Esc Anna Nery 2021;25(2):e20200225

Perception of Nursing professionals on medical device-related pressure injuries

Percepção de profissionais de enfermagem sobre lesões por pressão relacionadas a dispositivos médicos

Percepción de los profesionales de enfermería sobre la evidencia por áreas relacionadas con dispositivos médicos

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Abstract

Objective: To know the perception of Nursing professionals working in intensive care units regarding medical device-related pressure injuries related. **Method:** A qualitative and descriptive research, carried out with 12 Nursing professionals from a public teaching hospital in Santa Catarina. Data collection took place through semi-structured interviews, and the analysis was performed using the collective subject discourse technique by means of the *QualiQuantiSoft*® Software. **Results:** Five Central Ideas emerged: types of devices and the occurrence of medical device-related pressure injuries; (in)visibility and (de)valuation of these injuries in the care of critical patients; medical device-related pressure injuries can be inevitable; critical patient profile and risk to develop the injury; and (lack of) professional knowledge about the impact of the injury on people's lives after discharge from intensive care. **Conclusion and implications for the practice:** The perception of Nursing about medical device-related pressure injuries is linked to the types of devices, the occurrence of injuries in intensive care, the care offered and the impact of injuries on people's lives.

Keywords: Nursing; Pressure injury; Critical care; Nursing Care; Patient Safety.

Resumo

Objetivo: Conhecer a percepção de profissionais de enfermagem atuantes em unidade de terapia intensiva acerca das lesões por pressão relacionadas a dispositivos médicos. **Método:** Pesquisa qualitativa, descritiva, realizada com 12 profissionais de enfermagem de um hospital público de ensino de Santa Catarina. A coleta de dados se deu por entrevista semiestruturada, e análise pela técnica do discurso do sujeito coletivo com o emprego do *software QualiQuantiSoft*®. **Resultados:** Emergiram cinco Ideias Centrais: tipos de dispositivos e ocorrência das lesões por pressão relacionadas a dispositivos médicos; (in)visibilidade e (des)valorização destas lesões no cuidado ao paciente crítico; lesões por pressão relacionadas a dispositivos médicos podem ser inevitáveis; perfil do paciente crítico e risco para desenvolver a lesão; e (des)conhecimento profissional sobre o impacto da lesão na vida das pessoas após alta da terapia intensiva. **Conclusão e implicações para a prática:** A percepção da enfermagem acerca das lesões por pressão relacionadas a dispositivos médicos está vinculada aos tipos de dispositivos, a ocorrência das lesões na terapia intensiva, ao cuidado ofertado e ao impacto das lesões na vida das pessoas.

Palavras-chave: Enfermagem; Lesão por pressão; Cuidados críticos; Cuidados de enfermagem; Segurança do Paciente.

Resumen

Objetivo: Conocer la percepción de los profesionales de Enfermería que trabajan en unidades de cuidados intensivos acerca de las lesiones por presión relacionadas con dispositivos médicos. **Método:** Investigación cualitativa y descriptiva, realizada con 12 profesionales de Enfermería de un hospital escuela público Santa Catarina. Los datos se recolectaron por medio de una entrevista semiestructurada, y el análisis tuvo lugar a través de la técnica de discurso del sujeto colectivo utilizando el *software QualiQuantiSoft*®. **Resultados:** Surgieron cinco Ideas Centrales: tipos de dispositivos y frecuencia de las lesiones por presión relacionadas con dispositivos médicos; la (in)visibilidade y (des)valorización de estas lesiones en la atención al paciente en estado crítico; las lesiones por presión relacionadas con dispositivos médicos pueden ser inevitables; perfil del paciente en estado crítico y riesgo de desarrollar una lesión; y (des)conocimiento profesional sobre el efecto de la lesión en la vida de las personas después del alta de la unidad de cuidados intensivos. **Conclusión e implicaciones para la práctica:** La percepción del personal de Enfermería acerca de las lesiones por presión relacionadas con dispositivos médicos está vinculada a los tipos de dispositivos, a la frecuencia de las lesiones en la unidad de cuidados intensivos, a la atención prestada y al efecto de las lesiones en la vida de las personas.

Palabras clave: Enfermería; Lesión por presión; Cuidado crítico; Atención de Enfermería; Seguridad del Paciente.

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Submitted on 07/07/2020.
Accepted on 09/12/2020.

