

Patient safety related to surgical contamination

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Abstract

Surgical center infections known as SSI are caused by incidences of pathogens acquired during the surgical process, which brings negative results and complications to the patient. The general objective of the research was to evaluate the prevention of infections caused in the surgical field, expand nurses' care for patient health, and reduce the incidence of contamination by pathogens in the surgical site. The methodology is an integrative bibliographical review research located in databases such as VHL, BDNFe and LILACS. The research results show that nursing, as a member of the healthcare team, can carry out its own activities or in collaboration with other professionals, to prevent the occurrence of SSI, nursing has a fundamental role in this process, as well as facilitating monitoring. After the implementation of preventive measures, the use of preventive measures can be encouraged through continuing education through activities, whether behavioral or environmental. It is concluded that nurses occupy a position of proximity to the patient, requiring adequate training in identifying and providing evidence-based care to prevent and mitigate the occurrence of surgical site infections and identify risk factors that may trigger them, as early as possible. Nursing care, in this sense, encompasses several actions that aim to prevent and control surgical site infections, covering the pre, intra and postoperative phases. These actions include the use of degerming agents during bathing, controlling body temperature and glycemic levels, degerming the skin and caring for surgical wounds.

Keywords: *Infection control; surgical site infection; nursing care.*

Date of Submission: 14-11-2023

Date of acceptance: 30-11-2023

I. INTRODUCTION

Operating room infections, known as SSI, are caused by pathogens acquired during surgery and can lead to negative results and complications for patients (PAIXÃO et al., 2022). The objective of this proposal is to provide nursing guidance to nurses on nursing care to avoid surgical infections due to microbial contamination.

Confirm that the situation of SSI infections in surgical centers has a negative impact and, in view of this issue, confirm the importance of nurses as part of a multidisciplinary team and responsible for patient care in the surgical environment, starting with preparation for surgery, recovery, to become the surgical site. The basis of preventive action, therefore, requires that the care carried out and the advances described in the literature are important. In this evidence, it is extremely important to understand the care provided by the nursing team in preventing SSI, in order to identify and describe care at each stage of the perioperative period (pre-operative, intra-operative and post-operative) so that professionals can understand each action that must be taken at this stage.

Failures that may occur during surgical procedures can cause considerable harm to the patient. As a result, complications are reported in 3-16% of surgeries in developed countries. Furthermore, in non-developed countries, the mortality rate in more complex surgeries is approximately 0.4-0.8%. One of the most significant complications in surgical patients is surgical site infection, which is caused by surgery that occurs between 30 and 90 days in some surgeries (OLIVEIRA; CARRARA; ARAÚJO, 2015).

According to the National Health Surveillance Agency – ANVISA (Brazil, 2017), SSIs related to surgeries on outpatients and inpatients, with or without implants, are classified according to the programs and criteria affected.

The negative consequences of SSI include mortality, complications, and the high cost of treating surgical patients. Furthermore, an increase of 3 to 15 days in hospital stay also has a clinical impact when comparing patients with surgical site infections with those without infections. On average, the risk of readmission increased fivefold and the need for intensive care increased by 1.6%. Furthermore, this group of patients has a 2 to 11 times higher risk of death compared to patients who do not develop surgical site infections (OLIVEIRA; CARRARA; ARAÚJO, 2015).

Incidents arising from care failures directly impact the quality of care and patient safety (SILVA et al., 2021). It is known that some care environments are prone to risks to patient safety, such as surgical centers (SC), where the apparent complexity of care often exposes patients and staff to potential harm (MUCELINI et al., 2021; LOUNAY et al., 2023).

Healthcare professionals, especially nursing staff, are responsible for assessing the risks associated with SSIs and recommending measures to reduce and manage these risks. This includes adequate skin preparation, washing and brushing hands, changing gloves, using sterile materials and following the Safe Surgical Plan to Save Lives Checklist (SOUZA; SANTANA; JUNIOR, 2018).

Implementing checklists in the operating room can maintain patient safety, improve communication between professionals and reduce the number of postoperative complications, including death. Adherence to the checklist developed by the World Health Organization has been shown to reduce mortality from 1.5% to 0.8% and postoperative complication rates from 11% to 7% (HAYNES AB et al., 2009). However, the risk of surgical infection was reduced by up to 43% after adoption, with significant reductions in complications in developing countries (PRATES CG et al., 2018).

To prevent SSI, surgical teams must take measures that include using new surgical gloves, surgical caps, gowns, and covering the entire nose and mouth with masks that are replaced after surgery. It is also necessary to give up the use of decorative materials such as bracelets, watches and rings. If someone has a communicable disease, they should be prohibited from entering the surgical center. If gloves are contaminated, they must be changed in the operating room and hands must be disinfected again for 2 minutes before the next surgery (ÁVILA et al., 2010).

