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Postoperative pain management after mastectomy

A systematic literature review

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Abstract/Summary

This study aims to synthesize current evidence on pain management after mastectomy, with a primary focus on thoroughly exploring the strategies employed for postoperative pain management. The research addresses two main questions: firstly, an examination of the diverse strategies utilized in pain management after mastectomy; and secondly, the identification and analysis of barriers that hinder effective pain management in mastectomy patients.

The method employed in this study is a qualitative systematic literature review where data were carefully obtained and analyzed. Within the conceptual framework of the study, Katherine Kolcaba's theory of Comfort serves as the guiding theoretical lens, providing a structured and comprehensive basis for the investigation.

The findings of this study highlight two main themes: physiological and non-physiological strategies in pain management after mastectomy, as well as barriers to nursing care in pain management. Stressing the importance of using a variety of methods to manage pain, the study emphasizes the need to address these challenges to improve patient care.

Language: English
Keywords: Breast cancer, Mastectomy, Postoperative pain, Pain management, Barriers

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Table of content

Tables and Figures

Appendices

1 Introduction

Breast cancer is a significant health issue, being the most common cancer in women and the second most common cancer overall, accounting for approximately 30% of all cancers diagnosed in women. Breast cancer is the fifth leading cause of death in women in 2020, with an estimated 2.3 million new cases worldwide (World Health Organization, 2021). Breast cancer is therefore a type of cancer that develops in the breast tissue's cells. It happens when abnormal cells in the breast begin to grow and multiply uncontrollably, resulting in the formation of a tumor. Breast cancer can affect both men and women, but it is far more common in women (WHO, 2021). Another study by Elozohry et al, (2018) stated that breast cancer is a complex disease with many factors that can contribute to its incidence and mortality rates. Age is a significant factor, as the risk of developing breast cancer increases as a woman gets older. The chances of getting breast cancer can be influenced by a person's background, including their race and economic status. Women from certain ethnic and economic groups might face a higher risk due to factors like limited access to healthcare and lifestyle choices. Unhealthy habits such as smoking, excessive drinking, poor diet, lack of exercise, and exposure to polluted air can increase the chances of developing cancer (Elozohry et al., 2018).

According to the most recent data from the Finnish Cancer Registry, an estimated 5,094 new cases of breast cancer were diagnosed in Finland in 2020, making it the most common cancer in women in the country. Breast cancer incidence has steadily increased in Finland over the last few decades, but mortality rates have declined due to improved early detection and treatment. Breast cancer survival rates in Finland are among the highest in Europe, with a five-year relative survival rate of 89% across all stages combined (Finnish Cancer Registry, 2021).

Mastectomy, a common treatment for breast cancer, can enhance outcomes for breast cancer patients. However, it often leads to significant and debilitating post-operative pain. Effective pain management is paramount in ensuring a favorable outcome for mastectomy patients and enhancing their overall quality of life. This thesis argues that postoperative pain management after mastectomy is still underexplored, therefore, it is imperative to increase the understanding by examining the stated topic of mastectomy. The topic is very relevant and is expected to contribute significantly to the body of literature on mastectomy both theoretically and in practice.

2 Background

This chapter provides a comprehensive exploration of postoperative pain management following mastectomy. Also, it will shed light on types of breast cancer, staging and grading of breast cancer, types of mastectomy, minor complications after mastectomy, and various types of pain experienced by mastectomy patients.

2.1 Types of breast cancer

Breast cancer is classified into several types, and distinguishing between them can be difficult. Breast cancer classification is intricately linked to the specific cells within the breast that undergo cancerous changes. Breast cancers are most classified as carcinomas, which are tumors that begin in the cells that line the organs. Adenocarcinoma is a common subtype of breast carcinoma that can begin in the milk ducts, referred to as ductal carcinoma, or in the glands responsible for milk production, referred to as lobular carcinoma. When it comes to breast cancer, whether cancer has spread beyond its initial location is critical. In situ breast cancer, shown by ductal carcinoma in situ (DCIS), is a pre-cancerous stage in which abnormal cells are confined to the milk ducts and do not invade surrounding breast tissue. In contrast, invasive breast cancer refers to cancers that have spread beyond the initial site and into neighboring breast tissue. Invasive ductal carcinoma (IDC) and Invasive lobular carcinoma (ILC) are the most common types of invasive breast cancer, with IDC accounting for 70-80% of all diagnosed breast cancers (American Society, 2021). Advancements in diagnosis and treatments have led to improved survival rates for breast cancer patients. However, some treatments can cause pain as a complication, and as the population susceptible to breast cancer increases, the number of patients experiencing pain may also increase (Elozohry et al., 2018).

Breast cancer in its early stages may not cause any symptoms, but as the tumor grows, it may cause a lump or thickening in the breast, changes in the shape or size of the breast, nipple discharge, or skin changes on the breast, such as redness, swelling, or dimpling (National Breast Cancer Foundation, 2023). Therefore, breast cancer treatment can be extremely effective, especially when detected early. Depending on the type and stage of the cancer, treatment may include surgery, radiation therapy, chemotherapy, hormone therapy, or targeted therapy. The goal of treatment is to remove (mastectomy) or destroy cancer cells while preserving as much breast tissue and function as possible and mastectomy is the

common surgical intervention to remove breast tissue (National Breast Cancer Foundation, 2023).

2.2 Staging and grading of breast cancer

The American Joint Committee on Cancer developed the TNM system, which is widely used for staging breast cancer patients based on the following: the size and extent of the primary tumor (T component), the extent of spread to lymph nodes (N component), and whether the cancer has spread to other organs (M component). The T classifications range from T0 (no primary tumor) to T4 (invasion into nearby structures), N classifications range from N0 (no spread to lymph nodes) to N3 (severe spread), and M classifications range from M0 (no metastasis) to M1 (evidence of metastasis). American Joint Committee on Cancer also provides guidelines for grading breast tumors based on histological characteristics such as how closely they resemble normal tissue and how quickly they are likely to grow and spread. The tumors are graded from 1 (well-differentiated, slow-growing tumors) to 3. (Poorly differentiated, fast-growing tumors). A breast tumor's grade can help determine prognosis and guide treatment decisions (American Cancer Society, 2021).

2.3 Mastectomy

Mastectomy is a surgical procedure that involves the removal of breast tissue, which can lead to significant pain and discomfort. It is mostly performed as a treatment for breast cancer, but it may also be done as a preventative measure for women who are at high risk of developing breast cancer. Mastectomy may involve the removal of one or both breasts, depending on the extent of the cancer or the level of risk. The procedure involves making an incision in the breast and removing the breast tissue, along with any nearby lymph nodes that may be affected by cancer (National Breast Cancer Foundation, 2023).

