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 particular surgical procedure and its specialty. The main goal is to maintain body alignment and reduce pressure injuries (PI). These injuries are defined as one of the patient's adverse events, so preventive measures should be applied before starting surgery (NASCIMENTO; 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 injuries resulting from the surgical positioning of the patient (ELPO), at the Ribeirão Preto Nursing School of the University of São Paulo - EERP-USP. (LOPES, et al. 2016).

Based on the studies developed and its applicability, the ELPO, once developed and validated in Brazil, directly assesses the risk of pressure injury with a score of 0 to 35 points, as evidenced by the higher the score, the greater the risk of developing pressure injury (PEIXOTO, et al. 2019). The items applied vary 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 of the physiology and anatomy of each patient and their singularities reverberates from a complication-free transoperative period to recovery in the hospital environment and discharge (LOPES, et al. 2016).

The ELPO Scale is of paramount importance in terms of its applicability by operating room nurses, following its norms and scores. It can be considered an easy-to-use tool that contributes to the entire multi-professional team, but what is the nurses' knowledge and mastery of the scale's applicability for assessing the risk of injuries resulting from surgical positioning in adult patients?

2 OBJECTIVE

To assess nurses' knowledge of 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 qualitative approach. Qualitative research raises questions that relate to experiences, concerns, priorities and preferences, thus generating knowledge about aspects of human experience, which are fundamental to knowing and understanding 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 nature to interpret personal experiences in order to demystify their origin (MINAYO, 2015).

The participants were selected intentionally using the *snowball* methodology, where the initial participants referred new participants, who in turn referred new participants, and so on. The inclusion criteria were having an interest in the topic, being a surgical center nurse and the exclusion criteria: nurses who do not work in surgical centers.

Data collection took place after approval by the Research Ethics Committee of the University of Vale do Rio dos Sinos (UNISINOS). The initial participants were selected by an invitation sent by e-mail with a letter inviting them to take part in the research and a *link to* read the Free and Informed Consent Form (FICF), which was drawn up *online*.

Data analysis followed the stages of organization, exploration and interpretation of the material collected. The first phase consists of organizing the material by reading it, looking for specific information according to the study's objective; the second phase involves exploring the material in order to establish relationships between the content reported on the survey forms and the sociological structure of the research; the third phase consists of interpreting the data, which seeks to interpretively synthesize the results and look for valid meanings based on the findings of other research (GOMES, 2015).

Ethical aspects were respected, in accordance with Resolution 466/2012 of the National Health Council, which covers research carried out with human beings and together with the complementary norms of CNS Resolution No. 510/2016 (BRASIL, 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

The profile of the participants ranged in age from 28 to 67, and 20 were female and three male. The length of training and professional experience ranged from five months to 43 years. Of the 23 nurses, 16 specialized in surgical services, 14 worked in private hospitals, 11 were familiar with the POTS scale, six used the POTS scale, three used the Braden scale and one used the Munro scale. Nine nurses worked in public hospitals and seven of them were familiar with the ELPO scale, but only one used it, five of whom used the Braden scale and one the Norton scale.

When the survey participants were asked about the use of the ELPO scale in hospital practice in the operating room, it was possible to identify that six of the 23 nurses responded that they use it. The nurses said that the difficulties in implementing the scale were due to work overload, lack of support from management and the absence of tools (scales) to prevent the risk of injury associated with surgical positioning.

> Work overload (E19)
> It wasn't possible to implement it due to non-acceptance by the head of nursing and the doctor. (E18)
> It is not routine at the institution where I work to use a scale to prevent injuries during surgery. (E17)

The advantages of using the ELPO scale are well known among the nurses surveyed, ranging from care planning, identification of possible damage and prevention of PI. In relation to care planning

and the individualization of the care process to maintain patient safety, the following statements were identified:

> Identifying each patient's risk of injury, personalizing preventive care according to risk, facilitating communication, facilitating the recording of patient risks. (E03)
> Care planning for safe care (E04)
> Patient safety and injury prevention and estimating the risk of injury development (E11)

The nurses recognize that the main objective of using the ELPO scale is to prevent PI, since surgical procedures can last for many hours and the lack of planning and prevention can lead to complications resulting from positioning during the surgical intervention process.

