



## EVIDENCE FOR THE PERIOPERATIVE CARE OF MASTECTOMIZED WOMEN

*EVIDÊNCIAS PARA O CUIDADO DA MULHER MASTECTOMIZADA NO PERIOPERATÓRIO*

*EVIDENCIAS PARA LA ATENCIÓN A LA MUJER MASTECTOMIZADA EN EL PERIOPERATORIO*

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This study aimed to evaluate the evidence available in the literature about the perioperative care provided to women submitted to mastectomy. An integrative review of scientific literature conducted in MEDLINE, CINAHL, LILACS, and SciELO databases, published from 2000 to 2011, using the controlled descriptors: preoperative care; preoperative period; intraoperative care; intraoperative period; postoperative care; postoperative period; perioperative care; perioperative period; and mastectomy. The sample of this review consisted of seven articles. The evidence pointed as perioperative care of mastectomy the pharmacological management of pain in different surgical periods. Despite the difficulty in presenting a consensus of evidence for perioperative care of mastectomy, there was concern on the part of professionals to minimize/prevent pre-, intra- and post-operative pain. Nursing should be aware, both of the update of pharmacological treatments in pain management and the development of future research related to nursing care in the perioperative period of mastectomy.

**Descriptors:** Perioperative Nursing; Mastectomy; Evidence-Based Practice.

Objetivou-se avaliar as evidências disponíveis na literatura sobre os tipos de cuidados prestados à mulher submetida à mastectomia no perioperatório. Revisão integrativa da literatura realizada nas bases de dados MEDLINE, CINAHL, LILACS e portal de periódicos SciELO, utilizando os descritores: preoperative care, preoperative period, intraoperative care, intraoperative period, postoperative care, postoperative period, perioperative care, perioperative period e mastectomy, publicados de 2000 a 2011. A amostra constituiu-se de sete artigos. As evidências apontaram como cuidado perioperatório de mastectomia o manejo farmacológico da dor, abordado nos diferentes períodos cirúrgicos. Apesar da dificuldade de apresentar um consenso da evidência para o cuidado perioperatório de mastectomia, observou-se preocupação por parte dos profissionais em minimizar/prevenir a dor pré, intra e pós-operatória. A enfermagem deve ater-se tanto à atualização dos tratamentos farmacológicos no manejo da dor quanto ao desenvolvimento de futuras pesquisas relacionadas ao cuidado de enfermagem no período perioperatório de mastectomia.

**Descritores:** Enfermagem Perioperatória; Mastectomia; Prática Clínica Baseada em Evidências.

El objetivo fue evaluar las evidencias disponibles en la literatura acerca de la atención prestada a la mujer sometida a mastectomia en el perioperatorio. Revisión integrativa de la literatura realizada en las bases de datos MEDLINE, CINAHL, LILACS y portal de revistas SciELO, utilizando los descriptores: *preoperative care, preoperative period, intraoperative care, intraoperative period, postoperative care, postoperative period, perioperative care, perioperative period y mastectomy*, publicados de 2000 a 2011. La muestra consistió en siete artículos. Los resultados apuntaron como medida de atención el tratamiento farmacológico del dolor. A pesar de la dificultad de presentar un consenso de la evidencia para el cuidado perioperatorio de mastectomia, se observó preocupación entre los profesionales para minimizar el dolor preoperatorio, intra y postoperatorio. La enfermería debe quedarse atenta a la actualización de tratamientos farmacológicos en el manejo del dolor para el desarrollo de futuras investigaciones relacionadas a la atención de enfermería.

**Descritores:** Enfermería Perioperatoria; Mastectomía; Práctica Basada en Evidencias.

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## INTRODUCTION

Breast cancer is the second most frequent type of cancer worldwide and the most common among women. There were 52,680 new cases of breast cancer in Brazil in 2012, with an estimated risk of 52 cases per 100,000 women<sup>(1)</sup>. Currently, mastectomy is the most common treatment used for tumors greater than 3 and 4 cm, which hinder the conservative treatment of invasive carcinomas<sup>(2)</sup>.

A successful treatment requires the attention from professionals involved in the treatment of women in the perioperative period, which consists of preoperative, intraoperative and postoperative<sup>(3-4)</sup>. The numerous changes in women's daily routine, caused by their physical, psychological or social changes, can become a threat to their health, which requires nurses to acknowledge that any surgical procedure involves care strategies to handle the situation<sup>(5)</sup>. Nurses must consider that, for an effective care for the patient and family, it is necessary an interactive process, in which the professional applies not only technical skill, but also knowledge and, above all, sensitivity to the individual to be cared for in all surgical periods<sup>(6)</sup>.