2.4 Evolution of mastectomy

Laronga et al. (2012) conducted a study highlighting the drawbacks of the cauterization method, colloquially termed The Guillotine method, which employed a knife without anesthesia or antiseptic. This approach resulted in elevated mortality rates due to infections, causing substantial physical disfigurement and emotional trauma for patients. In the early

20th century, the Halsted radical mastectomy emerged as the prevailing treatment for breast cancer, involving the removal of the entire breast, underlying muscle, and all armpit lymph nodes. Despite its efficacy, this procedure faced criticism for its significant physical and psychological impact. Recognizing these concerns, alternatives like modified radical mastectomy, breast-conserving surgery, and sentinel lymph node biopsy were developed, marking a pivotal shift in the surgical management of breast cancer. Advancements in mastectomy procedures extended beyond surgical techniques, encompassing improvements in anesthesia, antibiotics for infection prevention, and enhanced pain management. Also, progress has been made in breast reconstruction techniques, offering women the opportunity to undergo mastectomy without enduring lasting disfigurement. These advancements collectively represent a transformative evolution in the approach to treating breast cancer, emphasizing not only efficacy but also a more considerate approach to patients' physical and emotional well-being (Laronga et al., 2012)

2.5 Types of mastectomy

Total mastectomy, or simple mastectomy, is a surgical intervention employed in treating breast cancer by removing the entire breast tissue, including the nipple and areola while preserving the underlying pectoralis major muscle. The procedure may involve axillary lymph node dissection based on the extent of cancer spread. A study conducted by Lazaraviciute &Chaturvedi (2017), suggested that total mastectomy is frequently performed on individuals for whom breast-conserving treatments are not viable. This includes those with larger tumors in comparison to breast size or those who have undergone prior radiotherapy to the chest wall. The research identifies modified radical mastectomy as the second type, involving the removal of both breast tissue and lymph nodes under the arm. This procedure is typically recommended for patients with larger tumors or cancer that has extended to the lymph nodes. The removal of lymph nodes serves the dual purpose of assessing the cancer's extent and preventing its spread to other body parts. On the other hand, radical (Halsted) mastectomy, encompassing the removal of breast tissue, lymph nodes under the arm, and the chest muscle, is seldom employed today. It is reserved for cases of very advanced breast cancer, particularly when the disease has affected chest wall muscles or entails recurrent manifestations involving the pectoralis muscles, as indicated by (Lazaraviciute &Chaturvedi 2017).

Recent research, as indicated by Rapisarda et al, (2021), introduces a novel mastectomy approach known as Skin-saving mastectomy. This technique involves making an inverted

'T' incision for the removal of breast tissue, followed by utilizing the de-epithelialized skin from the lower pole to create a dermo-muscular pocket for implant placement. Unlike traditional methods, this procedure preserves the skin while eliminating breast tissue, making it particularly suitable for patients requiring immediate breast reconstruction. In response to patient preferences and a focus on cosmetic outcomes, various skin-reducing techniques have been developed. These methods cater to diverse needs, including the preservation of the nipple-areolar complex, making them applicable to women with larger breasts (Rapisarda et al., 2021).

Another innovative approach highlighted in the research, by Bekeny et al. (2021), is Nipple-sparing mastectomy. In this procedure, breast tissue is removed while preserving the nipple and areola. Typically recommended for patients with small tumors not near the nipple, this technique allows for more realistic-looking breast reconstruction. Notably, women who undergo Nipple-sparing mastectomy report higher satisfaction with their breast appearance and overall psychosocial well-being (Bekeny et al.,2021).

2.6 Minor complications and side effects of mastectomy

While mastectomy is a crucial life-saving procedure, it is not without potential risks and complications. One significant complication that can arise during or after mastectomy is bleeding, often resulting from damage to blood vessels during surgery. Addressing such bleeding may necessitate additional surgical interventions, leading to an extended hospital stay (averaging approximately 1.3 days) and increased healthcare costs (Da Rosa Noronha et al., 2021). Another post-mastectomy complication is the accumulation of fluid in the surgical site, termed seroma. This condition may require further treatment, such as drainage or compression. Although some patients with seromas may be asymptomatic, others may experience pain and tingling, potentially necessitating fluid aspiration for several months, as highlighted (Wu et al.,2022). However, this procedure comes with its own set of challenges, including an increased risk of infection, additional clinic visits, and heightened mental stress for patients. According to Wu et al. (2022), the incidence of seroma formation after mastectomy varies widely, ranging from 15.5% to 92%. This variability is influenced by several risk factors, including age, body mass index (BMI), the type of surgical procedure, the drainage system employed, and the dissection instrument used during surgery (Wu et al., 2022).

A potential complication of mastectomy is nerve damage, which may manifest as temporary or permanent numbness or tingling in the chest, underarms, or arms. Additionally, lymphedema, a lifelong condition characterized by swelling and discomfort in the arms or legs, is another possible adverse outcome. Wound healing issues, such as delayed healing or wound breakdown, pose a risk of infection and may necessitate further treatment (Da Rosa Noronha et al.,2021).

2.7 Pain

Pain is a distressing signal that indicates discomfort; it is a complex experience that varies greatly between individuals, even those with similar conditions. Pain, which can range from small to intense sensations such as pricking, tingling, or burning, serves as an important warning system, signaling problems in the body and prompting specific actions. It affects emotional well-being, relationships, and daily activities in addition to physical discomfort. While pain can be a symptom of a variety of diseases, it becomes a separate condition when it persists beyond the recovery period from an injury or illness, potentially progressing to chronic pain (National Institute of Neurological Disorder, 2023).

2.7.1 Postoperative pain

Postoperative pain is often experienced by patients who are under surgical procedures. Effective pain management is critical for a patient's return to normal function and minimizing the physiological and psychological consequences of uncontrolled pain. To control postoperative pain, pharmacological agents and interventional techniques can be used. (National Library of Medicine, 2022)

Pain after mastectomy therefore refers to the discomfort or sensation of discomfort that can occur following a surgical procedure to remove one or both breasts. Pain is a common side effect, which can occur in the chest, underarm, and arm. Postoperative pain syndromes occur in approximately one-half of all cases in women undergoing mastectomy and breast reconstruction for breast cancer (Vadivelu et al, 2008). Pain and functional compromise after breast cancer surgery are major problems that can impact a woman's quality of life. Furthermore, pain control can be complicated in advanced breast cancer patients, particularly when there is metastasis of the tumor. Therefore, pain management strategies must be tailored to address the specific needs and challenges of the individual patient (Vadivelu et al., 2008).

In a study conducted by Oliveira et al.(2014), it was identified that postoperative pain poses a prevalent challenge for individuals undergoing mastectomy. The research indicates that around 60% of patients who undergo mastectomy with reconstruction encounter significant pain during the immediate postoperative phase. Furthermore, the study notes that chronic pain is more frequently observed in cases involving axillary dissection of lymph nodes that is modified radical mastectomy (MRM). Consequently, the intensity of postoperative pain appears to be contingent on the specific type of mastectomy undertaken (Oliveira et al., 2014).

Phantom breast pain, a prevalent form of chronic pain following mastectomy, is characterized by sensations in the removed breast, despite its absence. This pain is attributed to nerve damage during surgery and can be severe and disabling. Alongside phantom breast pain, individuals may also encounter phantom limb pain, manifesting as pain in the arm on the same side as the removed breast (Kudel et al., 2007). Neuropathic pain, stemming from nerve damage, is another chronic pain type that may emerge after mastectomy. Described as burning, tingling, or shooting pain, neuropathic pain poses challenges in management and can significantly impact patient outcomes and quality of life. Musculoskeletal pain is an additional pain type that can arise in post-mastectomy due to changes in posture and movement. Felt in the chest, shoulders, and back, this pain can be addressed through physical therapy and exercise, although effective treatment may present difficulties (Kudel et al.,2007).

