Risk assessment scale for the development of injuries resulting from surgical positioning: Nurses' knowledge

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ABSTRACT

Objective: To evaluate nurses' knowledge about the applicability of the scale for assessing the risk of injuries resulting from surgical positioning in adult patients. Methodology: Exploratory research focusing on a qualitative approach. The selection of participants occurred intentionally using the snow ball methodology, where the initial participants nominated new participants. Data analysis followed the steps of organization, exploration and interpretation of the collected material. Results: The collection was carried out with 23 nurses, their ages ranged from 28 to 67 years old, in relation to gender, 20 were female and three were male. The time of professional training ranged from five months to 43 years and the time of professional activity ranged from four months to 43 years. Of the 23 nurses, 16 had specialization in surgical services, 14 nurses had employment in a private hospital, of which 11 knew the ELPO scale and of these, six applied the ELPO scale, three used the Braden scale and one the Munro. Conclusion: The ELPO scale still needs to be widely disseminated and put into practice by institutions, in order to add to the safe surgery checklist, which in turn has already been implemented in order to ensure safe surgery for the patient.

Keywords: Perioperative Nursing, Nursing care, Pressure Injury, Patient Positioning.

1 INTRODUCTION

Surgical positioning is defined by the position in which the patient will be placed on the operating table and undergo a certain surgical procedure and its specialty. The main goal is to maintain body alignment and reduce pressure injuries (LP). These injuries are defined as one of the patient's

adverse events, so before starting surgery, preventive measures should be applied. (BIRTH; RODRIGUES, 2018).

In order to minimize and prevent events during the intraoperative period, nurse Camila Mendonça de Moraes Lopes, during her doctorate in 2014, developed a risk assessment scale for the development of lesions resulting from the patient's surgical positioning (ELPO), at the University of São Paulo at Ribeirão Preto College of Nursing - EERP-USP. (LOPES, et al. 2016).

Based on the studies developed and in the course of its applicability, ELPO, once developed and validated in Brazil, directly assesses the risk of pressure injury with a score from 0 to 35 points, evidenced by the higher the score, the greater the risk of developing pressure injury. (PEIXOTO, et al. 2019). The items applied range with a score of 1 to 5 points and are characterized by surgical time, type of surgery, type of anesthesia, degree of mobility, comorbidities, and age. From 19 points, the patient is already at risk of pressure injury, leading the professional to assertively apply the appropriate means of surgical positioning, referring to a certain surgical specialty. (LOPES, et al. 2016).

The nurse's knowledge regarding the physiology and anatomy of each patient and their singularities reverberates from a complication-free transoperative period to recovery in a hospital environment and discharge. (LOPES, et al. 2016).

The ELPO Scale is of paramount importance with regard to its applicability by operating room nurses, following its norms and scores. It can be considered a tool that is easy to implement and contributes to the entire multidisciplinary team, and it is questioned what is the knowledge and mastery of nurses about the applicability of the scale for the assessment of the risk of injuries resulting from surgical positioning in adult patients?

2 OBJECTIVE

To evaluate nurses' knowledge about the applicability of the ELPO scale for assessing the risk of injuries resulting from surgical positioning in adult patients.

3 METHOD

Exploratory research with a focus on the qualitative approach. Qualitative research brings questions that relate to experiences, concerns, priorities, and preferences, thus generating knowledge about aspects of the human experience, which are fundamental to know and understand the understandings that people have according to their experience. It allows nursing to outline strategies, forms and resources for interventions based on lived experiences (SOUZA; ERDMANN; MAGALHÃES, 2016). Therefore, the qualitative approach has a subjective character to interpret personal experiences in order to demystify their origin. (MINAYO, 2015).

The selection of participants occurred intentionally with the *snowball* methodology, where the initial participants indicated new participants, who in turn indicated other new participants, and so on. The inclusion criteria were: being interested in the topic, being a nurse in an operating room, and the exclusion criteria were: nurses who do not work in an operating room.

Data collection was carried out after approval by the Research Ethics Committee of the University of Vale do Rio dos Sinos (UNISINOS). The initial participants were selected by invitation sent by e-mail with an invitation letter to participate in the research and the *access link* to read the Free and Informed Consent Form (ICF), which was formulated *online*.

Data analysis followed the stages of organization, exploration and interpretation of the collected material. The first phase consists of organizing the material through reading, seeking punctual and specific information, according to the objective of the study; in the second phase, the material was explored in order to establish the relationships between the content reported in the research forms and the sociological structure of the research; the third phase consisted of data interpretation, which seeks to synthesize the results in an interpretative way and seeks valid meanings based on the findings of other studies (GOMES, 2015).

