ORIGINAL ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

SURGICAL WOUND CARE AFTER CARDIAC SURGERY: CONSTRUCTION OF AN EDUCATIONAL BOOKLET FOR USERS

CUIDADO DE LA HERIDA QUIRÚRGICA DESPUÉS DE LA CIRUGÍA CARDÍACA: CONSTRUCCIÓN DE UN FOLLETO EDUCATIVO PARA LOS USUÁRIOS

CUIDADOS COM A FERIDA OPERATÓRIA PÓS CIRURGIA CARDÍACA: CONSTRUÇÃO DE CARTILHA EDUCATIVA PARA USUÁRIOS

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Submission: 06-04-2025
Approval: 27-08-2025

ABSTRACT
Introduction: Cardiovascular diseases are the leading cause of mortality in Brazil and worldwide, particularly ischemic heart disease and Acute Myocardial Infarction. Procedures such as Coronary Artery Bypass Grafting are common but may result in severe complications, including Surgical Site Infections and wound dehiscence, which increase hospital stay, healthcare costs, and morbidity and mortality rates. Factors such as advanced age, comorbidities, and local conditions exacerbate these risks. In this context, educating patients about postoperative care is a key strategy to prevent complications. **Objective**: To describe the development of an educational booklet aimed at guiding patients on wound care after cardiac surgeries. **Method**: Methodological study developed in two stages: (1) scoping review on post-operative care after cardiac surgery, using databases such as SciELO, LILACS, Medline and PubMed, in addition to guidelines and technical notes; and (2) the development of an educational booklet with clear language and accessible illustrations. Results: A total of 330 articles were identified, of which 14 met the inclusion criteria. The analysis highlighted essential care practices such as proper hygiene, warning signs for Surgical Site Infections, risk factor control, and guidance on daily activities, which formed the basis of the booklet's content. **Conclusion**: The developed booklet has the potential to reduce complications, promote self-care, improve quality of life, and support patients' autonomy during the postoperative period.
Keywords: Thoracic Surgery, Nursing Care, Surgical Wound, Cardiology

RESUMEN
Introducción: Las enfermedades cardiovasculares son la principal causa de mortalidad en Brasil y en el mundo, especialmente la cardiopatía isquémica y el Infarto Agudo de Miocardio. Procedimientos como la Cirugía de Revascularización Miocárdica son comunes, pero pueden resultar en complicaciones graves, como Infecciones del Sitio Quirúrgico y dehiscencia de la herida quirúrgica, lo que aumenta el tiempo de hospitalización, los costos hospitalarios y las tasas de morbimortalidad. Factores como la edad avanzada, comorbilidades y condiciones locales agravan estos riesgos. En este contexto, educar a los pacientes sobre los cuidados postoperatorios es una estrategia clave para prevenir complicaciones. **Objetivo**: Describir el desarrollo de un folleto educativo destinado a orientar a los pacientes sobre el cuidado de la herida quirúrgica después de cirugías cardíacas. **Método**: Estudio metodológico desarrollado en dos etapas: (1) revisión del alcance de los cuidados postoperatorios de cirugía cardíaca, utilizando bases de datos como SciELO, LILACS, Medline y PubMed, además de directrices y notas técnicas; y (2) elaboración de un folleto educativo con lenguaje claro e ilustraciones accesibles. **Resultados**: Se identificaron 330 artículos, de los cuales 14 cumplieron con los criterios de inclusión. El análisis destacó prácticas esenciales como una adecuada higiene, señales de alerta para Infecciones del Sitio Quirúrgico, control de factores de riesgo y orientación sobre actividades cotidianas, que fundamentaron el contenido del folleto. **Conclusión**: El folleto desarrollado tiene el potencial de reducir complicaciones, promover el autocuidado, mejorar la calidad de vida y apoyar la autonomía de los pacientes durante el período postoperatorio.
Palabras clave: Cirugía Torácica, Cuidados de Enfermería, Herida Quirúrgica, Cardiología.