2.7.2 Psychological pain.

Psychological pain can significantly affect individuals undergoing mastectomy, with the experience eliciting a range of emotional and psychological responses. These reactions are shaped by various factors, including an individual's personality, social support, coping mechanisms, and pre-existing mental health conditions. A study by Shrestha (2012) revealed that women facing mastectomy grapple with profound fears related to their mortality, impacting not only the individuals themselves but also resonating within their families. The comprehension of their health status and the surgical process prompts contemplation on life expectancy and the proximity of mortality. Another primary channel through which psychological pain manifests in mastectomy patients is the impact on body image and self-esteem. The loss of one or both breasts can significantly influence how individuals perceive their bodies and their sense of self-worth. Given the association of breasts with femininity and attractiveness, their removal can evoke feelings of disfigurement

and identity loss, contributing to psychological pain and leading to emotions such as sadness, insecurity, and even depression. Shrestha (2012) also suggested that mastectomy's repercussions extend to sexual health and intimacy, sparking concerns about how partners perceive individuals, alterations in sexual desire, and potential physical discomfort or pain during sexual activity. These challenges can result in emotional distress and strain relationships (Shrestha, 2012)

Finally, the management of physical transformations after mastectomy, including scars and altered body contours, can prove challenging. Accepting these changes can be a struggle for some individuals, impacting their mental well-being and self-acceptance. Another consequence of the emotional aftermath of a mastectomy is the potential for social isolation. Individuals may distance themselves from social activities, friends, and family, driven by feelings of shame, embarrassment, or a belief that others may not comprehend their experience (Shrestha, 2012).

2.7.3 Post-mastectomy pain syndrome (PMPS)

A study by Shahbazi et al, (2015) revealed that failure to promptly address postoperative pain can lead to the development of a condition known as Postmastectomy Pain Syndrome (PMPS). PMPS is a chronic pain condition that can manifest in the thoracic wall, axilla, and upper half of the arm following breast surgery. It affects 20-68% of women, causing difficulties in daily activities and adversely impacting the quality of life (Kaur et al., 2018). This syndrome is considered a neuropathic pain condition, stemming from damage to the nervous system in the axilla or chest wall due to surgical breast cancer treatment. Non-modifiable risk factors for PMPS include age, with younger patients being more susceptible to chronic pain after breast surgery. Adjuvant therapies like chemotherapy and radiotherapy can also contribute to the development of acute and chronic pain after breast cancer surgery (Shahbazi et al., 2015).

2.8 Assessment of pain.

The assessment of pain after mastectomy involves a comprehensive evaluation of the patient's pain and associated symptoms to develop an individualized pain management plan. Pain assessment can be carried out through various methods, including verbal communication, observations, and holistic patient assessment. One common verbal pain assessment tool employed in clinical settings is the Numeric Rating Scale (NRS), where

patients rate their pain on a scale from zero to ten. However, some argue that the NRS is open to interpretation, as patients and healthcare providers may have different subjective interpretations of the same pain score. Despite this criticism, the NRS serves as a valuable tool for establishing a common language between healthcare professionals and patients, facilitating the tracking of changes in pain levels. An alternative to numerical scales is the use of pain-descriptive tools like the Verbal Descriptor Scale, which employs descriptive phrases such as 'intense,' 'mild,' or 'no pain' rather than numerical values. Nonetheless, although the Verbal Descriptor Scale provides descriptive information about pain, it may lack specificity. In contrast, there is a comprehensive mnemonic known as COLDSPA, which helps assess various aspects of pain, including its character, onset, location, duration, severity, pattern, and any associated factors. COLDSPA aids in gaining a better understanding of how patients experience pain. It is worth noting that acute pain is frequently under-recognized or inadequately addressed, prompting suggestions that pain assessment should be regarded as a fifth vital sign (Claassens,2018).

According to a study by Claassens (2018), pain assessment is critical, especially when patients are unable to communicate their discomfort. Patients may be drowsy or sedated in the immediate postoperative period, necessitating the use of nonverbal pain assessment tools such as the Behavioral Pain Scale (BPS) and Non-Verbal Adult Pain Assessment Scale (NVAPAS). It's important to note that vital signs alone aren't enough to accurately predict pain. BPS and NVAPAS use a combination of behavioral and physiological observations to assess a patient's level of pain. Acute pain can cause physiological and behavioral changes such as increased blood pressure, respiration rate, heart rate, changes in skin appearance, pupil dilation, decreased body movements, and facial grimacing. Although some consider BPS to be a valid indicator of acute pain, its suitability for assessing post-mastectomy pain remains unknown. Acute pain experienced by the patient may be related to the mastectomy procedure or a potential post-operative complication. Instead of assuming that the surgical procedure is the sole cause of post-operative pain, a thorough wound assessment is essential. Furthermore, evaluating the patient's circulation, neurological function, and respiration is critical because these factors can influence post-mastectomy pain and complications (Claassens,2018).

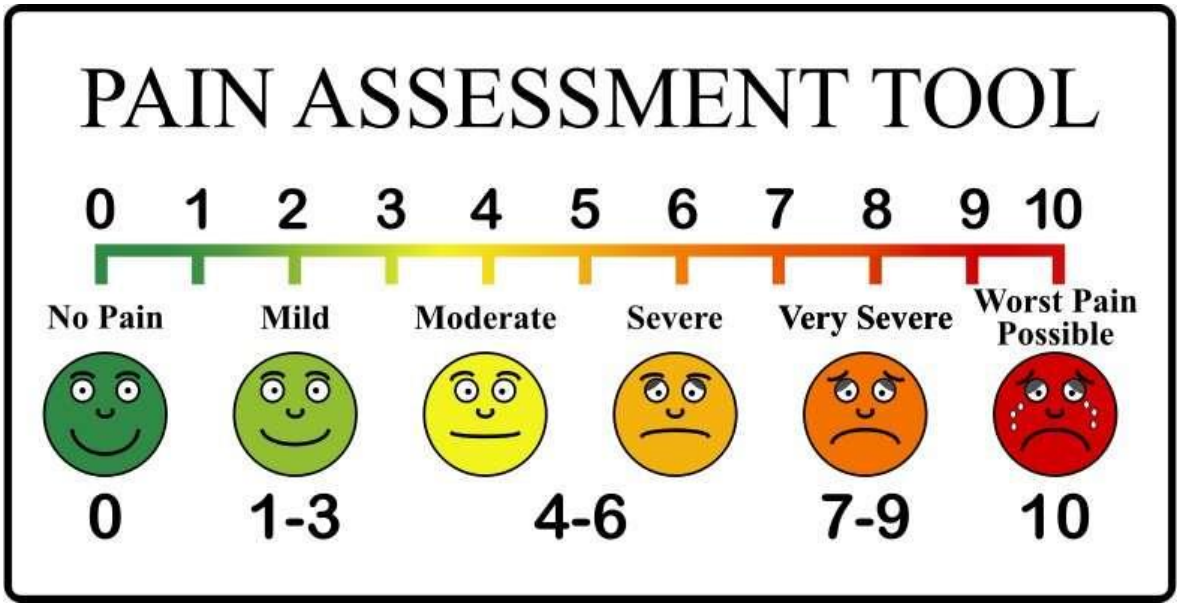

Figure 1 ***Pain Assessment Tool*** **(Medical Xpress,2022)**

2.9 Impact of pain on women after mastectomy.

In terms of physical recovery, pain can limit a woman's ability to perform daily activities, impede her mobility, and delay the healing process (Vadivelu et al, 2008). If the pain is not well-managed, it can also lead to a decreased appetite, poor sleep, and increased stress levels, which can further hinder the recovery process. In terms of emotional well-being, persistent pain can cause depression, anxiety, and other negative emotions. It can also affect a woman's self-esteem and body image, which can be particularly challenging after undergoing such a significant physical change. Socially, pain can make it difficult for women to engage in social activities and interact with others, which can lead to feelings of isolation and loneliness. This can hurt their overall quality of life and recovery process. Therefore, effective pain management strategies that address physical, emotional, and social needs can help mitigate the negative impact of pain on the recovery process and improve the overall well-being of women after mastectomy (Vadivelu et al., 2008).

3 AIM

The research is aimed at providing a comprehensive synthesis of the current evidence on postoperative pain management after mastectomy. The results will identify effective pain management strategies and potential barriers to effective pain management. The findings can be used to inform clinical practice and guide future research in this area.

