques, and anaesthesia management.

Besides elaborating on the epidemiologic aspects of obesity and comorbidities, weight loss surgery and the criteria for the recommendation of the surgery, this brief presentation of the contents of the studies included in this present research shows that the vast majority of the papers also seeks to identify risks and recommend specific nursing care directed to the whole perioperative period encompassed between precocious preoperative and late

postoperative times. In this way, except for two studies (S3 and S12), the theme of this present review is not addressed in isolation, but within the general context of the obesity issue and the perioperative care to bariatric surgery patients. Even systematic review-based researches seek evidences within this context. One of the two studies specifically dealing with the intraoperative period (S12) addresses only the anaesthetic procedure.

Chart 4 – Needed resources toward safe nursing practices in the bariatric surgery intraoperative period – extracted from the included studies - São Paulo, 2012

Safety measures	Study
ENVIRONMENT/PHYSICAL SPACE	
- Thermal blanket	E1
- Adequate dimension of the surgery room	E3,E8
- Temperature control in the surgery room	E1
FURNITURE	
- Adequate operating table (no specification)	E1,E3,E4, E5,E11
- Operating table that favors the positioning, change of decubitus and transference of patients to the stretcher, and vice-versa (no specification)	E1, E3, E4, E5
- Ergonomically adequate operating table for employees (no specification)	E1
- Adequate operating table to automatic overweight	E8
- Accessories aimed to enlarge the operating table (no specification)	E1, E3
- Hydraulic operation stretcher	E1,E10
- Hydraulic operation operating table	E1, E10
- Special gaiters	E3
- Adequate stretcher for the displacement and transference of patients and ergonomically fit for employees	E4,E5
- Adequate or wider stretcher	E8, E9
HEALTH CARE EQUIPMENTS	
- Equipments to strengthen the operating table (no specification)	E13
- Protection against skin injuries and circulation (no specification)	E1
- Safety straps or belts aimed to support the patient	E1, E3
- Large and extra large sphygmomanometer	E1, E8
- Special, longer surgical instruments	E1, E8
- Arteriovenous compression boots	E2
- Intubation materials in special sizes (# 5 Guedel cannulas, laryngoscope with a longer straight and curved blade, fiberscope for difficult intubation processes)	E3
- Standard mattress	E3
- Static devices for bony prominences, such as foam, gel, viscoelastic polymer, air or micro pulse air mattresses	E3
- Intermittent pneumatic compressor aimed to reduce the risks of deep venous thrombosis	E3, E8,
- Devices to protect areas under pressure, such as spongy tissues and padded fabric, aiming to prevent ulcers	E3,E5,E6, E11,E12, E13
- Respiratory support equipments (no specification)	E8
- Sequential compression stockings	E12
- Equipments for the proper positioning of the patient on the operating table no specification)	E2, E9
PATIENT POSITIONING ON THE OPERATING TABLE	
- Reverse Trendelenburg	E1, E2,E9
- Cushions aimed to raise the bed's head	E1
- Care for the arms	E1
- Equipments for the proper positioning of the patient (no specification)	E2,
- Raised head of the operating table during intubation processes	E2,E9
- Extra care in positioning the patient	E6
- 30° raised head in order to optimize pulmonary expansion	E12, E13
- Adequate posture and preparation of the team during a respiratory emergence; presence of essential equipments	E13
PERFORMANCE OF THE NURSING TEAM	
- Care during intubation processes	E1
- Support and provision of materials in the anaesthetic activity	E1
- Necessary material for the anaesthesia	E1
- Special vesical catheterization technique (no specification)	E1,E3,E6, E8, E11
- Vesical catheterization process carried out by three team members	E2
- Preoperative patient assessment	E3, E9
- Skilled team for specific care to obese patients (no specification)	E5, E8
EMOTIONAL SUPPORT	
- Provision of emotional support (no specification)	E1,E3,E12
- Assessment of the psychologic status	E2, E7
- Identification of physical and psychological needs	E5, E6

The specific contents related to nursing safety measures in the intraoperative period were extracted after the full-length reading of the publications, and were classified as follows: 1) environment/physical space; 2) furniture; 3) health care equipment; 4) patient positioning; 5) performance of the nursing team (training and conduct); and 6) emotional support. (Chart 4).