In the specific cases of mastectomy, the perioperative is an important phase where a thorough assessment of shoulder and upper limb should be provided, checking from every movement of the scapular-humeral joint to the existence of a problem that can influence the postoperative rehabilitation, such as bursitis, capsulitis, and arthritis<sup>(3)</sup>. Women should receive information about after surgery care, guidelines and information on the different stages of recovery, of how the surgery takes place, the care of ipsilateral arm, exercises to regain functional capacity of arm and shoulder, as well as information about other treatments such as chemotherapy, radiotherapy and hormone therapy<sup>(3-6)</sup>.

In Evidence-Based Practice (EBP), one of the main purpose is to encourage the use of research results in

different levels of health care, reinforcing the importance of research for clinical practice, since its implementation provides the achievement of research-based nursing interventions<sup>(7)</sup>.

This study is justified by the shortage of evidence in the literature to guide the types of care offered in practice to these patients. Therefore, it aimed to assess the evidence available in the literature about the types of care provided to women submitted to mastectomy in the perioperative period.

## METHOD

An integrative review, in which we covered the following steps: selection of review hypothesis or question, sample selection, categorization of studies, evaluation of studies, discussion and interpretation of results, presentation of the review, and knowledge synthesis<sup>(8)</sup>. The guiding question for the development of the integrative review was built through PICO strategy (P=population, I=intervention, C=control, O=outcomes)<sup>(9)</sup> and consisted of: What are the types of perioperative care provided to women submitted to mastectomy?

For selecting the articles included, we used the access to online databases. The Medical Literature Analysis and Retrieval System Online (MEDLINE), which contains multidisciplinary publications from over 70 countries. The Cumulative Index to Nursing and Allied Health Literature (CINAHL), a reference basis for health publications with a focus on nursing. The Latin American and Caribbean Center on Health Sciences Information (LILACS), which covers health literature published in Latin America and the Caribbean. And the Scientific Electronic Library Online (SciELO), which covers publications of journals from Brazil, Chile, Cuba, Spain, Venezuela and other Latin countries.

For MEDLINE and CINAHL databases, we used the following controlled descriptors: Preoperative Care; Preoperative Period; Intraoperative Care; Intraoperative

Period; Postoperative Care; Postoperative Period; Perioperative Care; Perioperative Period; and Mastectomy; those indicated in the Medical Subject Headings (MeSH) and in the List of Topical Subheadings of the CINAHL Information System. For the LILACS and SciELO databases, we used the following descriptors: Preoperative Care; Preoperative Period; Intraoperative Care; Intraoperative Period; Postoperative Care; Perioperative Care; and Mastectomy; contemplated in Health Sciences Descriptors (DeCS). All descriptors were linked using the Boolean operators "and", "or" and "not", until we obtained articles that matched the inclusion criteria for the study.

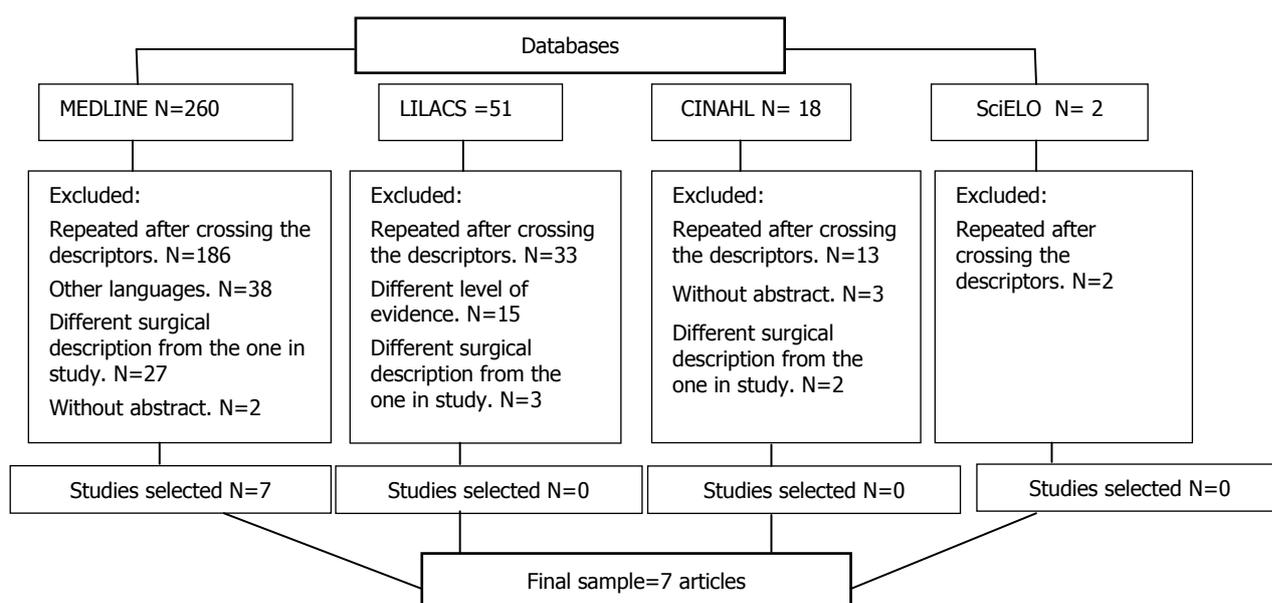
Data collection happened from January to March 2012. For the inclusion criteria, we used: full articles discussing the perioperative care for women who underwent mastectomy; published between 2000 and 2011; in Portuguese, English or Spanish; and with level of evidence I, II and III. At level I, evidence from a systematic review or meta-analysis of randomized clinical trials (RCTs) or from clinical guidelines based on systematic reviews of RCTs. At level II, evidence from at least one well-designed RCT. And at level III, the evidenced are obtained from well-designed clinical trials which are not randomized<sup>(8)</sup>. We excluded literature