3.1 Research Questions

- What are the different postoperative pain management strategies used after mastectomy?

- What are the barriers to effective postoperative pain management in mastectomy patients?

4 Theoretical framework

A nursing theory serves as a conceptual framework formulated by nursing theorists to offer guidance and insight into various facets of nursing practice. Essentially, nursing theory can be considered the heart of nursing practice. These theories encompass concepts related to patient care, holistic approaches, communication, health promotion, patient education, compassion, ethics, critical thinking, and decision-making (Regis College, 2023). They provide systematic guidelines for nurses to comprehend, elucidate, and navigate the intricacies of patient care. The overarching goal is to promote holistic well-being, effective communication, ethical conduct, and evidence-based practice within the nursing profession. The conceptual framework for this thesis incorporates Katherine Kolcaba's theory of Comfort.

4.1 Katherine Kolcaba's Theory of Comfort

Katherine Kolcaba's background as a nurse, combined with her experiences in various healthcare settings, led her to question the traditional focus on disease and treatment. Drawing inspiration from the works of Florence Nightingale and her understanding of holistic care, Kolcaba introduced the idea that comfort is a fundamental human need that should be addressed alongside medical interventions. She recognized that patients' comfort needs encompass physical, psychospiritual, social, and environmental dimensions, all of which contribute to their overall experience of health and healing.

Katharine Kolcaba's Theory of Comfort outlines three distinct types of comfort, each addressing different dimensions of the human experience. The first type is "Relief Comfort", which involves the alleviation of discomfort or physical distress. It focuses on the mitigation of physiological symptoms such as pain, nausea, or shortness of breath. Relief comfort aims to restore a sense of equilibrium in the body, allowing individuals to experience relief from their discomfort and enabling them to focus on their healing and well-being (Alligood, 2017, p .528).

The second type, "Ease Comfort", encompasses the enhancement of overall well-being and contentment. This dimension goes beyond physical relief to encompass emotional, psycho-spiritual, and even social aspects of comfort. Ease Comfort aims to create a positive atmosphere and foster feelings of security, relaxation, and emotional tranquility. It acknowledges the interconnectedness of physical and psychological comfort, recognizing

that a peaceful and supportive environment contributes significantly to an individual's holistic sense of comfort (Alligood, 2017, p .528).

The third type, "Transcendence Comfort", delves into the transformational aspects of comfort. This dimension addresses personal growth, the creation of meaning, and a deeper understanding of one's situation, even in the face of discomfort or suffering. Transcendence comfort involves finding purpose and meaning within challenging circumstances, leading to a higher level of psychological and spiritual well-being. It emphasizes the potential for individuals to rise above their immediate physical or emotional discomfort and find a sense of profound understanding, acceptance, and peace. These three types of comfort collectively provide a comprehensive framework for understanding and addressing the diverse needs of individuals within a healthcare context. They encompass the spectrum of human experience, from the physical to the emotional and even the spiritual, contributing to a holistic approach to patient care (Alligood, 2017, p. 528).

5 Methodology

In this thesis, a qualitative literature review approach was employed to gather and integrate pertinent information related to the subjects of concern. In the context of a qualitative literature review within a thesis, the methodology refers to the approach used to gather, analyze, and synthesize the existing literature on this chosen topic. While a traditional research study involves data collection and analysis, a literature review focuses on summarizing, evaluating, and discussing the relevant scholarly works available on the subject.

5.1 Systematic literature review

A systematic literature review is a research method that involves identifying, evaluating, and synthesizing all available research evidence on a specific research question or topic systematically and transparently. A systematic literature review aims to provide a comprehensive, unbiased, and reproducible summary of the current state of knowledge on a particular topic (Daren, 2015). A literature review article usually consists of several steps. The researcher must first formulate a research question or topic of interest. Following that, they conduct a thorough search for relevant studies, utilizing a variety of sources such as databases, reference lists, and online archives. The studies are then evaluated based on predetermined criteria such as relevance, quality, and methodology, and the findings are synthesized into a coherent narrative. They may also identify gaps in the literature and suggest areas for future research along the way. Finally, the literature review article should include an introduction, a discussion of the key themes and findings, and a conclusion that summarizes the main points and highlights the review's contributions to the field (Daren, 2015).

5.2 Data collection

Data collection involves the gathering and examination of pertinent data to address the research question of the study. Diverse data collection methods exist, and this study employed a systematic literature search to amass pertinent information. To achieve a high-quality literature review, comprehensiveness, precision, and progression are essential

aspects (Polit & Beck , 2012). The sources cited in this thesis have been published in the past Ten years. The thesis relies on respected databases like EBSCOhost MEDLINE, EBSCOhost Academic Search Elite, and CINAHL. Access to these databases was facilitated through FINNA, a search engine that grants entry to the library and electronic resources of Novia University of Applied Sciences. Keywords like Breast cancer, Mastectomy, Postoperative pain, Pain management, and Barriers were used to search for articles.

5.3 Inclusion and exclusion criteria

Keywords	**Exclusion criteria**	**Inclusion criteria**
Breast cancer	Articles which are not published between 2013-2023	Articles published between 2013-2023
Mastectomy	Articles in other languages	Articles in English
Postoperative pain	Articles that are not peer-reviewed	Articles that are peer-reviewed
Barriers	Articles that were not available in full-text	Full-text articles
Pain management,	Articles that did not relate to the aim	Articles that relate to the aim

Table 1 ***Inclusion and exclusion criteria***

From the research, a total of 650 articles were identified from various databases, including 124 from EBSCOhost Academic Search Elite, 338 from EBSCOhost MEDLINE, and 188 from CINAHL search. Subsequently, the titles, abstracts, and content of these articles were carefully assessed for their relevance. The PRISMA flowchart below illustrates this selection process