Ethical aspects were respected, in accordance with Resolution 466/2012 of the National Health Council, which encompasses research carried out with human beings, and together with the complementary norms of CNS Resolution No. 510/2016. (BRAZIL, 2012; CNS, 2016). It was submitted to the Research Ethics Committee of the University of Vale do Rio dos Sinos – UNISINOS and approved under opinion No. CAEE 54248721.00000.5344 CEP.

4 RESULTS

Regarding the profile of the participants, the age ranged from 28 to 67 years, in relation to gender, 20 were female and three were male. The time of training and professional performance ranged from five months to 43 years. Of the 23 nurses, 16 had specialization in surgical services, 14 nurses had a job in a private hospital, of which 11 knew the ELPO scale, six of which applied the ELPO scale, three used the Braden scale, and one the Munro scale. Nine nurses worked in public hospitals and of these, seven knew the ELPO scale, but only one used it, five of whom used the Braden scale and one the Norton scale.

When the research participants were asked about the application in hospital practice in the operating room, it was possible to identify that six of the 23 nurses answered that they use the ELPO scale. In the nurses' statements, it was possible to identify that the difficulties in the implementation of the scale occur due to work overload, lack of support from managers and lack of use of tools (scales) to prevent the risk of injury associated with surgical positioning.

Work overload. (E19)

> It was not possible to implement due to non-acceptance by the nursing and medical heads. (E18)
> It is not routine in the institution where I work to use a scale to avoid injuries during surgery. (E17)

The advantages of using the ELPO scale are well known among the nurses studied, ranging from care planning, identification of possible harm, and prevention of PL. In relation to care planning and the individualization of the care process to maintain patient safety, it was identified in the following statements:

> Identify each patient's injury risks, personalize preventive care according to risk, facilitate communication, facilitate patient risk recording. (E03)
> Care planning for safe care. (E04)
> Safety and prevention of patient injury and estimation of risk of injury development. (E11)

Nurses recognize that the main objective of using the ELPO scale is to avoid PL, since surgical procedures can last many hours and the lack of planning and prevention can generate complications resulting from positioning during the surgical intervention process.

> Prevent tissue damage to the patient. (E01)
> Avoids injuries to the patient by surgical positioning, in all surgeries, especially major ones. (E08)
> They avoid injuries, which is very important, especially in major procedures, elderly patients and surgeries with decubitus alterations. (E17)
> Prevent injuries resulting from surgical positioning and thus reduce the length of hospital stay and risk of infections. (E18)
> Avoid injuries resulting from surgical positioning. (E05)

The risks of hospitalization are increasingly evidenced in the literature, and nursing professionals are concerned with reducing these risks so that the patient is not compromised.

> Lower risk to the patient. (E15)
> Decrease the risk of injury. (E19)
> It reduces the risk of complications [...] decreases the risk of pain [...] social and economic impact for both the hospital and the patient. (E23)

Regarding the disadvantages of applying the ELPO scale, more than half of the nurses answered that it does not exist. The manifestations related to the disadvantages were restricted to the factor of time to start the surgical procedure, manifested by only four professionals.

> I don't see any significant drawbacks, it just postpones the start of the surgery and involves the whole team so that the positioning is satisfactory (E08)
> Longer surgical procedure time. (E15)
> It delays the start of surgery, which causes a delay in the scale of surgeries. (20)

The ELPO, developed and validated in Brazil, arose from statistical nonconformities by professionals in the area, which in view of the reality was then elaborated, developed, and implemented

a scale specifically for surgical patients in order to remedy and/or reduce factors resulting from such procedures. This scale has a score ranging from 7 to 35 points, which include: type of surgical position, surgery time, type of anesthesia, support surface, limb position, comorbidities, and patient's age. (PEIXOTO, et al. 2019).

ELPO uses the surgical positions of lithotomy, prone, *trendelemburg*, lateral and supine as the initial item for scoring the scale's score, which are more exposed positions in operating rooms. Lithotomy appears at the top with a score of 5, as *the* ranking of PL predominates in the intraoperative period. (LOPES, *et al. 2016*).