In Chart 4, the studies that most elaborated on contents related to the patient's safety needs in the intraoperative period were S1 (20 items) and S3 (14 items). On the other hand, those that less presented contents related to this same area were S10, S11 and S12 (2 and 3 items each, respectively), followed by S7 (1 item). Taking into account the classification of the levels of evidence displayed in an analyzed study⁽¹⁴⁾ (I through VII), the studies included in this review are located at the weakest levels: VI (S3) and VII (all others).

DISCUSSION

Throughout the literature search for this present review, we realized how extensive the production of knowledge on general obesity is, as well as its related epidemiologic aspects, such as incidence rates and prevalence, comorbidities and social-economic issues, risks and benefits of the bariatric surgery. Several recommendation guidelines and updates have already been produced regarding the perioperative period that starts with the precocious preoperative and ends with the late postoperative moment, mainly defined by expert societies composed of doctors, nurses and multiprofessionals⁽¹⁶⁻¹⁹⁾. It has been nearly 20 years now since the inception of the bariatric surgery⁽⁵⁾; however, all studies included in this research and virtually the whole amount of articles found in our search have been published on the last decade, thus confirming that the knowledge production in this area is a relatively recent practice.

A careful analysis of the studies included in this research shows that, except for two studies (S3 and S12), the envisaged objective of assessing the clinical advancements of the nursing care in the intraoperative period is not found in isolation, either in the nursing^(15,17-18) or in the multiprofessional⁽¹⁶⁾ practice, but is inserted within the perioperative context of the bariatric surgery. If, on the one hand, a positive aspect is deemed to favor an integral, non-fragmented view of the care, on the other hand such specific content is poorly represented and underdeveloped.

Nonetheless, nursing studies on the specific aspects of the perioperative care practice regarding the postoperative period⁽²⁰⁾ have already been produced. This finding prompted our interest in searching for all knowledge produced on the intraoperative period as a constituent, fundamental step in the whole perioperative context.

The specific content used in this review, therefore, was extracted from this perioperative context and arbitrarily classified in the following special needs: environment/physical space; furniture; health care equipments; patient positioning on the operating table; performance of the nursing team (training and conduct); and emotional support. Several of these contents emerge in all studies; however, the appearance of individual aspects is more observed in S1⁽²⁰⁾ and S3⁽¹⁴⁾. Despite the identification of several different resources, the research did not find any divergence regarding common needs presented in different studies. The majority of identified needs are repeatedly brought up, for instance: use of elastic stockings, pneumatic compression toward preventing thrombosis, and types of accessories to raise the patient's head.

Special needs concerning furniture and health care equipments were also repeatedly brought up, pointing out a greater concern at material resources. Such fact is quite relevant, as the technology employed in the intraoperative period is highly essential for the physical safety of the patient and the success of the surgery. Despite being insufficient to provide an integral and globalized care process, this fact positively echoes in the emotional aspect, once the patient recognizes that his special needs are met.

Another highlight is the generic recognition or the under-exposition of needs and resources in the *corpus* of the texts. For instance: the necessary materials for the anaesthesia, equipments to strengthen the operating table, special vesical catheterization technique, emotional support, etc. It can be clearly observed that the theoretical production is not sufficient to uphold the practice, as it does not provide information or proof on the existing types of special resources. Specifications are displayed only in a few studies. For example: hydraulic operation operating table that favors patient transference and positioning and prevents ergonomic risks to the professionals (S1, S3, S4, S5). However, ways to compare available resources, orientations on how to operate the equipments, and difficult and easy experiences found out in the process, among others, are absent. Thus, if on the one hand, indications help identify special needs, on the other, they do not favor the recognition and comparison of the practical impact of their application.

In spite of the presence of these aspects, the way the included studies were built does not reach a status of strong evidence. Hence, their classification was predominantly directed to the nursing area, presenting the following levels: *I (Strong)* – systematic review or meta-analysis of all controlled randomized clinical essays; *II (Strong)* – clearly outlined controlled randomized clinical essays; *III (Moderate)* – controlled clinical essays without randomization; *IV (Moderate)* – clearly outlined case-control and cohort studies; *V (Weak)* – systematic review of qualitative and descriptive studies; *VI (Weak)* – one and only descriptive or qualitative study; *VII (Weak)* – opinion of authorities and/or reports from expert committees⁽¹⁵⁾.