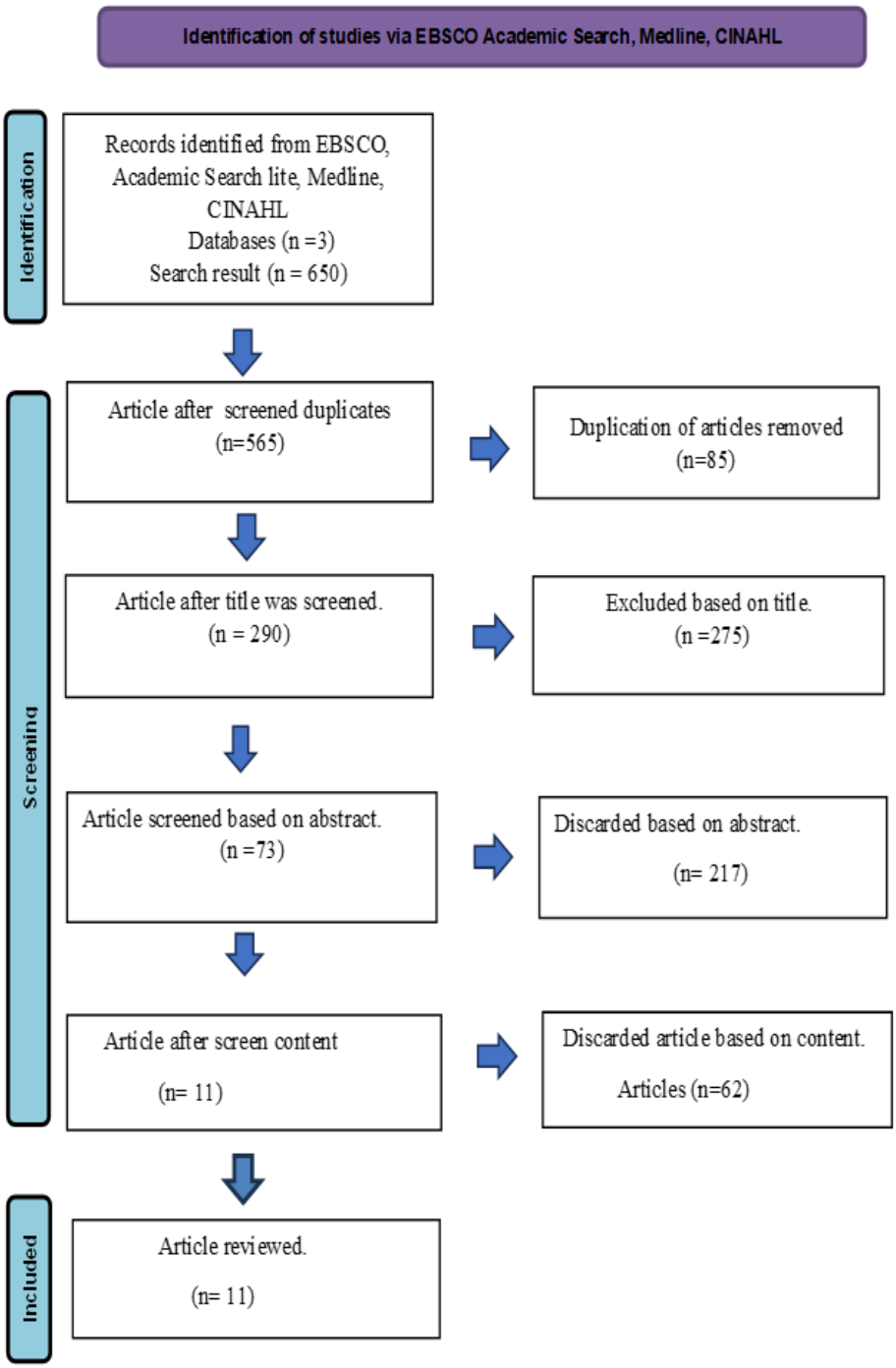

Figure 2 ***Prisma flow chat for literature review***

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

5.4 Data analysis

Content analysis of a qualitative literature review involves systematically analyzing and interpreting the content of the literature that has been reviewed. The purpose of this analysis is to identify patterns, themes, and trends within the literature that can help the researcher to answer their research questions and develop their arguments. Content analysis may involve categorizing the literature into themes or codes, identifying the frequency of certain concepts, and comparing the findings of different studies. Overall, the content analysis of a literature review in a thesis is an important step in developing a comprehensive understanding of the research topic and drawing meaningful conclusions from the available literature (Krippendorff, 2018).

5.5 Ethical Considerations

Ethical considerations are an important aspect of research, and they are designed to ensure that the research is conducted in a manner that is respectful, responsible, and safe for all participants involved. This includes ensuring that the sources have obtained informed consent from their research participants, protected their privacy and confidentiality, and minimized any potential harm or risks to the participants. It also involves ensuring that the sources have followed ethical principles and guidelines in conducting their research and reporting their findings. Additionally, the literature review should avoid any form of plagiarism, misrepresentation, or fabrication of data, and should properly acknowledge and reference the sources used in the review All sources utilized in the thesis are duly acknowledged and referenced, aligning with the ethical standard (TENK, 2021).

6 Results

The results section showcases the significant discoveries and how they align with the research objectives by thoroughly examining and pinpointing the primary themes and subthemes from the articles. It's worth noting that the qualitative analysis conducted in this thesis has been instrumental in utilizing specific research content obtained from eleven (11)

previously identified and published studies. In this section, postoperative pain management after mastectomy was categorized into two primary themes: Physiological and nonphysiological strategies for pain management, and nursing care barriers to postoperative pain management. These two main themes were further divided into 7 subthemes. The flowchart below illustrates themes and subthemes.

Theme 1. Physiological and nonphysiologically strategy of pain management after mastectomy. Subthemes include pharmacological methods, nonpharmacological methods, and psychological support.

Theme 2. Nursing care barrier. Subthemes include opioid addiction, medication side effects, inadequate pain assessment, and communication barriers. The flowchart below illustrates themes and subthemes.

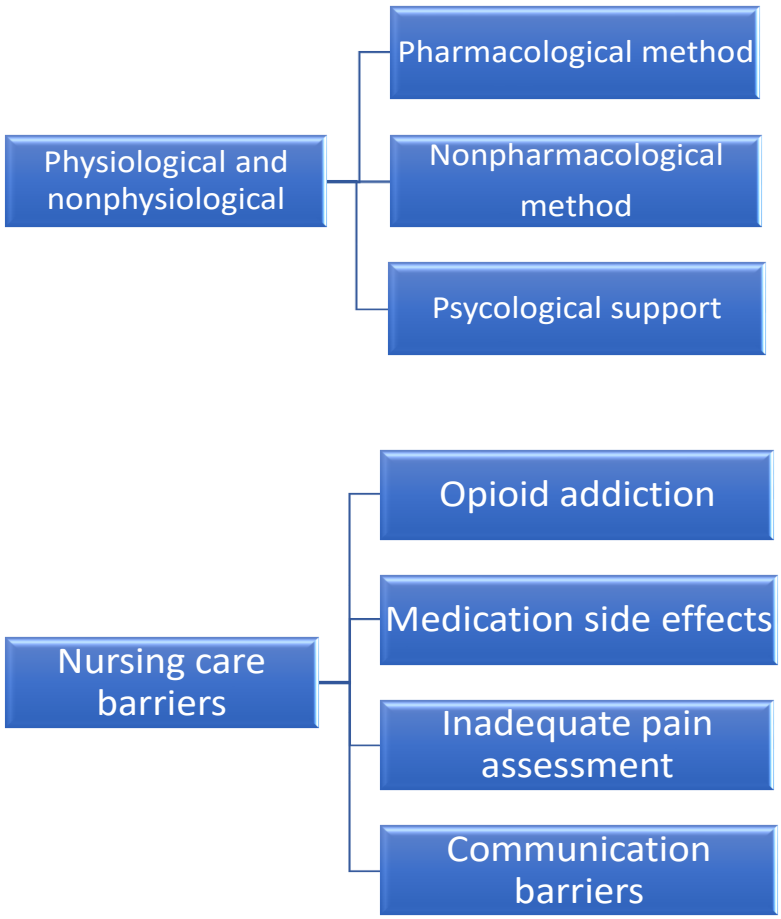

Figure 2. *Results from literature review of post-operative management after mastectomy*

6.1 Physiological and Nonphysiological Strategies

It refers to the strategies and techniques employed to alleviate and control pain in individuals who have undergone breast removal surgery. This comprehensive approach aims to ensure the patient's comfort and well-being during the recovery period while minimizing the use of opioids and their potential side effects. It may include various interventions, such as non-opioid medications, regional anesthesia techniques, nerve blocks, and other pain relief methods tailored to the individual patient's needs and the type of mastectomy performed. The goal is to effectively manage pain, promote healing, and improve the patient's overall postoperative experience.

6.1.1 Pharmacological Methods

Managing postoperative pain after mastectomy is a crucial aspect of patient care. Historically, opioids were conventionally the preferred option for alleviating pain in this situation. However, due to concerns about opioid addiction and side effects, there has been a shift toward exploring non-opioid alternatives (Sada et al.,2019). To ensure safe opioid-prescribing practices for surgical patients, it's essential to understand each patient's unique requirements and provide balanced guidelines that either excessively prescribe or inadequately prescribe opioids. Dealing with the considerable variations in opioid-prescribing practices is vital, and prescribing guidelines should be customized based on the specific procedure and the individual patient's risk factors.