RESUMO
Introdução: As doenças cardiovasculares lideram as causas de mortalidade no Brasil e no mundo, especialmente a cardiopatia isquêmica e o Infarto Agudo do Miocárdio. Procedimentos como a Cirurgia de Revascularização do Miocárdio são comuns, mas podem resultar em complicações graves, como Infecção do Sítio Cirúrgico e deiscência da ferida operatória, que aumentam o tempo de internação, custos hospitalares e taxas de morbimortalidade. Fatores como idade avançada, comorbidades e condições locais agravam os riscos. Nesse contexto, a educação dos pacientes sobre os cuidados no pós-operatório é uma estratégia fundamental para prevenir complicações. **Objetivo:** Descrever a construção de uma cartilha educativa voltada para orientar pacientes sobre os cuidados com a ferida operatória após cirurgias cardíacas. **Método:** Estudo metodológico desenvolvido em duas etapas: (1) revisão de escopo sobre cuidados no pós-operatório de cirurgia cardíaca, utilizando bases como SciELO, LILACS, Medline e PubMed, além de diretrizes e notas técnicas; (2) elaboração de uma cartilha educativa com linguagem clara e ilustrações acessíveis. **Resultados:** Foram identificados 330 artigos, dos quais 14 atenderam aos critérios de inclusão. A análise destacou cuidados essenciais como higienização adequada, sinais de alerta para Infecção do Sítio Cirúrgico, controle de fatores de risco e orientações sobre atividades cotidianas, que embasaram o conteúdo da cartilha. **Considerações finais:** A cartilha desenvolvida tem potencial para reduzir complicações, promover autocuidado, aumentar a qualidade de vida e oferecer suporte à autonomia dos pacientes no período pós-operatório.
Palavras-chave: Cirurgia Torácica, Cuidados de Enfermagem, Ferida Cirúrgica, Cardiologia.

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INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in Brazil and worldwide. Statistics indicate that cases could reach more than 23.6 million by 2030, up from 12.4 million in 1990 and 19.8 million in 2022[1]. According to the report "Global Burden of Disease and Cardiovascular Risk Factors," published in December 2023 in the Journal of the American College of Cardiology, there were 400,000 deaths in Brazil due to CVD in 2022[2]. Clinical and pharmacological interventions are priority treatment options, but when they are insufficient in managing and controlling the health of the heart patient, surgical intervention becomes necessary[3].

Cardiac surgeries are very common. The most common procedures are coronary artery bypass grafting (CABG) and heart valve implants. CABGs have a prevalence of 64% in Brazil and the primary goal is to restore coronary blood flow. Heart valve implant surgeries, whether for reconstructive or replacement purposes, account for 20% of all cardiac surgeries and are indicated when there are valvular heart disease that compromises heart function[3].

Cardiac surgery, like other surgical procedures, is divided into four stages: dieresis, hemostasis, excision, and synthesis. The latter stage consists of rejoining tissues previously ruptured during dieresis, creating the suture and, consequently, the surgical wound (WW)[4]. Generally, wound healing occurs without inflammatory signs. However, in specific cases, wounds may not heal within the expected timeframe due to complications such as seroma, surgical site infection (SSI), and dehiscence[5].

SSI is the most common complication and is a healthcare-associated infection (HAI). Patients undergoing cardiac surgery are at risk of developing SSI postoperatively. In Brazil, SSI ranks third among infectious causes in Brazilian patients and accounts for 14% to 16% of HAIs[6].

SSI after cardiac surgery is a complication that can occur up to 30 days after surgery and prolongs hospitalization, increasing hospital and social costs, as well as increasing patient morbidity and mortality[6]. SSI is intrinsically linked to dehiscence. Wound dehiscence is described as a suture rupture with opening of the edges after a surgical procedure, without protrusion of viscera[7].

Risk factors for Wound SSI and dehiscence include specific factors such as age and sex, external factors such as comorbidities and lifestyle habits, local pathophysiological factors such as infection, seroma, ischemia, and wound tension. Furthermore, length of hospital stay, dressing changes, and prolonged intubation in the ICU also influence WSS[8].