reviews, letters, editorials, articles without abstracts, and studies that did not discuss the care in mastectomy surgery.

For extracting data from the articles, we used an instrument designed and validated in a study carried out by nurses<sup>(9)</sup>, which includes the identification of the original article, the methodological characteristics of the study, the assessment of the methodological rigor, interventions measured, and results. We performed the categorization, organization and summarization of the data in figures, and for the analysis of study design and level of evidence, we used the concepts proposed by scholars of nursing<sup>(9-10)</sup>.

## RESULTS

We found 331 publications. Of those, 232 (70.0%) were excluded for appearing more than once in the database; 38 (11.5%) were published in other languages; 34 (10.2%) presented different surgical description from the one in study, such as breast reconstruction, quadrantectomy and tumorectomy; 15 (4.5%) were classified in a different level of evidence than those listed in the inclusion criteria; and five (1.5%) had no abstract. Details are provided in Figure 1.



**Figure 1** - Flowchart of study selection. Fortaleza, Brazil, 2012.

All articles were analyzed by reading the abstracts and selected based on the objective and guiding question of this review. Of the 331 articles, seven met the inclusion criteria. Thus, we found as the only type of perioperative care of mastectomy the pharmacological

pain management. Of the studies analyzed, there was only one with level of evidence III, the other six studies had level of evidence II, according to the framework adopted<sup>(8)</sup>. Table 1 presents a summary of the characteristics of the studies.

**Table 1** - Summary of the characteristics of studies included. Fortaleza, Brazil, 2012

Title	Author(s)	Year/Country	Design	Outcomes
01. A single dose of preoperative gabapentin for pain reduction and requirement of morphine after total mastectomy and axillary dissection: Randomized placebo-controlled double-blind trial.	Grover VK, Mathew PJ, Yaddanapudi S, Sehgal S <sup>(11)</sup>	2009/India	Randomized, double blind and placebo-controlled	Time to analgesic request: Experimental=37 min. Control=0 min. Morphine consumption: Experimental=4/25 Control=19/21
02. Reduction of postoperative nausea and vomiting and analgesic requirement with dexamethasone in women undergoing general anesthesia for mastectomy	Fujii Y, Nakayama M <sup>(12)</sup>	2007/Japan	Randomized, double blind and placebo-controlled	Incidence of analgesic request: Experimental 1 (4mg dexamethasone)= 21/30 Experimental 2 (8mg dexamethasone)= 13/30 Control=25/30
03. The associations between severity of early postoperative pain, chronic postsurgical pain and plasma concentration of stable nitric oxide products after breast surgery	Iohom G, Abdala H, O'Brien J, Szarvas S, Larney V, Buckley E, et al <sup>(13)</sup>	2006/Ireland	Randomized clinical trial	Incidence of post-mastectomy chronic pain: S Group (Standard pain management) =12/15 N Group (Aggressive pain management)= 0/14
04. Evaluation of efficacy of the perioperative administration of venlafaxine XR in the prevention of postmastectomy pain syndrome	Reuben SR, Makari-Judson G, Lurie SD <sup>(14)</sup>	2004/USA	Randomized, double blind and placebo-controlled	Incidence of post-mastectomy chronic pain: Experimental=14/48 Control=34/47
05. Efficacy of intravenous ketoprofen for pre-emptive analgesia	Pryia V, Divatia JV, Sareen R, Upadhye S <sup>(15)</sup>	2002/India	Randomized, double blind and placebo-controlled	Time to analgesic request: Experimental=15.47 hours Control=4.22 hours
06. EMLA reduces acute and chronic pain after breast surgery for cancer	Fassoulaki A, Sarantopoulou SC, Melemeni A <sup>(16)</sup>	2000/Greece	Randomized, double blind and placebo-controlled	Time to analgesic request: Experimental=42 min. Control=31 min. Incidence of chronic pain: Experimental=10/23 Control=20/22
07. Preoperative ropivacaine infiltration in breast surgery	Johansson A, Axelson J, Ingvar C, Luttrupp HH, Lundberg J <sup>(17)</sup>	2000/Denmark	Randomized, double blind and placebo-controlled	Incidence of postoperative pain: Experimental=28/30 Control=28/30