With the highest incidence among care-related infections that can be preventable, there is SSI. In this sense, it is necessary that prevention measures are substantiated, in order to use an extensive surveillance program, aiming to reduce SSI rates, in a proportion that can reach 40%. However, it is identified that this

program needs to be efficient, such that it is necessary to know the real incidence of infections as well as the risk factors associated with it (FUSCO et al., 2016).

The choice of the topic is explained by the possibility of bringing a reality that is very present in the surgical field, where it is common to have observed, in the treatment of patients, surgical site infections as well as the prolongation of hospital stay due to infection and the various impacts related to damage to the health. In this way, the work problem to be answered is: What precautions should the nursing team take in relation to errors caused by a surgical infection in the fragility of care during the process to which the patient is exposed?

The purpose of the objectives has the general purpose of understanding nursing care in the prevention of SSI. Specifically, describing the main risk factors that affect surgical site infections and their impacts; identify the main infection prevention strategies; specify the main nursing care in both the prevention and treatment of surgical site infections.

II. LITERATURE REVIEW

2.1 What is a surgical site infection?

Surgical site infection (SSI) is one of the main complications after surgery (SANTANA & OLIVEIRA, 2015). SSI is defined as an infectious process that affects tissues, organs and cavities, and can be present during any type of surgical procedure (BRASIL, 2009; WHO, 2019).

Although references state that SSI occurs in any type of surgical procedure, it occurs more frequently in procedures classified as potentially contaminated (BRASIL, 2009; SANTANA and OLIVEIRA, 2015; WHO, 2019).

Potentially contaminated surgeries are those performed on tissues with low resident flora or procedures that are difficult to decontaminate (MEDEIROS & CARVALHO, 2016). SSIs are included as one of the events resulting from poor care, as they are described worldwide as one of the quality control parameters of services provided by hospital units (BRASIL, 2009; WHO, 2019).

Therefore, it is necessary for the team to be involved in the care of patients with surgical health conditions, in order to offer quality care throughout the perioperative period. For this reason, professionals are advised to determine possible preventive measures according to the characteristics of each surgical procedure and the predisposing factors of each patient (SANTANA & OLIVEIRA, 2015).

2.2 The role of nursing as a member of the healthcare team to prevent the occurrence of SSI.

Nursing, as a member of the healthcare team, can carry out activities on its own or in collaboration with other professionals, to prevent the occurrence of SSI. Among these activities, the following can be highlighted: performing the pre-operative bath (FRANCO et al., 2015; LINDBLOM et al., 2015; MARCHI et al., 2016), better control of the glycemic status of the patient diagnosed with Diabetes Mellitus (SANTANA & OLIVEIRA, 2015; MARCHI et al., 2016) control of environmental factors in the operating room(4,18); implementation of VPA protocols, among others (MEDEIROS & CARVALHO, 2016; MARCHI et al., 2016).

According to Sevilha et al (2014), nursing plays a fundamental role in this process, as in addition to facilitating monitoring of the implementation of preventive measures, the use of preventive measures can be encouraged through continuing education through activities, whether behavioral or Environmental.

Healthcare professionals, particularly nursing staff, are responsible for assessing the risks associated with SSIs and recommending measures to reduce and manage these risks. This includes adequate skin preparation, washing and brushing hands, changing gloves, using sterile materials and following the Safe Surgery Life Saving Program checklist (SOUZA; SANTANA; JUNIOR, 2018).

For prevention and control measures to be implemented, Barros et al. (2019), stating that professionals, especially nurses, must understand the risk factors so that they can take intervention measures to reduce SSI rates.

2.3 Nurse actions and measures to prevent and control surgical site infections

For Krummenauer et al. (2021) and Barros et al. (2019), the most important occupation for providing surgical care to patients is nursing. Nursing in the surgical area has the effect of guaranteeing the quality of care to prevent surgical site infection. Although many of the actions carried out are carried out by multidisciplinary teams, nursing is considered the most strategic for reducing the rate of surgical site infection due to its interaction in most processes related to prevention and control. operative, intraoperative and postoperative periods.

According to ANVISA (2017), pre-operative bathing can be performed with neutral soap or antiseptic (2% chlorhexidine), depending on the surgical procedure to be performed, the night before the day of surgery. This procedure is considered good clinical practice, where nurses must ensure that the skin is as clean as possible before surgery and thus reduce the bacterial load (GÓMEZ; FERNÁNDEZ; NAVARRO, 2017).