Cardiac surgery is considered a highly complex procedure, impacting patients' lives and requiring adaptations to the new health condition. A well-informed patient can help prevent adverse events, such as Wound complications, by understanding the hand hygiene process and surgical wound care[9]. However, patients in the postoperative period of

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cardiac surgery are discharged from hospital and return home, insecure and with doubts, demonstrating the need to strengthen the preparation of the family-patient unit for the self-care process at home[10].

The educational process is associated with health promotion, given its relationship with the processes that involve patient participation in their daily lives, seeking to empower people to improve their health conditions and increase their level of commitment to self-care issues[11]. The introduction of technological tools for teaching is essential, as it facilitates the collection of information and clarification of doubts, as the care team can ensure the continuity of care in the home[12].

The educational booklet emerges as a technological tool and is a strategy for promoting improved care for surgical patients, aiming to minimize complications and adverse events. Besides being low-cost for various settings, including those with limited resources, it is essential to enrich the knowledge of patients undergoing cardiac surgery, providing empowerment in the face of possible complications[11].

Given these considerations, this study aimed to map the main aspects involved in developing an educational booklet in the literature to guide patients on wound care in the postoperative period of cardiac surgery in the home environment.

METHODS

This is a methodological study conducted in two stages: 1. Scope review; 2. Development of educational materials. The scope review, identification of nursing care for postoperative cardiac surgery wounds, organization of the booklet's items, and presentation of the prepared content were performed. To this end, the recommendations of the theoretical procedures were followed, using the criteria of clarity, relevance, and pertinence to represent the scope of the topic addressed.

The review adopted the PCC strategy, as recommended by the Joanna Briggs Institute (JBI) [13], defined as follows: P (Patients undergoing cardiac surgery), C (Development of an educational booklet on surgical wound care), and C (Home environment during postoperative recovery). Therefore, the following research question was formulated: "What elements are addressed in the literature on developing an educational booklet to guide patients on surgical wound care after cardiac surgery in the home environment?"

The search was conducted in the following databases: Scientific Electronic Library Online (SciELO), Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (Medline), and National Library of Medicine (PubMed). The search also included official websites for guidelines, guidelines, and technical notes on the topic, considering their relevance to this scoping review.

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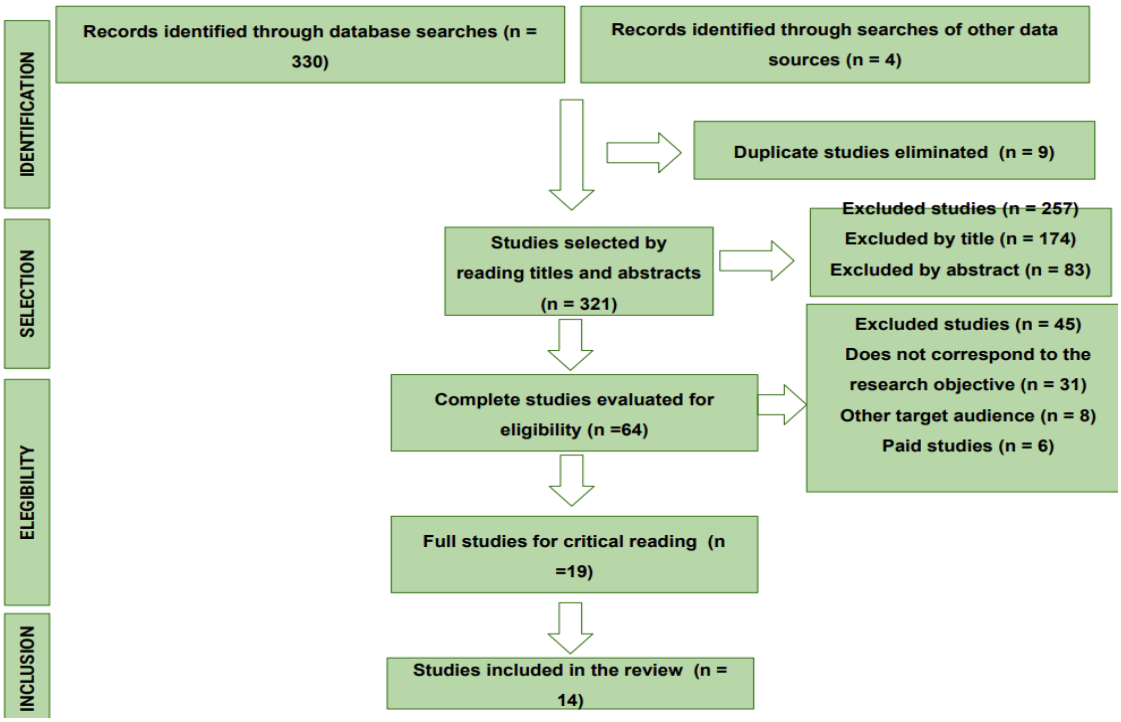
In addition to indexed databases, the review included gray literature, such as dissertations, Theses and scientific articles in non-indexed journals located on the Google Scholar platform (considering the first five pages of results). For data collection, the following health science descriptors (DeCS) were used: Thoracic Surgery, Nursing Care, Surgical Wound, and Cardiology, combined with each other using the Boolean operator "AND."