DOI:https://doi.org/10.1590/2177-9465-EAN-2020-0225

INTRODUCTION

Nursing care in the context of intensive care has evolved significantly over the years. This fact culminates with the emergence of increasingly complex procedures and the use of many medical devices which, although essential in the care of critically ill patients, can cause adverse events, such as medical device-related pressure injuries (MDR PIs).[1]

Resulting from the use of devices created and applied for diagnostic and therapeutic purposes, MDR PIs generally present the pattern or shape of the device and should be categorized according to the pressure injury classification system.[2] These injuries can develop anywhere in the body where medical devices are inserted. Commonly reported sites include head, face, neck and extremities, associated mainly with immobilization devices such as splints, cervical collars; and breathing devices such as endotracheal tubes, tracheostomy, and non-invasive ventilation masks.[3]

Patients who are dependent on medical devices, such as those who are critically ill, are more likely to develop pressure injuries.[4] A number of studies show that the MDR PI rates can range from 1.7% to 86% in patients of medical-surgical units and Intensive Care Units (ICUs), respectively, and are generally not identified until they reach stages 3 or 4.[5]

The Nursing team plays a fundamental role in identifying and providing care to prevent and/or minimize the occurrence of MDR PIs. However, these professionals are not always aware of the risks of medical devices in the development of injuries. In this sense, a research study conducted in Turkey showed that 20% of the nurses did not believe that medical devices could cause pressure injuries.[6] Furthermore, some professionals do not recognize MDR PIs as pressure injuries, either because they are unaware of the terminology of the National Pressure Injury Advisory Panel (NPIAP) or because they disagree with it.[7]

This shows the need to broaden the discussions about MDR PIs, which, although having significant occurrence, do not always receive the proper attention of the health team, which justifies conducting this research, also supported by an integrative review[8] which recommends new studies on the theme in the different scenarios of care, especially in Brazil, due to the various realities of care. In view of this, this research aimed to acknowledge the perception of Nursing professionals working in the intensive care unit regarding medical device-related pressure injuries.

It is noteworthy that this research can give visibility to MDR PIs in the context of critical care and contribute to the planning of actions to prevent their occurrence.

METHOD

A descriptive and qualitative study, developed in the general ICU of a public teaching hospital in the state of Santa Catarina. During the period of data collection, the ICU had 10 active beds for hospitalization of acute and surgical clinical patients (general, digestive, vascular, oncological, urinary, and gynecological surgeries). The physical structure had two Nursing stations, wardrobe, expurgation, equipment room, storeroom, cleaning room, and pantry. The administrative area has a room for medical, Nursing and Physiotherapy supervisors, a library, medical and Nursing resting rooms, rooms for visitors, meetings, and classrooms.

The Nursing staff was composed of: 1 Nursing chief, 14 Nursing assistants, and 38 Nursing technicians. The Nursing team professionals who met the following inclusion criteria participated: being a nurse or Nursing technician at the ICU for at least six months and being in professional practice. Professionals on vacation or leave of any kind were excluded. Intentional sampling was used.

Data was collected from February to April 2018, by means of semi-structured interviews, conducted by one of the researchers. In the ICU meeting room, the interviews were individual, based on the following guiding question: How do you perceive the problem of medical device-related pressure injuries in the intensive care unit? The interviews lasted a mean of 20 minutes, were recorded and later transcribed in full. The sampling was by theoretical saturation,[9] according to the following steps: 1. Making the records of "raw" data available – as the interviews were carried out, they were transcribed; 2. "Immersing" in each record – concurrent to the previous step, the transcripts were read to identify their nuclei of meaning; 3. Compiling the individual analyses – the compilation of themes and/or enunciations identified in the statements was carried out; 4. Gathering the themes and/or enunciations – statements with the same meaning nuclei were grouped; 5. Encoding or naming the data – simultaneously with the previous step, the naming of the enunciations was carried out; 6. Allocating the themes and/or enunciations – in a table, the utterances were allocated highlighting the time of the first occurrence; 7. Verifying theoretical saturation – the visualization of theoretical saturation occurred when different enunciations were not added after new interviews.[9] Thus, it was identified that after the sixth interview there were no new statements; however, data collection continued until the twelfth interview, in order to reinforce saturation.