> Avoiding tissue damage to the patient. (E01)
> Avoids injuries to the patient through surgical positioning, in all surgeries, especially major ones. (E08)
> They prevent injuries and are very important, especially in large procedures, elderly patients and surgeries with changes in decubitus. (E17)
> Preventing injuries resulting from surgical positioning and thereby reducing hospitalization time and the risk of infections. (E18)
> Avoiding injuries resulting from surgical positioning (E05)

The risks of a hospital stay are increasingly highlighted in the literature and nursing professionals are concerned with reducing these risks so that the patient is not compromised.

> Less risk to the patient. (E15)
> Reduce the risk of injury. (E19)
> Reduces the risk of complications [...] reduces pain [...] social and economic impact for both the hospital and the patient. (E23)

With regard to the disadvantages of using the ELPO scale, more than half of the nurses said that there were none. Manifestations related to disadvantages were restricted to the factor of time to start the surgical procedure, expressed by only four professionals.

> I don't see any significant disadvantages, it just delays the start of surgery and involves the whole team so that the positioning is satisfactory (E08)
> Longer surgical procedure time (E15)
> Delays the start of surgery, which leads to delays in the surgery schedule. (20)

The ELPO, which was developed and validated in Brazil, arose from statistical inconsistencies by professionals in the field who, faced with the reality of the situation, designed, developed and implemented a scale specifically for surgical patients with the aim of remedying and/or reducing factors resulting from such procedures. This scale has a score ranging from 7 to 35 points, which include: type of surgical position, length of surgery, type of anesthesia, support surface, limb position, comorbidities and patient age. (PEIXOTO, et al. 2019).

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

Prolonged surgical time, over 6 hours, also represents a score of 5. This 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 greater risk of developing associated injuries. Support surfaces such as mattresses, leggings and cushions, depending on their 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 result in relation to the appearance of pressure injuries, related to neuropathies, so investigate the presence of obesity, malnutrition, diabetes mellitus due to its pathophysiology, since there is a decrease in blood flow and impaired 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 scoring process on the ELPO scale, although gender is not an item on the scale, but it always appears relevant in studies and research related to it. In terms of age, the score is between 18 and 80 years or more, with the latter being more affected. At the end of the assessment and when a denominator is reached, the patient is classified as more likely to develop an injury according to the score, the higher the score, the more likely they are to develop a pressure injury (LOPES, et al. 2016).

When it came to implementing the use of the ELPO scale, it was recommended by practicing professionals that a cut-off point be used to classify each patient. The operating characteristic curve (ROC-Receiver-Operating *Characteristic curve*) was implemented, which consists of a cut-off point of 20 for risk classification, with a score of up to 19 points the risk is considered low, from 20 onwards the risk presented is higher. (LOPES, et al. 2016).

Other scales were mentioned by the survey participants, the most frequently mentioned was the Braden scale, which assesses the risk of developing PI. It covers pressure injury prevention care as a whole, regardless of the hospital unit the patient is in. It does not specify items and scores intrinsic to the operating room, nor does it include surgical position, surgery time, anesthesia time, support surface, limb position, comorbidities and the patient's age. The Braden scale assesses the patient's nutritional status, level of mobility, level of physical activity, sensory perception, friction and shear and level of humidity. These are graded from 1 to 4, with the exception of friction and shear, which are graded 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 PPI. (SARAIVA, 2015).

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 assesses 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 or the condition of the patient's skin (ARAÚJO, et al. 2011).

In this sense, it was also noted that one participant cited the Munro scale, an American scale validated in Brazil, which assesses the patient's risks in three phases of the perioperative period, all of which contribute to the risk of developing a pressure injury. 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; Postoperative: duration of the perioperative period and blood loss. The benefits of the Munro scale is the process of communication and transfer of care between hospitalization units (SOUSA, 2021).

In this way, the POTS scale, in its purpose and through evidence, enables nurses to make the right decisions, guaranteeing their protection and safety in accordance with the Systematization of Perioperative Nursing Care (SAEP), an indispensable and extremely important protocol that allows for better assessment, according to the needs of each patient (GONZAGA, 2021). Since the ELPO scale is easy and quick for nurses to apply, once they are familiar with all its items and sub-items, it is recommended that they apply it when positioning the patient on the operating table and if they are repositioned during surgery, they apply it again, and at the end of the surgery they carry out a new assessment. (LOPES, et al. 2016).