According to a study by Sada et al, (2019), patients can be categorized into two groups: high-risk and low-risk patients based on their in-hospital pain scores and opioid consumption before discharge. Acetaminophen was considered the first choice for pain management, followed by tramadol as the secondary option to reduce the use of oxycodone. Oxycodone was considered a third-line option for addressing breakthrough pain when acetaminophen

and tramadol were insufficient. This strategy aims to provide tailored pain management while minimizing opioid usage (Sada et al.,2019)

Another study by Mane et al, (2021) stated that nonopioid treatments, such as pectoral nerve blocks, have become preferred options for managing postoperative pain after mastectomy due to the adverse effects associated with opioid medications. Pectoral nerve blocks, specifically Pecs I and Pecs II blocks, involve the injection of local anesthetics into the chest muscles and surrounding nerves. Pecs I block targets the medial and lateral pectoral nerves, while Pecs II block extends the coverage to include intercostal nerves and the thoracodorsal nerve. These blocks are effective in reducing the need for opioid pain medications and enhancing pain control in the chest and breast area after surgery (Mane et al.,2021).

An additional regional analgesic technique utilized in the management of postoperative pain after mastectomy is the thoracic paravertebral block. This method involves the injection of local anesthetics into the paravertebral space, situated adjacent to the vertebral column. Stewart et al. (2021) conducted a study that demonstrated the efficacy of this method in alleviating pain after mastectomy.

However, emerging as a newer alternative is the Erector Spinae Plane block **(**ESPB). This technique involves the injection of local anesthetics into the erector spinae plane, a fascial plane located near the vertebral column. Furthermore, erector spinae plane block) might provide more benefits when compared to conventional thoracic paravertebral blocks, as indicated by (Stewart et al.,2021).

6.1.2 Nonpharmacological Methods

Non-pharmacological techniques for managing pain after mastectomy encompass a range of approaches and strategies aimed at alleviating discomfort and promoting recovery without relying on medications. These methods encompass physical, psychological, and complementary therapies, all designed to enhance the overall well-being of mastectomy patients.

Physical therapy plays a crucial role in pain reduction, fatigue management, and the mitigation of cancer treatment side effects, ultimately improving patients' quality of life Klein et al, (2021). Physical therapy also contributes to enhanced physical functioning and increased range of motion (ROM) during the recovery process. However, despite the evidence supporting the benefits of early physical therapy, surgeons may be hesitant to refer

patients due to concerns about potential issues such as increased bleeding, seroma (fluid accumulation in the tissue), and lymphedema (chronic edema). This prompts an important question: when is the optimal time to initiate physical therapy and exercise? (Klein et al., 2021).

In a study conducted by Tola et al, (2021) it was highlighted that Music intervention (MI) is a versatile form of mind-body therapy with various applications, one of which is pain management following surgical procedures. MI is thought to operate by providing a form of mental distraction, potentially modifying the perception of painful stimuli within the spinal cord. Furthermore, it competes with the transmission of pain signals to the brain along the spinal cord. MI encompasses the emotional, physical, social, mental, spiritual, and aesthetic dimensions of music, aiming to support and enhance the overall well-being of the individual. Tola et al, (2021) have highlighted the advantages of Music Intervention (MI), such as its cost-effectiveness, patient-centered approach, and cultural appropriateness. This recognition has led to the integration of MI in various post-surgery pain management.

Abdelaziz & Mohammed (2014) also suggested that massage therapy can help elevate pain after mastectomy. Massage therapy (MT) is the practice of manipulating soft tissues using manual techniques to facilitate positive effects on various systems within the body. It encompasses the application of specialized strokes, kneading, and the exertion of pressure with varying degrees of intensity on soft tissues to alleviate postoperative pain in cancer patients.

MT techniques have demonstrated their ability to enhance blood circulation, promote venous and lymphatic drainage, boost muscle tissue metabolism and flexibility, and induce relaxation by increasing parasympathetic activity while reducing sympathetic nervous system activity. Moreover, MT offers a biological advantage by elevating serotonin and dopamine levels while reducing stress hormone levels, which can be particularly beneficial for breast cancer patients who have undergone mastectomy (Abdelaziz & Mohammed, 2014).

6.1.3 Psychological support

A study by Theofilou (2022), states that breast cancer often triggers a range of emotional responses, including fear, a sense of femininity loss, reduced self-confidence, and changes in body image. Additionally, it can affect a woman's relationships with those close to her,

potentially leading to feelings of isolation and loneliness. Consequently, these emotional fluctuations can have a detrimental effect on the psychological well-being of mastectomy patients, leading to stress, anxiety, and in some cases depression. The mastectomy experience, starting with the breast cancer diagnosis, leads women to redefine their lives and make significant decisions.

Theofilou (2022) also suggested that the loss of the breast is experienced as both mourning and trauma for mastectomy patients. They find it challenging to discuss their bodies and may even feel disgusted and avoid touching or looking at their chests. The scar left by the surgery adds to their feeling of bodily difference and foreignness. The diagnosis phase is considered the most painful moment for women with breast cancer, as it is the first encounter with the harsh reality of the disease. It is characterized by uncertainty, self-perception changes, and ambiguity. The fear of death during this phase is overwhelming, overshadowing even the mastectomy announcement. Counseling support plays a significant role in helping women affected by breast cancer come to terms with the emotional and physical changes they experience. Through counseling, women not only learn to accept their new self-image but also find relief from these negative emotions, allowing them to evolve and integrate a new identity (Theofilou, 2022).

Another study by Çol & Kılıç (2019) investigates the impact of a training and counseling program on mastectomy survivors and their spouses, addressing post-treatment challenges and emphasizing the importance of interventions to maintain quality of life. The program, based on a health promotion model, is designed to improve family functioning and overall well-being. The training is delivered by nurses through home visits and phone calls and includes sessions on topics such as physical activities, a healthy diet, effective communication, stress management, and problem-solving skills. It consists of four weekly home sessions lasting 50-60 minutes each, followed by a phone call and a home visit a month later, for a total of three months of counseling. This program was found effective in improving family dynamics and overall well-being among breast cancer survivors and their spouses (Çol & Kılıç, 2019).

6.2 Nursing care barriers.

While significant progress has been made in pain management approaches, effectively addressing postoperative pain in mastectomy patients continues to pose challenges. These

nursing care barriers represent hindrances to the successful relief of pain after mastectomy surgery.

6.2.1 Opioid addiction

Opioid addiction, known as opioid use disorder, is a severe condition characterized by an overwhelming and compulsive urge to use opioids, even in the face of its detrimental consequences. A study by Orujlu et al., (2022) stated that in 2016, opioid overdoses were responsible for more than 42,000 deaths, and an estimated 40% of these overdose fatalities were associated with prescription opioids. This alarming statistic has prompted a reduction in the amount of opioids prescribed to patients.

Additionally, many patients had apprehensions about the use of pain-relieving medications, especially opioids, fearing the potential for long-term addiction. Their concerns stemmed from a belief that these medications, due to perceived risks, were unsafe. Consequently, they held a negative attitude toward such drugs and refrained from taking them until their pain became excruciating. As a result, the fear of opioid addiction has impeded the effective management of pain after mastectomy (Orujlu et al., 2022).