The first study revealed an association between the administration of a low dose of preoperative gabapentin and satisfactory postoperative results. The postoperative morphine consumption was 48% lower in the experimental group than the control group, and the time to first analgesic request was longer in the experimental group.

The second study evaluated the efficacy of dexamethasone to reduce the analgesic request of women undergoing mastectomy. It was found that the analgesic requirements to unbearable pain was lower in patients receiving dexamethasone 8 mg than in those of the control group or the group of 4 mg, suggesting that

the dosage of 8 mg was effective for the control of postoperative pain.

The third study compared the effect of two analgesic therapies and the concentration of nitric oxide (NO) in the probability of developing chronic post-surgical pain (CPSP). However, the authors found no associations between NO and subsequent development of CPSP. A limitation of the third study referred to the fact it was not double blind, due to ethical considerations, and therefore subject to bias.

The fourth study verified the analgesic efficacy of perioperative administration of venlafaxine to acute and chronic pain after mastectomy. The results showed that the administration of venlafaxine in the night before surgery had no result in the immediate postoperative pain and the amount of analgesic use; however, it significantly reduced the incidence of post-mastectomy pain syndrome at six months of postoperative mastectomy.

In the fifth study, the investigation determined the possibility of preventive infusion of intravenous ketoprofen for pain relief in the postoperative mastectomy. The sixth study aimed to determine whether the perioperative application of Eutectic Mixture of Local Anesthetics (EMLA) cream in the breast and axilla area reduced the analgesic need, as well as the pain after surgery. At the end, the study revealed a decrease in postoperative analgesic request and the incidence and severity of chronic pain.

The seventh study investigated whether the preoperative ropivacaine infiltration along with mastectomy improves the management of postoperative pain. Nevertheless, the authors found no differences in the treatment of postoperative pain between 3.75 mg/ml ropivacaine (intervention group) and infiltration with saline solution (control group) prior to mastectomy. The data show similar postoperative analgesic requirements.

## DISCUSSION

The concern for the patient well-being and their quality of life directly relates to an essential factor: pain control. Considering the economic, social and emotional damages caused by pain to the world population, the scientific community decided some time ago to alert doctors, nurses and patients about the importance of identifying, valuing and correctly treat this symptom. However, there are still myths regarding the use of analgesic drugs and techniques. The present study showed the pharmacological management of pain as one of the mastectomy perioperative care in the years in study; however, multidisciplinary care is not restricted only to the management of this vital sign.

Pain can represent the final product of a passive transmission system of a peripheral signal through the spinal cord to the center of pain in the brain. Additionally, the transmission of afferent harmful substances (for example, caused by intraoperative incisional) to the spinal cord leads to a prolonged state of central neural sensitization or hyper-excitability, which amplifies the posterior input of the wound and causes postoperative pain<sup>(18)</sup>.

In the first study, the authors associate the administration of preoperative gabapentin with satisfactory postoperative results. Gabapentin is an anticonvulsant that acts on sodium channels, and is proven effective in the treatment of neuropathic pain, according to several randomized controlled clinical trials conducted<sup>(19-21)</sup>. A meta-analysis comparing gabapentin, pregabalin, and duloxetine confirmed the efficacy in neuropathic pain of the first drug, although there were no differences between them in terms of adverse effects<sup>(20)</sup>. Following mastectomy, women may experience several types of neuropathic pain or discomfort, including intercostal brachial neuralgia,

phantom breast pain or local neuroma and, in a recent study, it was shown that the prophylactic use of gabapentin orally before mastectomy reduces the total morphine consumption, as well as the incidence of postoperative pain<sup>(22)</sup>, corroborating the first study.