The selection criteria were: Original articles, reviews, and gray literature that were complete and available in full, addressing the study topic, published in Portuguese, English, and Spanish, and that corresponded to the guiding question. Exclusion criteria included duplicate articles in databases, studies with children and adolescents as the target population, and articles not freely available. For this study, no time frame was used—the literature search was conducted from March to September 2024.

The articles were tabulated and characterized according to the PCC strategy, which can be better visualized in the flowchart presented in Figure 1.

Figure 1 - PRISMA-ScR Flowchart of the study selection process. Brazil, 2024.



Source: Author, 2024

Based on the main care measures identified in the literature review on surgical wounds after cardiac surgery, and in line with the researchers' theoretical and practical experience on the topic, information was selected and grouped, and a booklet-style

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educational tool was created. The research was exempt from submission by the Research Ethics Committee.

To create an attractive and easy-to-understand booklet, texts for each item were developed with a reader-centered approach, providing clear and objective information that presents language guidelines and illustrations (photos, drawings, and figures) selected from open-access websites, searched on the Google Images website. The booklet's presentation was developed according to the color palette that comprises elements of the institution's visual identity.

RESULTS

Scope Review

The search strategy identified 330 articles in the databases searched and 4 identified in other data sources, such as guidelines, guidance guides, and protocols. After removing duplicate studies, 321 articles were retrieved. The studies were selected by reading titles and abstracts, with 257 articles being excluded. Eligibility criteria were applied, and 45 full-text studies were excluded. As a result, 19 articles were selected for full-text critical reading, but only 14 were eligible for inclusion in the research.

This revealed the incidence of scientific articles published on the study topic, as well as the decline in nursing research in recent years regarding post-cardiac surgery wound care. Given the eligibility of the studies, a corpus for analysis was constructed to collect data acquired in the research, containing the following information about the studies: authorship and year of publication, objective, methodology, and conclusion. The corpus for analysis is represented in Table 1 below:

Table 1 - Analysis corpus used in the Scope Review

AUTHORSHIP/ YEAR	OBJECTIVE	METHODOLOGY	CONCLUSION
Mendes et al., (2023)[14]	Explore the difficulties patients face in their sex lives after experiencing a cardiac event, such as a heart attack or heart surgery.	Literature review based on epidemiological studies and analyses	Sexual activity for patients undergoing complete coronary artery bypass grafting may be possible after 6 to 8 weeks after coronary artery bypass grafting, provided the access sites are well healed.
Santos et al., (2020)[15]	Identify the necessary health guidelines so that patients in the post-operative period of cardiac surgery can perform self-care behaviors after	Integrative review, following the steps proposed by Whittemore, limited to the Portuguese, English and Spanish languages, and published between 2007 and 2018. The databases available in the virtual	Health guidelines for self-care after hospital discharge of patients undergoing cardiac surgery were identified, such as: Activities of daily living, physical exercise, control of risk factors and drug therapy