6.2.2 Medication side effects

Also, these pain medications, while effective in alleviating discomfort, often come with side effects that can be troublesome for patients. Some of these common side effects include nausea, which can lead to feelings of queasiness and a general sense of unease, as well as constipation, which can cause discomfort and digestive issues. Orujlu et al, (2022) also stated that medications may also result in a sense of loss of control, affecting one's ability to function normally, and a reduction in alertness, leading to drowsiness and reduced cognitive sharpness. These potential side effects, when experienced, understandably make many patients hesitant to take pain medications, as they weigh the relief they provide against the unwanted consequences. This dilemma can impact a patient's overall pain management strategy and their willingness to use these medications as prescribed (Orujlu et al., 2022).

6.2.3 Inadequate pain assessment

Inadequate pain assessment in mastectomy patients serves as a significant barrier to effective pain management, giving rise to various issues. Patients reported that healthcare providers, for example, Nurses and Doctors often fail to adequately assess their pain, with doctors

prioritizing disease diagnosis and treatment over pain evaluation. This lack of attention to pain assessment can lead to misunderstandings about the severity of the patient's pain, resulting in suboptimal pain management. Furthermore, this insufficiency in pain assessment can cause delays in intervention, subjecting patients to unnecessary suffering and, in some instances, contributing to the development of chronic pain. Moreover, inaccurate pain assessment may lead to misconceptions about the origin of the patient's pain, potentially leading to an inappropriate treatment approach, thereby underscoring the importance of thorough pain evaluation in mastectomy patients (Orujlu et al., 2022).

6.2.4 Communication barriers

Communication barriers can significantly hinder effective pain management after mastectomy, underlining the importance of clear and empathetic communication between Nurses and patients. Language barriers can pose challenges, and a common sentiment among patients and their families is a desire for increased interaction and information from healthcare professionals. This becomes especially critical when addressing concerns related to potential medication side effects. Many patients feel that healthcare providers offer inadequate information during consultations and spend too little time with them, leading to interactions that feel rushed and unsatisfactory (Al-Ghabeesh et al., 2020).

Al-Ghabeesh et al, (2020) also suggested that in some cases, the information provided by physicians may be overwhelming, mistimed, or delivered in an insensitive manner, potentially straining the patient-provider relationship. Patients and caregivers can become distressed by remarks about the lack of improvement in their condition or insensitive comments from Nurses. Therefore, the way Doctors and Nurses communicate information significantly influences the mutual trust and confidence between them and the patients, ultimately affecting pain management (Al-Ghabeesh et al., 2020).

7 DISCUSSION

The discussion section is structured into three key parts: the results discussion, the method discussion, and the limitations of this study Moreover, it is centered on achieving the primary goal of the study, which is to offer a thorough synthesis of the existing evidence regarding post-operative pain management in mastectomy. The study's research inquiries also guide the discussion, specifically addressing the various strategies employed for postoperative pain management in mastectomy and examining the impediments encountered when striving for effective postoperative pain management in mastectomy patients.

7.1 Discussion of the Main Findings

According to peer-review articles, most authors agreed that "Physiological and non-physiological strategies for pain management after mastectomy," reveal a holistic approach involving pharmacological, non-pharmacological, and psychological methods. The shift away from traditional opioid-centric postoperative pain management reflects concerns about addiction and side effects (Sada et al., 2019).

Pharmacological management adopts a patient-tailored approach, categorizing patients based on pain scores and opioid consumption. Non-opioid medications like acetaminophen are prioritized, with tramadol as a secondary option and oxycodone as a third-line choice for breakthrough pain (Sada et al.,2019). Non-pharmacological methods, such as physical therapy, music intervention (MI), and massage therapy (MT), play significant roles in managing postoperative pain. MI provides mental distraction and alters the perception of painful stimuli, while MT stimulates circulation and promotes relaxation.

The psychological support strategy addresses the multifaceted impact of breast cancer, particularly in the context of mastectomy and post-treatment challenges. Theofilou (2022) study highlights emotional responses triggered by breast cancer, including fear, femininity loss, and changes in body image, leading to potential feelings of isolation. Diagnosis is deemed particularly challenging, marked by uncertainty and overwhelming fear of death. Counseling, as emphasized by Theofilou (2022), plays a pivotal role in helping women navigate these emotional challenges, fostering acceptance of a new self-image and evolution into a new identity. Çol & Kılıç (2019) study focuses on the impact of a training and counseling program rooted in a health promotion model, effectively improving family dynamics and overall well-being among mastectomy survivors and their spouses.

Despite promising techniques, nursing care barriers to effective pain management after mastectomy exist. Medication tolerance and fear of opioid addiction may deter proper use. Analgesic side effects, inadequate pain assessment, and communication barriers between nurses and patients pose additional challenges (Orujlu et al., 2022; Al-Ghabeesh et al., 2020).

This study adopts Katharine Kolcaba's theory of comfort, identifying three distinct types: relief, ease, and transcendence (Kolcaba, 1994). Relief comfort focuses on immediate relief of surgical pain, utilizing techniques like medications and anesthesia. However, barriers such as medication addiction and side effects may impede effective relief. Ease Comfort aims to provide relaxation, contentment, and well-being through non-pharmacological methods like music therapy, massage therapy, and psychological support. Communication barriers may hinder the achievement of ease comfort. Transcendence comfort, the highest level, seeks to help patients find meaning and personal growth. Achieving transcendence comfort may involve counseling and support, addressing issues such as body image and self-esteem. Barriers to transcendence comfort include inadequate pain assessment. This framework guides the study in understanding and addressing postoperative pain management after mastectomy in a comprehensive manner.

7.2 Discussion related to methodology.

The extensive nature of the topic led to the selection of a qualitative literature review as the research method for this study. The method of reviewing the literature provided a structured and manageable approach to exploring the vast subject matter in an easy-to-understand manner. It is critical to ensure the trustworthiness of qualitative content analysis in this regard, which can be accomplished by addressing factors such as credibility, dependability, confirmability, and transferability (Wood & Sikes,2022). In this study, trustworthiness was upheld by collecting relevant data through a systematic literature review.

The eleven (11) selected articles underwent a rigorous examination, analysis, and interpretation during the review process. This comprehensive review method allowed for a deep understanding of the topic. The study's foundation was built upon the areas of physiological and non-physiological strategies of pain management after mastectomy and the nursing barriers to postoperative pain management. These aspects provided a clear framework to guide the study towards its eventual results. The study's outcomes represent a collective understanding derived from the selected date and it focused on identifying patterns, similarities, and regularities within the data to draw meaningful conclusions.

Furthermore, the collected data developed a sense of trustworthiness, assuring the reader about category formation and the reliability of the findings. The study's findings were interpreted and presented in a logical sequence, making it easy for readers to comprehend the connections between the data and the results. The themes and subthemes were illustrated transparently to enhance clarity. This approach allowed for the incorporation of previous knowledge, emphasizing existing insights and building upon them. The study's structure and format adhered to the thesis writing guidelines of Novia University of Applied Sciences, ensuring consistency and clarity in the presentation of information.

7.3 Limitations of this study

This study does exhibit some limitations. One notable constraint is the limited availability of free-to-access articles, which presented a significant challenge. Many potentially valuable articles that could have contributed to the study were inaccessible due to restricted access, potentially resulting in the exclusion of pertinent information and introducing a potential bias into the data used. Moreover, qualitative literature reviews are susceptible to selection bias, as the inclusion of studies may rely on the researcher's judgment, which can introduce subjectivity. However, many of these limitations can be addressed and improved through larger-scale research conducted by more established or well-funded researchers. So, in this study, the literature review was conducted by a single researcher. Collaborative efforts, especially in systematic literature reviews, are generally recommended, involving at least two researchers to enhance reliability and minimize the potential for bias (Wood &Sikes 2022). Another limitation is related to the number of articles included in the review and this research was carried out based only on 11 articles. While the selected databases were thoroughly searched according to predefined inclusion and exclusion criteria, it's possible that expanding the search to additional databases and conducting a more comprehensive examination of grey literature could uncover even more relevant articles (Wood &Sikes,2022).