In the period leading up to surgery, in the preoperative period, the patient is accompanied on admission to the operating room, at which time the nursing team takes the patient's anamnesis using an institutional protocol and the nurse observationally and in the patient's report already draws up the care plan, in addition to information pertinent to the patient's state of health. (PEIXOTO, et al. 2019).

In the operating room, monitoring is carried out hour by hour, from the start of anesthesia and the surgery itself. After this period, the patient is inspected immediately before leaving the operating table for the stretcher. As an evaluation and preventive measure, an inspection and evaluation protocol is followed daily until the patient is discharged from hospital (PEIXOTO, et al. 2019).

Aiming for excellence in surgical patient care, continuing education through educational programs in the process of care by all active professionals, nursing staff, anesthetic and surgical staff plays an important role, as well as a care flow to establish the preoperative visit as an essential procedure for knowing the particularities of each patient, this procedure would be a way to prevent and be ahead of the inherent risks possible for this patient. (PEIXOTO, et al. 2019).

In the study carried out by Menezes, et al. (2013), the author states that all care and resulting injuries such as physiological changes including respiratory and cardiovascular, pressure ulcers,

alopecia, peripheral nerve damage and blindness, is the responsibility of the surgical team as a whole. A study of 172 patients identified pain at pressure points + neuropathy in 12.2% of patients, 9.9% complained of severe pain, according to the visual analog scale, with a score >7 at pressure points. Peripheral neuropathy affected 4.7% of patients and 0.6% had erythema. The most significant risk presented in this study was a 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.

With the aim of more clearly covering the reduction of risks arising from surgical positioning, the POTS scale has more intrinsically highlighted the work of nurses and their implementation with surgical patients and staff. Responsibility remains between surgeons, anesthesiologists and the nursing team, but with the implementation of the POTS Scale, nursing plays a fundamental role in the applicability of this scale. (PEIXOTO, et al. 2019).

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

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

The studies don't point out any disadvantages to the applicability of the ELPO scale, but four participants in this study expressed a disadvantage in terms of the time it takes to start the surgical procedure, which can lead to a delay in the surgical scale.

All the scales mentioned in this study help to prevent PI, providing the patient with a more comfortable and safe environment in the trans-operative process. The ELPO scale provides nurses and the team with greater safety, as this tool records all the measures and conduct applied to the patient.

Patient safety in the intraoperative period in the light of the analysis of scientific evidence points to the implementation not only of the POTS, but also of a safe surgery *checklist, which* is already part of the protocol in institutions, with the aim of reducing risks. These initiatives promoted by the

World Health Organization (WHO), following the example of the 2009 "Safe Surgery Saves Lives" global challenge, aim to concomitantly apply the POTS scale at the same time (ESPÍNDOLA, et al. 2020).

Since 2013, Brazil's National Patient Safety Program has included Safe Surgery in its protocols, which is fundamental for quality patient care in the transoperative period. These measures have reduced the occurrence of adverse events and since then it has been recommended that they be applied to all surgical procedures. All these measures are preventive and try to minimize the risks of PI and other adverse events. Given all this data and protocols, the operating room nurse must apply, control and monitor the patient undergoing the proposed procedure by means of evidence (ESPÍNDOLA, et al. 2020).

5 FINAL CONSIDERATIONS

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

However, the limitation of this study is that the number of nurses was limited, and it is important to consider carrying out 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 the dissemination of the ELPO scale by nursing leaders, through workshops, training and continuing education to all the teams involved in the surgical act, in order to optimize the time of its applicability, always contemplating patient safety.

REFERENCES

ARAÚJO, Thiago Moura de; ARAÚJO, Márcio Flávio Moura de; CAETANO, Joselany Áfio. Comparação de escalas de avaliação de risco para úlcera por pressão em pacientes em estado crítico. Acta Paulista de Enfermagem, São Paulo, v. 24, n. 5, p. 695-700, 2011. FapUNIFESP (SciELO). http://dx.doi.org/10.1590/s0103-21002011000500016. Disponível em: https://www.scielo.br/j/ape/a/xmx7H54RWs77ZG9mxbdyZSL/?lang=pt. Acesso em: 29 maio 2022.

BEZERRA, Mayara Beatriz Gonçalo; GALVÃO, Mayana Camila Barbosa; VIEIRA, José Cristovam Martins; LOPES, Marcella Gomes dos Santos; CAVALCANTI, Aracele Tenório de Almeida e; GOMES, Eduardo Tavares. Fatores associados a lesões de pele decorrentes do período intraoperatório. Rev. SOBECC; 24(2): 76-84, abr-.jun.2019.