	hospital discharge.	libraries PubMed and Virtual Health Library and the data extraction instrument were used.	
Gentil et al., (2017)[16]	Develop an educational manual for self-care for patients who underwent revascularization after hospital discharge	It is a methodological study conducted in three stages: bibliographical survey of information, structuring the educational tool, and content and face validation of the educational tool.	The tool presented 36 items. The items that achieved 100% agreement were: Recommending adherence to a special diet; Informing the patient of signs and symptoms to watch for in the event of a surgical wound infection; Recommending home cleanliness and safety; Indicating actions to be taken if the patient feels unwell at home; Explaining the medications to be used; Informing the patient about drug interactions; and Alerting the patient to the main problems encountered with medication use and their side effects.
Holovaty et al., (2023)[17]	Identify risk factors for site infection Surgical in perioperative patients Cardiac surgery	Study Methodological study structured in two stages: (1) Integrative literature review to search for risk factors in the main databases; (2) Content validation	It identified four risk factors for developing a surgical site infection Postoperatively and was validated by 15 committee judges, including: diabetes mellitus, systemic arterial hypertension, obesity, and smoking.
De Magalhães et al., (2022)[18]	Describe the main nursing care measures performed in the postoperative period of cardiac surgery.	It was a research work focused on bibliographic review, using a virtual health library, in the following databases available in SCIELO and LILACS	Some basic guidelines are necessary in the postoperative period of cardiac surgery: Sleep in a bed with only one pillow, in a supine position; Avoid heavy lifting; Wait thirty days before resuming passive and progressive sexual activity. Drive only after thirty days.
Fiorin et al., (2022)[19]	Identify risk factors for surgical site infection in patients after cardiac procedures.	Describe the main nursing care measures performed in the postoperative period of cardiac surgery. It was a research work focused on bibliographic review, using a virtual health library, in the following databases available in SCIELO and LILACS Identify risk factors for surgical site infection in patients after cardiac procedures.	The main factors associated with surgical site infections are diabetes mellitus, hypertension, obesity, and smoking. Risk factors such as male gender, advanced age, and prolonged hospitalization have been identified.

		Integrative literature review, using databases such as MEDLINE, LILACS, SciELO and bdenf in February 2022	
Cruz et al., (2021)[20]	Identify pre- and postoperative risk factors related to the development of mediastinitis among patients undergoing cardiac surgery	Descriptive study, approach, in which the risk factors for mediastinitis were identified in patients who underwent cardiac surgery at a hospital in Rio de Janeiro.	The most common risk factors for mediastinitis identified during the study were male gender, hyperglycemia, smoking, and use of the mammary artery for myocardial bypass grafting.
De Lima et al., (2023)[21]	To characterize the sociodemographic, clinical and surgical profile of patients who presented surgical site infection, observing glycemic levels in the postoperative period.	Descriptive, retrospective study, developed from the consultation of medical records in the Healthcare-Related Infection Control Service, in a teaching hospital, from January to December 2017.	Of the 46 surgical patients who developed infection, 16 (34.78%) had high blood glucose levels or had diabetes mellitus. These results reinforce the importance of glycemic control. o
Järvelä et al., (2018)[22]	To describe the incidence and risk factors for postoperative infections and the correlation between hyperglycemia after cardiac surgery.	This is a cohort that comprised 1356 consecutive adult patients who underwent cardiac surgery between January 2013 and December 2014 and were followed for 6 months.	One in 10 patients develop infectious complications after cardiac surgery. The incidence of deep sternal wound infection was 2.0%. Hyperglycemia occurred in 39.7% of patients and was associated with higher rates of postoperative infections.
Silva et al., (2023)[23]	Analyze and integrate the main recommendations and updates regarding the mobilization of upper limbs in the immediate postoperative period of cardiac surgery via median sternotomy.	This is an integrative literature review, which brought together articles from the following databases: MEDLINE, LILACS, Embase and Scopus.	It addresses post-surgical strategies and care for patients undergoing sternotomy, focusing on upper limb mobilization. It highlights the importance of avoiding movements that cause stress, which should be done with caution but without excessive restrictions.
Lima et al., (2024) [24]	To gather evidence regarding Cardiopulmonary Rehabilitation in	This is an integrative literature review, based on articles that investigated Cardiopulmonary	Cardiopulmonary rehabilitation is an ally in preventing and minimizing the harmful effects of heart disease and its surgical treatment, thus reducing the