The prolonged surgical time, above 6 hours, also represents a score of 5, which can be revalidated at the end of the procedure and associated with other items such as the type of anesthesia, which with two concomitant techniques presents a higher risk of developing associated injury. Support surfaces, such as mattresses, leggings and cushions, depending on the structure and presentation, can develop serious risks and short- and long-term injuries. Comorbidities are always at the top of studies and research and their results in relation to the appearance of pressure injuries, related to neuropathies, thus investigating the presence of obesity, malnutrition, diabetes mellitus due to its pathophysiology, as there is decreased blood flow and impairment of tissue perfusion; Vascular diseases and deep vein thrombosis are scores related to this item. (LOPES, et al. 2016).

The patient's gender and age are also part of the ELPO scoring process, although gender is not an item on the scale, but it is always relevant in studies and research related to it. In the age item, the score is between 18 and 80 years or older, and these are more affected. At the end of the evaluation and when a denominator is reached, the patient is classified as more likely to develop a lesion according to the score, the higher the score, the greater the probability of developing a pressure injury. (LOPES, et al. 2016).

In the practice of implementing the use of the ELPO scale, it was recommended by working professionals to use the cut-off point to classify each patient. The operation characteristic curve (*ROC-Receiver-Operating Characteristic curve) was implemented*, which consists of a cut-off point of score 20 for risk classification, with a score of up to 19 points the risk is considered low, from 20 the risk presented is greater. (LOPES, et al. 2016).

Other scales were mentioned by the research participants, the most mentioned was the Braden scale that evaluates the risk of developing PL, it covers the care of prevention of pressure ulcers in its totality of patient care, regardless of the hospital unit in which the patient is, it does not specify intrinsic items and score of the operating room, On the other hand, it does not include surgical position, surgery time, anesthesia time, support surface, limb position, comorbidities, and patient age. The Braden scale assesses the patient's nutritional status, mobility level, physical activity level, sensory perception, friction and shear, and the patient's moisture level. These are graded from 1 to 4, except for friction

and shear, which are from 1 to 3. The degree of risk ranges from 6 to 23 and in the end, the lower the score, the greater the risk of developing PPL. (SARAIVA, 2015).

On the other hand, the second most cited scale was the Norton scale, developed in the early 1960s and defined as the first scale aimed at reducing PPLs, the Norton scale evaluates five risk parameters: physical condition, level of consciousness, activity, mobility and incontinence. Each parameter has a score of 1 to 4 points, the scale does not include friction and shear, age and skin conditions of the patient. (ARAÚJO, et al. 2011).

In this sense, it was also found that one participant mentioned the Munro scale, an American scale validated in Brazil, which assesses the patient's risks in three phases of the perioperative period, all phases contribute to the risk of developing pressure ulcers. These phases comprise the preoperative, intraoperative, and postoperative periods, subdivided into risk categories; Assessment: mobility, nutritional status, body mass index (BMI), recent weight loss, age and comorbidities; Intraoperative: classification according to the *American Society of Anesthesiologists* (ASA) scale, type of anesthesia, body temperature, hypotension, humidity, surfaces and surgical position; Postoperatively: duration of the perioperative period and blood loss. The benefits of the Munro scale is the process of communication and transfer of care between inpatient units. (SOUSA, 2021).

Thus, the ELPO scale, in its purpose and through evidence, provides nurses with the ability to make correct decisions, ensuring their protection and safety in accordance with the Systematization of Perioperative Nursing Care (SAEP), an indispensable and extremely important protocol that allows for better evaluation, according to the needs of each patient. (GONZAGA, 2021). Because the ELPO scale is easy and quick to apply by nurses, since they are aware of all its items and sub-items, it is recommended to apply it when positioning the patient on the operating table and, if it is repositioned during surgery, to apply it again, and at the end of the surgery, to make a new evaluation. (LOPES, et al. 2016).

In the period prior to the surgery, in the preoperative period, the patient is accompanied at the admission to the operating room, at this time the nursing team takes the patient's anamnesis through an institutional protocol and the nurse in an observational way, and in the patient's report, the care plan is already elaborated, in addition to information pertinent to the patient's health status. (PEIXOTO, et al. 2019).

In the operating room, the follow-up is performed hour by hour, from the beginning of anesthesia and the surgery itself. After this period, the patient is inspected immediately before leaving the operating table for the stretcher. As an evaluative and preventive measure, a protocol of inspection and evaluation is followed daily until the patient is discharged. (PEIXOTO, et al. 2019).