BRASIL, 2013. Resolução nº 466, de 12 de dezembro de 2012. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Brasília, DF, 2013. Disponível em: https://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf. Acesso em: 04 out. 2021.

BRASIL, 2016. Resolução nº 510, de 07 de abril de 2016. Dispõe sobre as normas aplicáveis a pesquisas em Ciências Humanas e Sociais. Diário Oficial [da] República Federativa do Brasil, Brasília, DF, 24 maio de 2016.

ESPINDOLA, Schirley de et al. Segurança do paciente no intraoperatório do transplante hepático: revisão integrativa. Acta Paulista de Enfermagem, São Paulo, v. 33, p. 1-9, 2020. http://dx.doi.org/10.37689/acta-ape/2020ar0187. Disponível em: https://acta-ape.org/article/seguranca-do-paciente-no-intraoperatorio-do-transplante-hepatico-revisao-integrativa/. Acesso em: 22 maio 2022.

GOMES, Romeu. A análise de dados em pesquisa qualitativa. In: MINAYO, Maria Cecília de Souza. Pesquisa social: teoria, método e criatividade. 34. ed. Petrópolis: Vozes, 2015. cap.4, p.79-108.

GONZAGA, Maria José Dias et al. Aplicação da escala em avaliação de risco para o desenvolvimento de lesões decorrentes do posicionamento cirúrgico do paciente. Revista Sobecc, São Paulo, v. 26, n. 2, p. 99-106, 8 jul. 2021. Disponível em: https://revista.sobecc.org.br/sobecc/article/view/641. Acesso em: 29 maio 2022.

LOPES, CMM, HAAS VJ, DANTAS RAS, OLIVEIRA CG, GALVÃO CM. Assessment scale of risk for surgical positioning injuries1 1 Paper extrated from Doctoral Dissertation "Risk assessment scale for the development of injuries due to surgical positioning: construction and validation", presented to Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, Brasil. Supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq). Revista Latino-Americana de Enfermagem [online]. 2016, v. 24

MENEZES, Sónia; RODRIGUES, Regina; TRANQUADA, Raquel; MÜLLER, Sofia; GAMA, Karina; MANSO, Tânia. Lesões decorrentes do posicionamento para cirurgia: incidência e fatores de risco. Acta Med Port., Portugal, 2013; 26(1):12-6.

MINAYO, Maria Cecília de Souza. Pesquisa Social: teoria, método e criatividade. 34. ed. São Paulo: Vozes, 2015.

NASCIMENTO, Francisca Caroline Lopes do; RODRIGUES, Maria Cristina Soares. Risco para lesão no posicionamento cirúrgico: validação de escala em um hospital de reabilitação. Revista Latino-Americana de Enfermagem, Ribeirão Preto, v. 28, e3261, 2020. DOI: https://doi.org/10.1590/1518-

8345.2912.3261. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-11692020000100324&lng=en&nrm=iso. Acesso em: 29 maio 2022.

PEIXOTO, Camila de Assunção et al. Risk assessment for perioperative pressure injuries. Revista Latino-Americana de Enfermagem, [S. I.], v. 27, p. 1-11, 2019.

SARAIVA, I. L. Úlcera por pressão no período transoperatório: ocorrência e fatores associados. Revista SOBECC, [S. l.], v. 19, n. 4, p. 207–213, 2015. DOI: 10.5327/Z1414-4425201400040006. Disponível em: https://revista.sobecc.org.br/sobecc/article/view/99. Acesso em: 29 maio. 2022.

SOUSA, Cristina Silva. Tradução, Adaptação Cultural e Validação da Munro Scale para Português do Brasil. Reme Revista Mineira de Enfermagem, Belo Horizonte, v. 25, p. 1-10, 2021.

SOUZA, Francisca Georgina Macedo; ERDMANN, Alocoque Lorenzini; MAGALHÃES, Aline Lima Pestana. Contornos conceituais e estruturais da pesquisa qualitativa. In: LACERDA, Maria Ribeiro; COSTENARO, Regina Gema Santini (Org.). Metodologias da pesquisa para enfermagem e saúde. Porto Alegre: Moriá, 2016. p. 99-122.