



RESEARCH ARTICLE

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KNOWLEDGE OF INTENSIVE NURSES ABOUT THE DIAGNOSIS OF NURSING: RISK OF INJURY IN THE CORNEA

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ABSTRACT

Objective: To analyze nurses' knowledge about nursing diagnosis and intervention for the risk of corneal injury in the Intensive Care Unit. **Method:** Descriptive, exploratory research with a qualitative approach. **Setting:** Study developed at the Intensive Care Unit of a public hospital of medium and high complexity, located in the metropolitan region of Belém, State of Pará, Brazil, from April to June 2019. The sample consisted of nine nurses. The semi-structured interview was used as data collection technique, having as an instrument for the collection an interview script, elaborated with open questions, and for analysis, the methodological framework proposed by Bardin. **Results:** It was verified a weak knowledge about the subject in the discourses of the nurses, guiding their rhetoric in personal experiences and with low scientific content. However, they realize the importance and complexity of the theme. **Conclusion:** There is insufficient knowledge on the part of nurses regarding the diagnosis of risk of corneal injury, as well as their risk factors and preventive measures. This reality evidences the need and the importance of greater investments in strategies of updates on the issue addressed to the nurses.

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INTRODUCTION

Intensive Care Units (ICUs) are critical areas for the hospitalization of critically ill patients, who require specialized professional attention on an ongoing basis.

They have specialized teams, involving physicians, nurses, physiotherapists, nutritionists, among other professionals, as well as having a range of technological innovations of high assistance complexity (Oliveira *et al.*, 2016; Brasil, 2017).

The recovery of patients under intensive care depends exclusively on the correct performance of complex and qualified procedures. Such actions performed effectively and within the scientific rigor are demonstrated as factors that clearly reduce the length of stay in the ICU and morbidity and mortality (Silva *et al.*, 2017). Studies show that the characteristics and severity of patients in this critical area tend to provide a certain negligence regarding procedures considered of low complexity, such as hygiene and eye protection (Herdman and Kamitsuru, 2018; Esper *et al.*, 2016; Kalhori *et al.*, 2016). However, these preventive measures are considered as essential and effective care to prevent ocular lesions in critical patients, which, when neglected, predispose the patient to the risks of dry eye, which is conceptualized as an ocular discomfort and damages caused to the cornea and conjunctiva due to the decrease in the quantity or quality of tears to moisten the eye, and consequently the risk of corneal lesions, which is a susceptibility to infection or inflammatory lesion in the corneal tissue, capable of affecting superficial and deep structures (Esper *et al.*, 2016; Herdman and Kamitsuru, 2018). The injuries resulting from a corneal injury can directly influence the patient's quality of life after discharge from the ICU, negatively reflecting recovery and rehabilitation. Corneal lesions, whether temporary or permanent, are directly associated with ineffective nursing care or lack thereof, either due to the lack of daily observation of the reduction of the lacrimal content caused by some drugs caused by the harmful action of sedatives and muscle relaxants, ocular globe in a refrigerated environment, longer than expected hospitalization time and damages caused by mechanical ventilation and oxygen therapy, among other risk factors (Queiroz *et al.*, 2018). The prevention of corneal lesions begins from the admission of the patient to the ICU, under a broad and detailed view of the nurse and multidisciplinary team until their discharge. In this context, the importance of providing comprehensive care requires actions performed with exactness in the light of scientific consensus, prescribed in the Systematization of Nursing Assistance (SNA), a nurse's private assistance methodology, able to subsidize interventions for the purpose of recovery of the patient with lower degree of sequelae (Araújo *et al.*, 2016).

Objective: To analyze the knowledge of nurses about the nursing diagnosis for the risk of corneal injury in the Intensive Care Unit.

MATERIALS AND METHODS

Participants: The study included nurses who work in the ICUs of a public hospital of medium to high complexity, a reference in oncology. All signed the Informed Consent Term (TCLE). Of the total of seventeen nurses, nine were interviewed until saturation around the thematic axes.