According to ANVISA (2017), if hair removal is necessary, it must be carried out in an anteroom outside the operating room, as close as possible to the surgery time, using an electric clipper with disposable blades for shaving. because it can cause micro- Injuries become openings for bacteria to take shelter, creating contamination and increasing the risk of infection. In their study, Garcia and Oliveira (2020) confirmed that the measures described above are considered the gold standard for SSI prevention and emphasized that nursing has an important leadership role in the practice of SSI prevention.

In addition to the risk factors related to the surgical procedure mentioned above in the preoperative period, antibiotic prophylaxis administered up to one hour before the incision was listed as a protective factor for the development of SSI (BRAZ et al., 2018).

In the preventive care package developed by Braz et al. (2018), stating that prophylactic antibiotics are one of the actions to prevent SSI. The nursing team must be closely involved in checking the appropriate dose timing, as this is essential for the effectiveness of prophylaxis.

Nursing plays an essential role in this process in maintaining the sterile conditions of the surgical wound, preventing contamination and proliferation of microorganisms at the end of the surgery, as the dressing acts as a physical barrier to protect the incision and absorb exudate from the surgical wound, as well as helping with the healing process.

III. PROPOSED METHODOLOGY

The selection of studies was carried out by searching for scientific productions on the Virtual Health Library (VHL) portal, in the following databases: Latin American and Caribbean Literature in Health Sciences (LILACS) and Nursing Database – Brazilian Bibliography (BDENF). The descriptors used according to the Health Science Descriptors (DeCS) were: “Infection control”; “Surgical Site Infection”; nursing care.

IV. RESULTS AND DISCUSSIONS

To effectively analyze biosafety measures, it is important to understand the basic principles of handling materials and equipment in a hospital environment. This includes several aspects that help reduce the risk of accidents for healthcare professionals when carrying out their work activities.

To ensure safety, healthcare professionals must remain very attentive while working, avoiding using their fingers as a barrier and avoiding manually recapping or removing syringes.

For an adequate analysis of biosafety measures, it is essential to know the basic principles of handling materials and equipment in a hospital environment, which includes consideration of various aspects that can mitigate the risk of accidents for healthcare professionals during the execution of its activities.

Proper disposal of sterile material is essential to prevent infections among healthcare professionals and the spread of diseases in hospital environments. To achieve this, it is important to use containers with high puncture resistance and properly sealed, as this is one of the main preventive measures.

To avoid leaks and possible contamination of the air or people who handle them, it is mandatory that containers are filled to a maximum of 2/3 of their total capacity.

If the accident cannot be avoided, healthcare professionals should take measures to minimize the risk of infection, including basic procedures such as washing the affected area thoroughly with soap and water, using antiseptic and degerming solutions, and carrying out tests to detect possible problems. or diseases, administering appropriate medications and recommending vaccination as necessary, according to the specificities of each case.

If mucous membranes are exposed, it is imperative to clean the affected area with water or saline. However, it is important to avoid exposing the area to further damage, as this would reduce the likelihood of acquiring other hospital-acquired infections, virtually eliminating the risk. This has been documented in studies and should be taken into consideration.

Currently, there are limited resources available to healthcare professionals who experience accidents in Brazilian hospitals. This lack of response and notification structures makes it difficult to accurately assess the frequency of workplace accidents in this environment and prevents the monitoring of trends in occupational safety. Furthermore, the monitoring system fails to account for accidents in the informal sector, which constitute a noteworthy portion of these occurrences.

Occupational risks are prevalent among healthcare professionals, who are constantly at risk of suffering injuries and skin conditions, such as rashes and dermatoses. This specific sector of the healthcare industry is also heavily involved in immunization programs and research, specifically on potential risks of exposure, with a total of 16 studies conducted in this area.

Occupational infection refers to infections acquired by healthcare professionals in their work environment. However, it is essential to prevent all nosocomial infections, whether they affect patients or hospital staff.

The success of preventive measures is inherently linked to organizational factors. To ensure a successful implementation, it is essential to avoid practices such as excessive working hours, overtime, night shifts and monotonous tasks. Additionally, it is vital to ensure that employees receive adequate preparation and training and that there is sufficient professional turnover within shift times.

V. CONCLUSION

When carrying out the study, it was discovered that nurses occupy a position of proximity to the patient, requiring adequate training in identifying and providing evidence-based care to prevent and mitigate the occurrence of surgical site infections and identify risk factors that can trigger them as early as possible.

It was also observed that some of the patient's own risk factors play a significant role in the development of surgical site infections, highlighting the importance of early identification by the nursing team to avoid such incidents.

Nursing care, in this sense, encompasses several actions that aim to prevent and control surgical site infections, covering the pre, intra and postoperative phases. These actions include the use of degerming agents during bathing, controlling body temperature and glycemic levels, degerming the skin and caring for surgical wounds.

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