	patients undergoing cardiac surgery in order to prevent or minimize complications after hospital discharge.	Rehabilitation in patients undergoing cardiac surgery after hospital discharge.	negative effects on the functionality and quality of life of this population.
Queiroz et al., (2022)[25]	To develop and analyze the evidence of content validity of a comic book-type educational technology for patients undergoing Myocardial Revascularization Surgery.	A validation study was conducted in three phases. The first consisted of assessing the information needs of patients undergoing coronary artery bypass grafting; the second was developing a roadmap for the comic book-style educational technology; and the third, analyzing the validity evidence.	Eleven information needs were identified: Pain control, Physical exertion, Smoking, Nutrition, Surgical wound care, Alcohol consumption, Return to work, Sexual intercourse, Anxiety and stress control, Physical activity, Travel and return to driving
Ambrosetti et al., (2020)[26]	Update practical recommendations on the main components and objectives of cardiac rehabilitation intervention in different cardiovascular conditions	Search strategy for research published in English, consensus documents, and policy documents from the year 2010 onwards, using electronic databases, as selected, evaluated, and reviewed by Section Core experts and original document authors	Identified the main components of cardiac rehabilitation after cardiac surgery, such as: Exercise training at least 20–30 min, 3 days/week and advice on smoking cessation.
Barcellos et al., (2023)[27]	To develop and validate an educational booklet for self-care of patients in the postoperative period of cardiac surgery.	Methodological study, including bibliographical survey, preparation of the booklet and validation with judges and the target audience.	A booklet was created with topics related to the care needed for recovery after hospital discharge, such as: Smoking and alcoholism as factors that hinder recovery; Gradual return to sexual activity; Necessary care during bathing, dressing, and sun exposure; Detection of signs of infection; Guidance on daily activities according to postoperative time and the need for blood glucose control.
Gorlitzer et al., (2013)[28]	To analyze the effectiveness of a support vest to prevent sternal wound infection after cardiac surgery and to identify risk factors.	This is a prospective randomized multicenter study with 2539 patients undergoing cardiac surgery, comparing those who received support and those who did not.	The use of breast support reduced the risk of deep sternal wounds by 54%, preventing surgical suture breakage, protrusion through the sternal skin, and infection. It provided sternum stabilization and allowed the patient to breathe more deeply by minimizing pain from friction on the sternal edges.

Source: Author, 2024

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Composition of the Content of the Primer

After the literature review, the booklet's content was developed based on the studies included in the review, which answered the research question. The booklet's content was organized into 11 pages and divided into two parts. The first part contains the cover with the title, the back cover with the introduction, explaining what will be covered in the booklet, the catalog card, and a summary.

The second part covers the booklet's theoretical content and is divided into three topics. The first is: "What is Cardiac Surgery?", which addresses the concept of cardiac surgery and its implications for surgical site infection and risk factors for infection. The second topic addresses signs of postoperative wound infection, and the third topic presents surgical wound care.

Finally, the booklet contains the references used on the back of the booklet, a reminder at the top for users, and the back of the booklet identifies the author responsible for producing the booklet and the institutional healthcare network.

The content was written in text format, bullet points, illustrations, and attractive and interactive images, developed by the author and using an online image bank. The predominant colors were dark blue and yellow. Red and green were also used.

DISCUSSION

The research analyzed a variety of studies focused on postoperative care for patients undergoing cardiac surgery, revealing a diversity of approaches related to their recovery. Among the studies analyzed, an emphasis was placed on specific guidelines promoting wound care and recovery in patients undergoing cardiac surgery, as well as the creation of educational tools aimed at improving patient adherence to these recommendations.

Based on the results, it is possible to highlight, as noted by authors[17,19,20,22], some risk factors that influence the occurrence of surgical wound infection, such as diabetes mellitus, systemic arterial hypertension (SAH), obesity, and smoking. SAH tends to be associated with unfavorable lipid and glycemic profiles. Regarding the healing process, increased peripheral pressure can prolong the inflammatory phase. When decompensated, hypertension may be associated with redness in peripheral surgical wounds (SWs), such as those resulting from saphenectomy[29].