Ethical aspects: Study approved by the Research Ethics Committee (CEP) of Ophir Loyola Hospital (HOL), CAAE: 03851118.2.3001.5550, with an opinion number 3.244.886, on April 04, 2019.

Type of study: A descriptive, exploratory study with a qualitative approach.

Methodological procedures

Scenario of the study: A public hospital of medium and high complexity, a reference in oncology, located in the

metropolitan region of Belem, State of Pará, Brazil, from April to June 2019.

Data source: Nine nurses participated, and the closure occurred according to the saturation sampling method. In this, the researcher closes the group when, after information collected with a certain number of individuals, new interviews begin to present a number of repetitions in their content (Minayo, 2017). The inclusion criteria of the participants were: nurses of both genders, who were part of the staff of the institution and who developed their work activities in the adult ICU. Nurses who were unavailable at the time of the interview were excluded from the study.

Collection and organization of data: The data collection was performed in the units of the units through semi-structured interview recorded in audio. The semi-structured interview was used as data collection technique and as an interview script, with four open questions elaborated by the researchers.

Analysis of interview data: The data were treated according to the methodology proposed by (Bardin, 2016), which allowed the identification of three thematic categories. Resolutions 510/16 of the National Health Council (CNS) and the National Commission for Research Ethics (CONEP) were respected. The TCLE was explicitly individual to the research participants, who were identified with the following denominations: "E1, E2, E3..." respectively, where "E" represents "Nurse" and the number to order in which they were addressed, in order to preserve the anonymity and confidentiality of the information.

RESULTS

Among the nine participants, seven were of the female gender and two of the male gender. The age ranged from 25 to 54 years, and the individuals were mostly single (44.5%). 66.7% of the participants, have postgraduate *Lato Sensu*, with service time varying from 1 to 20 years of experience. The corpus of the study allowed the organization of the content in three empirical categories, grouped according to the theme extracted from the answers.

Nurses 'understanding on the diagnosis of nursing risk of injury in the cornea: This first category describes the nurses' knowledge about the concept of risk of corneal injury. The nurses related this diagnosis to patients who are hemodynamic instability, and can develop lesions associated to several factors, as can be observed in the speeches:

"[...] This diagnosis is a sign that the patient is hemodynamically unstable. When there is a risk of corneal injury is why the patient is unconscious, comatose and cannot perform the blinking movement, and tear." (E1, E2, E3).

"[...] Because it is a risk diagnosis, it is the fact that the patient may present this lesion in the cornea, but it is not an already concrete fact, it does not yet present, so it would be a diagnosis to work on prevention." (E4, E5, E6).

"[...] I imagine that it is when an injury originated by abrasion or of infectious origin, that it is going to take the change in the cornea, that has relation with the clinical picture of the patient in serious condition." (E7).

"[...] From what I understand, it would be a lesion in the cornea already present, which generates sequels for the patient, being a patient that will have a chance of survival or not." (E8, E9).

Nurses' understanding on risk factors for the inhibition of corn injury: In relation to category 2, it was sought to identify if the nurses knew the predisposing risk factors for the appearance of corneal lesion in critically ill patients. It was observed that the nurses have divergent knowledge about the risk factors, as observed in the following statements:

"[...] Risk factors are inadequate manipulation, lack of care in humidification of the cornea with physiological solution at 0.9% and lack of orientation of these care for the nursing team." (E1, E2).

"[...] Depending on the type of injury, it may be a traumatic event or infection, patients sedated, in a coma, that ends up diminishing the reflexes or loss of eyelid reflex, thus resecting the eye." (E3, E4).

"[...] Patients hospitalized in ICU, patients with lagophthalmos, patients with ocular dryness and patients with some lacrimal canal disorder." (E5).

"[...] I believe that it is precisely the exposure of this cornea, by not completely closing the eyelids, leaving it exposed to a cooled medium and with bacteria." (E6).