Although one of the studies is labeled as a systematic review (S6) and two as systematic search (S4 and S8), the major part of the literature used to ground recommendations in the other studies is not deemed to be researches, but expert opinions and consensuses. Consequently, they are placed at the last level (VII) of a weak evidence. Moreover, in spite of employing the classification per level of evidence, none of the studies achieved high levels of evidence. Only one recommendation adopted by S4 achieved a level B (employment of an ergonomics program, including a special device aimed to transfer the patient); all other recommendations in these studies displayed levels C and mainly D. S6, by the way, recognizes the limits of its review and suggests the implementation of future research.

As S11 does not adopt methodological criteria toward searching and analyzing obtained results, it is dealt with as a simple review. Together with the other studies comprised of opinions, reflections or updates, S11 is not included in the adopted diagram; therefore, all studies are not liable for classifications per level of evidence. Despite pointing out that its guideline is based on current research and opinions of experts, S1 does not indicate the research references that grounded the recommendations; therefore, it does not allow for the comprehension of what is identified as research result and what corresponds to an opinion. On its turn, S3 was the only primary study obtained by the research; it is listed at level VI of evidence, as it deals with a descriptive methodological outline.

As the vast majority of these included studies deals with the perioperative context at large, the weak evidences achieved are not only bound to the intraoperative period, but refers to the whole context. In other words, the production of knowledge by nursing toward assisting patients in the perioperative period of bariatric surgeries still does not derive from research-based evidences; on the contrary, it is almost exclusively grounded on theoretical rational elaborations originated in traditional clinical rationale issued by the opinions and consensuses of experts.

Notwithstanding, since obesity is recognized as the epidemics of the 21st century, such as any other emerging epidemics, the initial foundations that aimed to control, prevent and treat the disease necessarily go down to theoretical elaborations; just later, following a collection of empirical data, primary studies were triggered, aiming at generating evidences that could ground the practical science (Practice-Based Evidence - PBE). In other words, the currently available actions are still based upon traditional clinical practices grounded on the knowledge of signs and symptoms related to the so-called basic sciences, such as anatomy, physiology, etc.

Again, the final objective of this present review was to search for synthetic evidences aimed to intervene or improve the care practice, or identify knowledge gaps on the nursing safety needs in the intraoperative period of bariatric surgery patients. If, on the one hand, the achievement of results was not possible due to the current PBE

science, on the other hand, this study found an extensive production of knowledge grounded on the traditional clinical practice. In order to fill the gaps, a series of knowledge productions grounded on strong foundations and aimed to provide the PBE with support have already been triggered and elaborated, thus transforming this field into a broad, fruitful research area.

The reality of the elaboration of primary research specifically dealing with the advantages and disadvantages of the special material resources described in the included studies is a possibility. If affirmative, the results of those studies have not yet been inserted into the accessed electronic databases. Throughout our search for this paper, such documents have been neither found nor quoted in the studies included in this review. Although S3 was classified as a weak evidence, it was the one and only primary study to question the aspects related to the physical space, materials and equipments in its search for the identification of the difficulties faced by nurses in the intraoperative care to bariatric surgery patients; the study finally recognizes the need of professional training toward this specific knowledge, so that patients are provided with comfort, physical and emotional security.

As several special needs aimed to assist bariatric surgery patients have been identified by the review, future research must be produced in order to assess and ratify their sufficiency. S6 clearly shows this perspective: attitude of nurses toward severe obese patients; impacts of their attitudes and biases in the results of patients; identification of technical knowledge that prompts patients to the surgery, improvement of results and safety of patients; occupational risks; identification of best practices toward improving safety of the professional team and preventing occupational risks; and identification of best practices toward managing pain reduction levels.

Other future researches could include, for instance, cohort or case-control studies on the assessments of recommendation guidelines regarding the lack of adverse events, development of innovative techniques for female vesical probing, patient positioning on the table for anaesthesia and surgery, physiologic responses of obese patients to the pneumoperitoneum, anaesthesia, among other events. The problems generated by this integrative review also lead to the elaboration of other studies dealing with the impact, sufficiency and adequacy of the resources provided by the industry of materials and specific equipments.