The authors[19,20] reinforce the association of smoking with surgical site infection, as one of the main comorbidities that influence the infection process and as one of the most frequent risk factors for mediastinitis[19,20]. The study by Queiroz et al. developed an educational technology for patients undergoing coronary artery bypass grafting and identified smoking as one of the 11 information needs to be included in the educational material[25].

The authors state that smoking is the most important risk factor for the development of postoperative complications and the need for postoperative intensive care unit treatment, due

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to the inhalation of cigarette components such as nicotine and carbon monoxide, which impair oxygen transport, increase blood pressure, and hinder wound healing by reducing tissue oxygenation. Furthermore, the reactive oxygen species generated by cigarettes compromise the immune response and increase the risk of cellular damage, hindering healing and intensifying inflammation, leaving the tissue more vulnerable to infections[26].

The authors reinforce the need for continuous blood glucose monitoring, as hyperglycemia has been associated with higher rates of postoperative infections, especially considering that approximately 39.7% of patients experience hyperglycemia postoperatively[22]. Circulating glucose levels after cardiac surgery increase proportionally to the body's physiological stress. This increase in glucose levels compromises the wound healing process and is associated with an increase in infectious complications[24].

Obesity is another recognized variable that interferes with the healing process. A study investigating the impact of obesity on surgical procedures found that surgical site infection was the most common postoperative complication overall in obese patients, who had approximately a 50% survival rate, while non-obese patients had approximately an 85% survival rate[30].

Since the 1990s, studies have shown that it is preferable to use a specific bra support to prevent infections, as it shows that medium- and large-sized breasts impose tension on the sternotomy[31]. The study [28] also favored the use of breast support, demonstrating a 54% reduction in the risk of deep sternal wounds. They concluded that the use of support prevents surgical suture breakage, in addition to providing sternal stabilization and deeper breathing for the patient, by minimizing pain from friction on the sternal edges[28].

In a more recent study, revealed that the larger the breast, the longer the hospital stay, the more frequent the infection, and the lower the quality of life after coronary artery bypass graft surgery. In their study population, it was impossible to demonstrate any benefits of bra use in terms of pain, but they concluded that it was effective in improving functional capacity after 30 and 60 days[23].

The authors present 11 pieces of information necessary to include in educational materials, including the avoidance of alcohol consumption in the postoperative period.[25] The study by authors[32] corroborates this statement, as they confirm that the deleterious effects of alcohol can reduce the function of neutrophils and inflammatory proteins in the wound bed, in addition to contributing to decreased angiogenesis during the epithelialization phase. Another important factor is that acute alcohol exposure renders fibroblasts unable to synthesize the extracellular matrix components necessary to restore skin integrity[32].

The authors draw attention to the individual's daily precautions, which may change after the surgical procedure, causing limitations in the performance of daily tasks such as sleeping in a bed with only one pillow, in the

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supine position[18]. One of the frequent complaints of patients in this condition is discomfort when sleeping, due to the recommendation to remain in the supine position and not sleep on their side[33].

Daily activities can raise concerns among individuals, such as physical activity, driving, and air travel. Experts have suggested that the healthcare team should approve physical exercise after six to eight weeks, if there are no significant changes in the stress test[25]. The guidelines recommend waiting at least 30 days before starting to drive[18]. The authors [16] , in their guidance guide, state that individuals should wait at least six weeks before scheduling an air trip, and even then, they should discuss this decision with their doctor[16].

There is no scientific basis to support weight-bearing restrictions after sternotomy, as long as the activity is performed within the pain-free range of motion. Because the pectoral muscles are the strongest, they can compromise the stability of the sternal suture, as their movement occurs in the opposite direction to the suture's strength. It is crucial to avoid lateral or upward movements until the bone healing process, which takes approximately 6 weeks, is complete[34].