"[...] I think the main thing is when the patient cannot close the eyelid, patient sedated, loss of eyelid reflexes, vasoactive drug use, as well as possible infection or trauma." (E7).

"[...] The non-humid cornea, eye in direct contact with ambient light, improperly performed eye hygiene, patients undergoing mechanical ventilation, sedation and age." (E8, E9).

Nurses' understanding on the intervention methods used to prevent injury in the cornea: In this category, it was observed the lack of protocols that make routine in the sector the prevention of corneal lesions. Emphasis was placed on the commitment of professionals working in ICUs to try to construct prevention goals or even minimize factors that may compromise the physiology of the eye. From the answers, a lack of knowledge about prevention methods was noticed, as well as the lack of standardization of eye care, as observed in the speeches:

"[...] Use gauze moistened with 0.9% saline solution, always promote the humidification of the cornea, observe if it has any type of injury, if the patient can make the blinking movement, never leave the cornea exposed to the environment." (E1).

"[...] Mainly in the orientation of the technical team, regarding the care processes, which is to humidify the cornea to try not to dry up, and guidelines for all multidisciplinary team." (E2, E3, E4).

"[...] Daily corneal evaluation, patient assessment, neurological status, use of gauze moistened with 0.9% physiological solution, use of artificial eye drops, artificial tears and the use of SNA." (E5, E6).

"[...] Try to keep the patient's eye closed and also do the hydration, if you have appropriate eye drops in the case prescribed by the ICU doctor we use, but if we do not use the physiological solution at 0.9%, and close the eyelids we use the micropore, maintain a good hygiene of the eyeball and the daily evaluation of these corneas with the support of the SNA." (E7, E8, E9).

DISCUSSION

Regarding the nurses' understanding of the concepts involving corneal injury, the interviewees associated with traumatic or infectious episodes, the latter coming from inadequate hygiene. However, the responses were not sufficient to differentiate the diagnosis of risk and injury, types of lesions, stages of evolution and lesion specificities. Regarding the concept of corneal injury, this is a vulnerability to infection or inflammatory lesion with the possibility of reaching superficial or deep layers of the corneal tissue (Costa *et al.*, 2019; Freitas *et al.* 2018; Herdman and Kamitsuru, 2018). In relation to the classification of the corneal lesions, one has the traumatic, that causes abrasion in the cornea, superficial that causes the ocular exposure, infectious ones that can be infectious keratitis ulcerativas or corneal ulcer caused by bacteria. There are still the degenerative, keratocone and miscellaneous. Each type of lesion presents a characteristic and a degree of compromise of the corneal tissue, being the knowledge of these characteristics fundamental for the prevention and treatment (Araújo *et al.*, 2018; Bendavid *et al.*, 2017; Comarella *et al.*, 2015). It is described that the reality of the ICU professional is permeated with challenges, and the care and risks related to the visual perception of critical patients is unfavorable, since, there is a tendency of the prioritization of care to the systems considered vital such as neurological, respiratory and cardiovascular (Araújo *et al.*, 2016). Associated with this, insufficient knowledge of the professionals has contributed to a high incidence of corneal lesion in critically ill patients (Esper *et al.*, 2016).

In the meantime, we consider it essential for nurses to seek new knowledge to meet the needs of their patients, thus promoting a change of attitude, substituting care based on experiences based on scientific evidence. For this, training courses and professional updating emerge as indispensable methods when it is sought to guarantee high quality assistance. Regarding the main risk factors for the development of corneal lesion in critically ill patients, exposure of the eyeball, sedation, intubation and the long period of hospitalization were the main risk factors reported. There were also reports that inadequately performed nursing care is a factor for the development of corneal lesion. There was a great divergence of understanding regarding the risk factors among nurses. In addition, there was insufficient scientific deepening regarding the factors generating the injury from the aforementioned risks, revealing a greater need to prepare professionals to deal with this risk in their routine. An intensive care setting is prone to the development of various lesions including the cornea. In this understanding the training of nurses and the accomplishment of the appropriate nursing process is fundamental to reduce the risk of injury and to guarantee a better prognosis to the patient (Pitombeiro *et al.*, 2018; Silva *et al.*, 2017). Corroborating the findings of this study, in order for nurses to perform their work with excellence it is necessary to know the risk factors that can lead to some kind of corneal injury. To this end, in recent years the global literature has