8 Conclusion

Finally, the thesis on postoperative pain management after mastectomy provides valuable insights into the complex and multifaceted issue of pain relief in breast cancer patients. The study describes a variety of effective pain management techniques, including both pharmacological and non-pharmacological approaches and psychological support. This includes a shift away from traditional opioid-based pain relief and toward a more balanced and individualized strategy aimed at reducing opioid use. Non-pharmacological methods, such as physical therapy, music intervention, and massage therapy, have also been identified as critical components in the pain reduction and postoperative recovery processes. The study does, however, highlight several nursing care barriers to effective pain management in this context. Concerns about opioid addiction, medication side effects, inadequate pain assessment, and communication difficulties between healthcare providers and patients are among the barriers. The emotional aspects of post-mastectomy patients, such as concerns about disease recurrence and body image, add to the overall complexity of this topic. Finally, this study emphasizes the importance of an integrated approach to postoperative pain management after mastectomy, addressing not only physical pain but also patients' psychological and emotional well-being. It emphasizes the importance of additional research in this area, particularly on a larger scale and by more established researchers, to address some of the limitations and continue to explore innovative and tailored pain management methods.

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Appendix 1 Overview of the article

AUTHOR AND TITLE	AIM	METHOD	RESULTS
Klein et al,(2021) A pilot study evaluating the effect of early physical therapy on pain and disabilities after breast cancer surgery: Prospective randomized control trial	This study examines the effect of early physical therapy (PT) and patient education on these morbidities.	A prospective, randomized clinical trial was conducted at a single medical center in October. 2018 until April 2019	Early PT and patient education reduce pain levels, and may improve function disabilities, without causing postoperative complications,
Tola et al,(2022) Perception of music and its cultural elements on acute post-mastectomy pain management among Nigerian women: an exploratory qualitative	This study aimed to explore the cultural elements of music in pain management among women who have undergone mastectomy	An exploratory qualitative study with in-depth interviews. Using the purposive sampling technique, 20 participants were recruited for the study.	The participants were between 28 and 83 years old and mostly diagnosed with stage III breast cancer. Three main themes emerged from the data analysis, including pain experienced after mastectomy, culture, and music, and the perception of music for postoperative pain management after mastectomy

Abdelaziz et al, (2014) Effect of foot massage on postoperative pain and vital signs in breast cancer patient	This study aims to evaluate the effect of foot massage on postoperative pain and vital sign parameters in postoperative breast cancer patients.	A quasi-experimental design was used to investigate any causality between foot massage and postoperative pain with a total of 60 breast cancer patients	When analyzing pain levels over time a significant difference was found between both groups with the mean the pain level of the experimental group who had experienced foot massage as an adjunct to analgesia was noted to be lower than that of the control group
Sada et al, (2019)	The study aimed to establish guidelines for	Patients who underwent mastectomy with concurrent	The finding showed that there is a significant overprescription of opioids after elective breast

Optimizing Discharge Opioid Prescribing Practices After Mastectomy With Immediate Reconstruction	opioid prescribing in the postoperative period following mastectomy with immediate reconstruction	tissue expander reconstruction were surveyed during different phases of the study	surgery. Practice guidelines can reduce the amount of opioids prescribed. Reducing excess opioids available in the community is a noble goal; however, it must be done cautiously, as decreased patient satisfaction can be an unintended consequence.
Orujlu et al,(2022) Barriers to cancer pain management from the perspective of patients	This study aimed to explore the barriers to effective pain management in Iranian people with cancer	This qualitative descriptive study was performed on 14 people with cancer. Data were collected using semi-structured interviews.	Barriers to pain management are multidimensional in nature consisting of patients, healthcare providers, and system components. Therefore, attempts should be focused on the education of patients and healthcare providers about pain management and eliminating the shortcomings of the healthcare system.

Al-Ghabeesh et al,(2020) Barriers to effective pain management in cancer patients from the perspective of patients and family caregivers	The purpose of this study was to explore the barriers to effective cancer pain management from the perspective of cancer patients and their family members	A qualitative research design was employed. Semi-structured interviews were conducted with 10 patients and 10 family caregivers to elucidate their perspectives regarding the barriers to effective cancer pain management in Jordan	Regulatory factors, knowledge deficit, and the use of religious and cultural strategies to cope with pain were major barriers to effective cancer pain management. Although effective cancer pain management is highly recommended, the participants' cultural beliefs deeply appreciated pain tolerance and discouraged effective treatment of cancer pain

(Stewart, et al., 2021) Erector spinae plane block versus thoracic paravertebral block for pain management after total bilateral mastectomies	This clinical quality improvement project aimed to compare pain scores and opioid consumption between erector spinae plane blocks (ESPB) and thoracic paravertebral blocks (PVB) in patients undergoing total bilateral mastectomies without reconstruction.	Twenty-five patients enrolled in an enhanced recovery pathway received both ESPB on one side and PVB on the contralateral side	This suggests that ESPB and PVB confer equal analgesic effects in patients undergoing mastectomies. The conclusion was that ESPB provides a comparable alternative to PVB for reducing postoperative pain in mastectomy patients within an enhanced recovery pathway.

Mane et al,(2021) Modified Pectoral Nerves Block for Postoperative Analgesia After Modified Radical Mastectomy: Analysis of Efficacy	This study aimed to evaluate the effectiveness of the modified pectoral nerves (Pecs II) block given intraoperatively for pain relief in the postoperative period of patients undergoing modified radical mastectomy.	A total of 100 patients, divided into two groups of 50 each (test group: general anesthesia with endotracheal intubation with Pecs II block, and control group: general anesthesia with endotracheal intubation only), were included in the study.	The findings suggest that the modified Pecs II block administered intraoperatively is an effective technique for postoperative analgesia in patients undergoing modified radical mastectomy.

Saifan et al, (2015) Patient–and family–and caregiver–related barriers to effective cancer pain control.	The purpose of this study was to identify the attitudinal barriers to effective cancer pain relief in patients and their family caregivers in Jordan.	A cross-sectional questionnaire survey was employed for this study. The researchers recruited a convenience sample of 300 cancer patients and 246 family caregivers from four different Jordanian hospitals between August 2009 and May 2010	The study identified four major barriers to pain control: fears related to addiction, side effects, communication concerns, and fatalistic beliefs. This research provides essential baseline information about the barriers to effective cancer pain control in Jordan.

Theofilou (2022) Mental Health among Women after Mastectomy: The Role of Counselling.	This research aims to investigate the consequences of the mastectomy experience in women with breast cancer, exploring the role of counseling therapy in promoting their mental health.	Five women who had undergone mastectomy and participated voluntarily in semi-structured interviews were included in the study. Phenomenological Analysis was employed for the analysis of the interviews.	The analysis revealed that mastectomy induces both physical changes, such as the sensation of breast loss, and mental changes, directly impacting the women's mental health in their awareness of breast removal. The provision of advisory support emerged as a crucial factor in alleviating psychological symptoms, managing negative thoughts, and reducing emotional distress.

Çol & Kılıç (2019). The Effects of the Training Program and Counseling Program Given to Women Who Underwent a Mastectomy and Spouses	This study focused on assessing the effects of the training program and counseling program given to women who underwent a mastectomy and their spouses	The study was carried out between September 2013 and January 2016, by using an experimental model with pre-test and post-test design and a control group to discover the effect of training and counseling program	The results prove that education and counseling programs improve family functioning and quality of life for women and their spouses