CONCLUSION

This integrative review clearly shows the state-of-the-art nursing performance toward the safety needs of patients in the intraoperative period of weight loss surgeries. Such well established needs can also be seen in several recommendation guidelines. However, these recommen-

dations are fundamentally based on the traditional clinical science practice set out by the elaboration of theoretical rational judgments of experts. This present research recommends that primary studies be carried

out in order to assess the impact and the solvability of the identified resources toward fulfilling these needs, as well as to generate other innovative resources and identify new needs.

REFERENCES

- World Health Organization (WHO). Obesity and overweight: 2003-2004 [Internet]. Geneva; 2011 [cited 2011 Mar 25]. Available from: <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>
- World Health Organization (WHO). Obesity [Internet]. Geneva; 2008 [cited 2012 Apr 24]. Available from: www.who.int/topics/obesity/en/
- Neri M. Cirurgias bariátricas saltam 800% em 10 anos na rede pública de saúde. Correio Braziliense [Internet]. 2011 fev. 21 [citado 2012 mar. 12]. Disponível em: http://www.correiobraziliense.com.br/app/noticia/ciencia-e-saude/2011/02/21/interna_ciencia_saude,238824/cirurgias-bariatricas-saltam-800-em-10-anos-na-rede-publica-de-saude.shtml
- Brasil. Ministério da Saúde; Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Obesidade. Brasília; 2006.
- National Institute of Health. NIH Conference. Gastrointestinal surgery for severe obesity. Consensus Development Conference Panel. *Ann Intern Med.* 1991;115(12):956-61.
- Organização Mundial da Saúde (OMS). Segundo Desafio Global para a Segurança do Paciente. Cirurgias seguras salvam vidas: manual. Brasília: OPAS/ANVISA; 2009.
- Associação Brasileira de Enfermeiros de Centro Cirúrgico, Recuperação Anestésica e Centro de Material e Esterilização. Padrões da AORN para a assistência de enfermagem ao paciente sob sedação/analgesia moderada. *Rev SOBECC.* 2004;9(2):7-11.
- Whittemore R, Knafk K. The integrative review: updated methodology. *J Adv Nurs.* 2005; 52(5):546-53.
- Ganong LH. Integrative reviews of nursing. *Rev Nurs Health.* 1987;10(1):1-11.
- Mendes KDS, Silveira RCCP, Galvão CM. Revisão integrativa. Método de pesquisa para incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm.* 2008;17(4):758-64.
- Roma AR, Friedlander MR. Revisão integrativa de pesquisa aplicada à enfermagem. *Cogitare Enferm.* 1998;3(2):109-12.
- Beyea SC, Nicoll ELH. Writing an integrative review. *AORN J.* 1998;67(4):877-80.
- Krainovich-Miller B. Revisão de literatura. In: Lobiondo-Wood G, Haber J. *Pesquisa em enfermagem: métodos, avaliação crítica e utilização.* Rio de Janeiro: Guanabara-Koogan; 2001. p. 53-73.
- Lacerda RA, Nunes BK, Batista AO, Egry EY, Graziano KU, Angelo M, et al. Evidence-based practices published in Brazil: identification and analysis of their types and methodological. *Rev Esc Enferm USP [Internet].* 2011 [cited 2011 Nov 27];45(3):777-86. Available from: http://www.scielo.br/pdf/reeusp/v45n3/en_v45n3a33.pdf
- Melnik BM, Fineout-Overholt E. A guide to best practice. Philadelphia: Lippincott Williams; 2011. Evidence based practice in nursing & healthcare.
- Association of periOperative Registered Nurses (AORN). Bariatric surgery guideline. *AORN J.* 2004;79(5):1026-40, 1043-4, 1047-52.
- Lehman Center Weight Loss Surgery Expert Panel. Commonwealth of Massachusetts. Betsy Lehman Center for Patient Safety and Medical Error Reduction. Expert Panel on Weight Loss Surgery: executive report. *Obes Res.* 2005;13(2):205-26.
- Owens TM. Bariatric surgery risks, benefits and care of the morbidly obese. *Nurs Clin North Am.* 2006;41(2):249-63.
- Thompson J, Bordi S, Boytim M, Elisha S, Heiner J, Nagelhout J. Anesthesia case management for bariatric surgery. *AANA J.* 2011;79(2):147-60.
- Negrão RJS. Cirurgia bariátrica: revisão sistemática e cuidados de enfermagem no pós-operatório [dissertação]. São Paulo: Escola de Enfermagem, Universidade de São Paulo; 2006.