been revealing the main factors that lead the patient to corneal injury. Thus, it was confirmed that ocular exposure to ambient air, absent or decreased blink reflex, lowering of consciousness level due to coma or sedation, prolonged hospital stay, hemodynamic instability, use of medications, infectious processes, patient under mechanical ventilation, facial trauma and cranial nerve palsy are potent factors for the development of lesions in corneal tissue (Herdman and Kamitsuru, 2018; Oliveira *et al.*, 2016; Werli-Alvarenga *et al.*, 2016; Porto *et al.*, 2015). There is great heterogeneity and divergences of understanding of the nurses regarding the risk factors for corneal injury when compared with the literature; moreover, there was no scientific deepening in the discourses. It is described that for nurses to perform their work with excellence it is necessary to know the risk factors that can cause some type of corneal injury (Freitas *et al.*, 2018; Oliveira *et al.*, 2016). Thus, it was evident the difficulties of understanding the interviewees in describing the various risk factors for the onset of this type of injury, in a way that could negatively influence the quality of the care provided. It is believed that the thematic approach is little discussed with the interviewees, which is why the low scientific base is notorious, considering it a limiting factor for the answers. There is the recognition of professionals regarding the need for greater attention to eye care, however, there is a tendency and a predominance of responses from experiences, experiences and daily observations. Regarding the preventive methods used, some therapeutic strategies emerged, ranging from daily corneal evaluation, neurological status, use of eye drops, good eye hygiene, and humidification of the cornea with 0.9% physiological solution; only 2 participants reported using SNA as a prevention strategy, and corneal humidification with 0.9% saline solution was reported by all interviewees as the main prevention method for corneal lesions.

The practice of humidification of the cornea is performed to prepare the patient for the application of preventive methods, using gauze moistened in 0.9% SF. In addition, an international study carried out at the ICUs of a large hospital, Valiasr, in Arak, Iran, pointed out that the application of gauze with saline increases the prevalence and severity of keratopathy in critically ill patients, a pathology resulting from decompensation endothelial function, therefore its use is not recommended (Davoodabady *et al.*, 2018). The interviewees' discourses on the methods and interventions used, brought information that shows great ignorance of the methods recommended in the literature. Regarding the most effective methods described, there is consensus: ocular gel or ointment (Costa *et al.*, 2019; Freitas *et al.*, 2018), eyewash or ocular lubricant (Bendavid *et al.*, 2017), polyethylene films (Kalhori *et al.*, 2016; Alansari *et al.*, 2015), Bandage Contact Lenses and Tear Plugs (Bendavid *et al.*, 2017), as well as the use of protocols, the use of SNA, being one of the most efficient way of providing these and other care (Massoroli *et al.*, 2015). Although it is not recognized as a priority care in ICUs, eye care is fundamental for a good prognosis of critical patients. From this, it is perceived that it is of great importance the nurse to identify the most effective methods to prevent ocular changes and complications, as well as the implementation and the monitoring of a standardized protocol on eye care. This fact is observed in a ICU survey of a large general hospital, located in Cornwall, UK, with 114 intensive care patients, which verified the efficacy of a protocol to prevent corneal disease from exposure; the overall rate of corneal disease was 21% before the protocol and there was a decrease to 2.6% in