Aiming at excellence in the care of surgical patients, continuing education through educational programs in the care process by all working professionals, nursing staff, anesthetic and surgical staff

plays an important role, as well as a flow of care to establish the preoperative visit as an essential procedure to know the particularities of each patient, this procedure would be a way to prevent and be ahead of the curve of the inherent risks possible to this patient. (PEIXOTO, et al. 2019).

In the study conducted by Menezes, et al. (2013), the author states that all care and injuries resulting from physiological changes, including respiratory and cardiovascular changes, pressure ulcers, alopecia, peripheral nerve injuries, and blindness, are the responsibility of the surgical team as a whole. In the study with 172 patients, pressure point pain + neuropathy was identified in 12.2% of the patients, 9.9% complained of severe pain, according to a visual analog scale, with a score of >7 in pressure points. Peripheral neuropathy affected 4.7% of the patients and 0.6% had erythema. The most relevant risk presented in this study was the body mass index >30 kg/m2, which was related to the occurrence of neuropathy. Age between 45 and 64 years, female gender, and ASA II/III classification had a higher percentage according to the related variables.

In order to cover more clearly the reduction of risks resulting from surgical positioning, the ELPO scale showed more intrinsically the work of the nurse and its implementation with the surgical patient and the team. The responsibility remains between surgeons, anesthesiologists and nursing staff, but with the implementation of the ELPO Scale, nursing plays a fundamental role in the applicability of this scale. (PEIXOTO, et al. 2019).

In another, more recent study, data collected over the course of a year with 278 patients who underwent elective surgeries, in addition to ELPO, used a questionnaire with sociodemographic and clinical characteristics. As a result, the inherent risks were high, with a percentage of 56.5% for perioperative lesions resulting from surgical positioning. Female patients, the elderly, and altered BMI were the relevant factors for the increase in LP in the surgical patients included in this study. (PEIXOTO, et al. 2019).

Even with all the technological advances, PL still appears frequently and recurrently in surgical patients. The most diverse factors, such as pressure, friction, shear, humidity and heat, favor the appearance of these lesions. Intrinsic factors include age, body weight, nutritional status, presence of comorbidities, immobility or reduced movement, incontinence, infection, low hemoglobin levels, and surgical risk (anesthetic and positional). Regarding the specific intraoperative factors, prolonged surgical time, use of anesthetics, sedation, vasoconstrictor drugs, surgical specialty, surgical positioning, body temperature related to hypothermia, intraoperative hypotension, heating, type of mattress and other devices. (PEIXOTO, et al. 2019).

The studies do not indicate disadvantages of the applicability of the ELPO scale, however four participants in this study manifested a disadvantage to the factor of time to start the surgical procedure, causing longer procedure time, which may cause delay in the surgical scale.

All the scales mentioned in this study collaborate with the prevention of LP, providing the patient with an environment with greater comfort and safety in their intraoperative process. The ELPO scale provides nurses and staff with greater security, as this tool records all the measures and conducts that were applied to the patient.

Intraoperative patient safety in the analysis of scientific evidence points to the implementation not only of ELPO, but also of a safe surgery *checklist*, as is already part of a protocol in institutions, aiming at reducing risks. Such initiatives promoted by the World Health Organization (WHO), following the example of the global challenge "Safe Surgery Saves Lives" in 2009, aim at the concomitant applicability of the ELPO scale at the same time. (ESPÍNDOLA, et al. 2020).

Since 2013, in Brazil, the National Patient Safety Program has included Safe Surgery in its protocols, a protocol that is essential for quality patient care in the intraoperative period. These measures reduced the occurrence of adverse events and since then it has been recommended to apply them to all surgical procedures. All these measures are preventive and try to minimize the risks of LP and other adverse events. In view of all these data and protocols, the operating room nurse, through evidence, must apply, control and monitor the patient submitted to the proposed procedure. (ESPÍNDOLA, et al. 2020).

5 FINAL THOUGHTS

The proposal of this study highlights the importance of the applicability of the ELPO scale by operating room nurses. However, the ELPO scale still needs to be widely disseminated and put into practice by the institutions, in order to add the *safe surgery checklist*, which in turn has already been implemented in order to ensure a safe surgery for the patient.

However, the limitation of this study consists in the fact that there is a restricted number of nursing professionals, and it is important to consider the development of new multicenter studies with methods that enable analysis and understanding of the application of preventive scales, considering them as routine measures.

As a relevant contribution of this study to the surgical area, I suggest that the ELPO scale be disseminated by nursing leaders, through workshops, training and continuing education to all teams involved in the surgical procedure, in order to optimize the time of its applicability, always considering patient safety.

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