The Brazilian cardiovascular rehabilitation guideline states that patients with sternotomies should have weight-bearing restrictions for 5 to 8 weeks when using their upper limbs. After this period, depending on the pain threshold and sternal stability, range-of-motion exercises with the arms may be permitted. All sternotomy patients should avoid exercises that overload the thoracic muscles and cause sternal traction in the first 90 days after the surgical procedure[35].

Regarding sexual activity, the authors[14], recommends sexual activity for patients undergoing complete coronary revascularization after 6 to 8 weeks, if the OFC is well healed[14]. Tuncer et al. state that timely sexual intercourse after cardiac surgery positively affects cardiac health, postoperative recovery, and quality of life[36].

Te search[37] developed a postoperative cardiac surgery guide to guide patients through the recovery process at home. Among the guidelines, it is important to sleep on your back for the first fifteen days; use warm water and mild soap when bathing; dry scars gently; household activities can be resumed four to six weeks after discharge; resume sexual intercourse thirty days after discharge, in a moderate and comfortable manner; wait at least thirty days after discharge; engage in moderate activities, such as short walks and climbing stairs, with caution during the first three months[37].

Promoting self-care and cardiopulmonary rehabilitation are essential aspects for the long-term well-being of patients. Studies such as those by authors [16,25,27] have developed manuals, educational booklets, and comic books, providing clear and easy-to-understand information to patients on self-care practices. Guidelines include risk factor control, management of activities of daily living, and safe mobilization. Abrantes et al. state that

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educational technologies are especially important, as they aim to enhance knowledge, encourage autonomy, and contribute to self-care, involving the individual in the teaching and learning processes[11].

The development of the educational booklet was based on studies selected from bibliographic databases. According to Gentil et al., the practical application of an instrument allows for a safer postoperative myocardial revascularization period with a lower risk of complications at home, resulting from a lack of self-care preparation, reducing the number of readmissions and hospital costs[16].

Furthermore, educational materials can be used to optimize discharge planning by healthcare professionals and to assist patients and families with post-discharge care at home. This will reduce the return rates of patients with clinical complications resulting from incorrect medication use, surgical wound management, and a lack of knowledge about the rehabilitation process in general[1].

The authors [15,18] emphasize the need for specific guidelines to promote self-care after hospital discharge. Recommendations include physical restrictions and risk factor management. It is clear that a lack of standardized guidelines can lead to preventable complications, such as infections and readmissions. The literature suggests that detailed and personalized patient guidance throughout the postoperative period can significantly reduce stress and improve adherence to care[15,18].

LIMITATION OF THE STUDY

A relevant point noted during the review was the scarcity of nursing research on postoperative care in cardiac surgery, compared to the guidelines provided in other manuals and hospital services. Some of the guidelines are based on surgeons' experiences. This suggests the need for further studies to address the identified gaps and provide more evidence on effective care practices.

Another important limitation of the study is the need for validation of the educational booklet. Validation by experts and the target audience is the next step in the booklet's production, which was not performed in this study due to the time available. Therefore, validation of the educational material produced will be the focus of the principal researcher's master's dissertation.

FINAL CONSIDERATIONS

It was concluded that postoperative wound care includes controlling risk factors, adopting a healthy lifestyle, and following specific home care guidelines.

Based on the need to develop educational technology for post-cardiac surgery patients, this study achieves its main objective. The use of the educational booklet serves as support material for patients discharged from hospital after cardiac surgery, helping them overcome doubts and difficulties in the surgical wound healing process, becoming a relevant technological tool for self-care and self-care.

REVISTA ENFERMAGEM ATUAL IN DERME

The implementation of educational technologies promotes adherence to recovery recommendations, thus becoming effective in the education process for preventing complications. Furthermore, it promotes not only healing but also the quality of life of patients undergoing cardiac surgery.

With the completion of the booklet, the importance of validating its content with specialists and the target audience is emphasized, as it is the subject of further studies.

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Jonas Lima Vanderlei: Wrote some parts of the manuscript, including the introduction and methodology, and revised the entire text for clarity and cohesion.

Andreza Correria Dourado Da Silva: Critical analysis of the included studies, assessing quality and methodological relevance.

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Conflict of Interest Declaration

Nothing to declare

Funding:

This research received no funding.

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