patients who had used protocolized intervention (Kousha *et al.*, 2018; Alansari *et al.*, 2015). The SNA is of great importance for the maintenance of vital functions of critical patients. The implementation of it in the ICU implies the organization of the nursing actions, through the application of its interrelated phases. It refers to an exclusive methodology of the nurse, through a daily clinical evaluation, in this way it is possible to define prescriptions in accordance with the patient's individualized neuroscience, subsidizing the decision making, based on clinical reasoning, with a view to the best patient recovery (Massoroli *et al.*, 2015; Salvador *et al.*, 2015). It is worth noting that there is a lack of knowledge about the subject matter that makes nursing diagnosis more likely to cause damage to the cornea, and consequently more effective intervention methods to prevent such lesions. Corroborating with the study, a survey carried out in 2015, in a public referral hospital on cancer treatment, located in the city of Belém, State of Pará, Brazil, which also evaluated the level of knowledge of the professionals about corneal lesions, evidenced the difficulties of the nurses to develop the SNA within the ICUs, as well as incomplete and superficial knowledge on the subject (Freitas *et al.*, 2018). In this understanding, it is inferred that perhaps for this reason, nurses do not realize that the relevance of eye care in the ICU is beyond providing daily care. To diagnose and prescribe, it is necessary to have knowledge based on scientific evidence. Such knowledge contributes strongly to the quality of care, especially when the patient is in the ICU, vulnerable to several risk factors that can compromise the function of this noble tissue (Queiroz *et al.*, 2018).

Conclusion

From the results we understand that the most relevant points about the subject were approached, just as the research objectives were reached, since the results allowed reflections on the understanding of the intensive care nurses about the nursing diagnosis risk of corneal injury, risk factors and the methods and interventions used in the daily life of these nurses, making a comparison with the methods available and recommended by the current literature for the prevention of corneal lesions. However, nurses' knowledge of the subject was weakened. The results allow us to infer that the nurses' understanding was superficial, as there were no consolidated and detailed answers regarding the concept of risk of corneal injury, as well as the potential risk factors discriminated in the NANDA 2018-2020. Regarding methods of interventions with a focus on prevention, the use of gauze moistened with saline solution was the main method mentioned, however, the literature does not recommend such a method. The SNA applied by the nurses was reported only by two interviewees, which demonstrates the non-implementation of this private nurse instrument, which can subsidize the actions and direct to the best practices in critical care within the ICU. Thus, we consider that the inclusion of the nursing diagnosis of corneal injury in the SNA of the unit is necessary and timely, since this diagnosis guarantees more attention and assistance with quality, as well as the incentive of continuing education and the implantation of a standardized protocol to aid in the care of the corneas, considering that there is a great turnover of professionals within the ICUs, making continuous care difficult without the aid of a standard protocol. Among the preventive methods cited, polyethylene film is the most effective option. This film is a transparent, flexible and non-toxic polymer that has the function of preventing the

evaporation of liquids from the ocular cavity into the medium, in this way the humidity of the covered place is maintained. Ocular gel or ointment is indicated for disorders in lacrimal secretion and in cases where the eyelid does not close or date incompletely. The eyewash or ocular lubricant has analgesic action, indicated for temporary relief of irritation and burning due to dry eye; and the bandage contact lenses and the lacrimal Plugs, were more effective in the prevention of keratopathy (Bendavid *et al.*, 2017; Esper *et al.*, 2016; Kalhori *et al.*, 2016).

Finally, the relevance of the use of SNA, a tool of great importance for the maintenance of the vital functions of the patient, is highlighted. Its use through daily clinical evaluation makes it possible to define prescriptions according to the needs of the patient, supporting the decision-making of the patient based on clinical reasoning (Massoroli *et al.*, 2015; Salvador *et al.*, 2015). In spite of answering the question of research, this study had the following limitation: the involvement of professionals filled in only one hospital, with representations of regional aspect, making limited the possibility of generalizations. Therefore, it is recommended to carry out similar research in other institutions, both nationally and internationally. In view of the above, this research raises future studies to quantify the impacts of subjecting the process to the obstacles mentioned.

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