The second study evaluated the efficacy of dexamethasone to reduce the analgesic request in women undergoing mastectomy. Randomized clinical trials conducted between 1996 and 2001 on administration of single-dose steroids in the perioperative period have demonstrated that dexamethasone has an analgesic effect in various types of surgery<sup>(18-19)</sup>.

The third study showed no association between the concentration of nitric oxide (NO) and the development of chronic post-surgical pain (CPSP). Chronic pain is costly to society in terms of suffering and disability, as it is a high incidence morbidity that qualitatively affects the lives of patients, although the multidisciplinary team often neglects it. Different studies have shown that NO relates to the induction and maintenance of chronic pain, since plasma levels are elevated in women with this condition, especially visceral pain, and this can be considered a tracking factor for patients with chronic pain, once it can be used as a serum marker for the disease<sup>(23-24)</sup>.

The results of the fourth study demonstrated that perioperative administration of venlafaxine in the night before surgery had no immediate effect on postoperative pain and analgesic use, but significantly reduced the incidence of post-mastectomy pain syndrome at six months postoperative mastectomy. Recent studies indicate that, unlike other analgesic techniques used to mastectomy, the perioperative administration of venlafaxine was unable to demonstrate a significant reduction in the incidence of acute postoperative pain<sup>(25-27)</sup>.

The investigation in the fifth study determined the possibility of preventive infusion of intravenous

ketoprofen to result in pain relief in the postoperative mastectomy. Preemptive analgesia not only reduces nociception and stress during surgery, but also prevents the creation of central sensitization, resulting in decreased pain intensity and less need for analgesics, even after the analgesic effect of the agents used<sup>(26)</sup>. Although the role of preventive analgesia with non-steroidal anti-inflammatory drugs (NSAIDs) has solid theoretical basis, the results of some studies that administered ketoprofen to prevent postoperative pain have not been encouraging in its results, since other NSAIDs were more effective<sup>(27-28)</sup>.

In the sixth study, the authors demonstrated that the use of EMLA reduces the analgesic requests during the first days of postoperative. Thus, we emphasize the possibility of using EMLA to prevent the occurrence of chronic post-mastectomy pain. Similar studies have shown that the use of EMLA in the perioperative period proved useful in other surgeries and that different sites and duration of application should be studied to optimize its effect<sup>(29-30)</sup>.

Corroborating the seventh study, which showed no differences in the management of postoperative pain between ropivacaine and infiltration of the wound with saline solution prior to mastectomy, a recent study<sup>(28)</sup> aimed to observe the presence of postoperative pain, analgesic requirements and length of hospital stay for mastectomized women receiving different anesthetics. This included ropivacaine, in the interpleural block, and found that patients who experienced postoperative pain require only common analgesics (dipyrone), and that all were discharged after 24 hours of postoperative, without conferring residual analgesic power or decreased postoperative pain with the use of the drug in question.

## CONCLUSION

The evidence pointed to the pharmacological management of pain as the prevalent type of mastectomy care in the perioperative period in the years

surveyed. The type of care indicated was evidenced in different surgical periods, however, there were several types of drugs used and, in most studies, there was disagreement and divided opinions between authors and subsequent studies, hindering the consensus on which drug is best used for pain management, which, although not the initial goal of this study, encourages future researches. Nonetheless, there was concern among medical professionals to minimize/prevent pain in pre-, intra- and post-operative.

By crossing the descriptors in search for nursing care in perioperative mastectomy at the beginning of study, we did not find any result in the selected period, demonstrating the low perioperative nursing scientific production in the field, both nationally and internationally, in a field where nurses are key players in promoting the health and well-being of women undergoing mastectomy. The non-definition of type of care in the descriptors is a limitation for the study, since we did not find the description of the specific nursing care during the initial searches, and used descriptors and a guiding question that included the search and hindered the nursing consensus.

Therefore, this study contributed with a current evidence of pharmacological treatments in the perioperative pain management, something that is important for nursing and other areas that work in assisting cancer patients. Thus, we encourage the development of research related to nursing care in perioperative mastectomy, since the process of nursing care is broad and should not be limited to the immediate resolution of the acute symptoms caused by the surgical procedure.

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Galvão CM, Fernandes AFC and Santos MCL contributed to the orientation and design of the work. Mourão CML, Silva APS and Silva TBC contributed to the design, analysis, data interpretation and drafting of the article.

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