For data organization, the *QualiQuantiSoft*® software, version 1.3.c., was used and, for analysis, the Collective Subject Discourse[10] (DSC) technique, which has four methodological figures: key expressions (KEs) – they are the most significant extracts from the testimonies; central ideas (CIs) – name or linguistic expression that describes the meaning of each homogeneous set of KEs; anchoring (AC) – comprises assumptions, principles, hypotheses and theories that support key expressions; and DSC – a synthesis discourse in the first-person singular, with KEs that have similar or complementary CIs or AC.[10]

The *QualiQuantiSoft*® software comprises four components: 1) Records: in this field all the individual information of the participants (e.g.: age, gender, training, etc.) were recorded, in addition to the questions used in the interview and the answers transcribed from each interviewee; 2) Analyses: this field is called the Discourse Analysis Instrument (DAI), which is divided into DAI1 and DAI2. In DAI1, the analysis of each interview was performed, selecting the most significant passages (KE), and

then, identifying the CIs. DAI2 helped to build the DSC from the grouping of all the KEs with the same CI; 3) Tools: allowed exporting the results of the survey from the software to *Microsoft® Office Word*, version 2010; 4) Reports: made it possible to generate DSC reports, synthesis of CIs and percentage of participation of each interviewee in the DSCs.

It is noteworthy that the use of analysis software for data processing, allows greater credibility, confirmability, coherence and reliability in qualitative research, reducing researchers' bias.[11] In addition, to ensure the reliability and credibility of the study, the empirical material from data collection was peer-reviewed,[12] including the researcher who collected the data and another two PhDs in Nursing involved in the study, with corresponding theoretical and methodological basis. The relevance of the validation of the researchers in the exercise of the research is emphasized because it is associated with the criteria of confirmation and credibility.[11]

The participants were identified in the speeches by the letter "E", assigning them numbers according to the sequence of the interviews (E1, E2, E3...). The research followed the guidelines and provisions of Resolution No. 466/12 and was approved by the Ethics Committee on Research with Human Beings of the Federal University of Santa Catarina, under Opinion No. 2.091404 on May 30th, 2017. All the participants signed the Free and Informed Consent Form.

RESULTS

Twelve Nursing professionals participated in the study, seven of whom were technicians and five nurses, the majority (n=10) female. Their age varied between 21 and 51 years old (mean of 40 years old). The period of training related to the position ranged from four to 25 years (mean of 16 years) and the mean working time in intensive care was 9.6 years.

As for academic degrees, six Nursing technicians had completed higher education, four in Nursing and two in other areas of knowledge, in addition to specializations, three in intensive care and two in other areas. The five nurses interviewed have a master's degree with a dissertation in the area of intensive care, one is a PhD in Nursing and one was studying for a doctorate in Nursing.

The analysis of the statements gave rise to five CIs with their respective DSC on MDR PIs. The methodological figure AC was not identified in the statements of the professionals.

CI1, "Types of device and occurrence of MDR PIs in the ICU", emerged from the statements of five professionals, while CI2 and CI3, respectively, "Critical patient profile and risk to develop MDR PIs" and "(In)visibility and (de)valuation of MDR PIs in the care of the critically ill patient", represent the statements of six participants. Other CIs were originated from the statements of a smaller number of professionals: CI4, "MDR PIs can be inevitable" and CI5, "(lack of) knowledge of the professional about the impact of MDR PIs on the lives of people after discharge from the ICU", which correspond to the statement of two and one participant, respectively.

CI1: Types of device and occurrence of MDR PIs in the ICU

DSC1: *I think that because it is an ICU, because it has several invasive devices, the issue becomes more prevalent. Mainly severe, isolated patients. Pressure injuries by devices are caused by intubation, catheterization, central or peripheral venous catheter. Anyway, everything that is used as therapy in the patient and that has this injury as a secondary. I think that every day we get to see a case, sometimes even more than one injury in the same patient. Lately I have seen it more often or I haven't noticed it so much. I don't know if there was an increase in these injuries by devices or if people started to call my attention to that. We notice, unfortunately, only at bath time where the patient has the injury and what is causing it. Because it is when the laces are changed, the monitoring of the patient is removed to see, at this moment, you look with more criteria to the patient. I think that all hygiene and comfort care is related to observing this type of thing, the fixations, the drains, the probes, if they are not hurting the skin.* (E1, E3, E6, E9, E10)

CI2: Critical patient profile and risk to develop MDR PIs

DSC2: *There are several factors that contribute to the injury such as the device, the time, the severity. It is usually also related to a vasoactive drug, which generates fragility, predisposition. Some patients are more likely, those with softer skin, with more edema, older patients, with more friable skin, end up injuring themselves. For those who are more agitated, the fixation of the tube has to be stronger, they usually cause ear damage.* (E1, E2, E5, E6, E8, E12)

CI3: (In)visibility and (de)valuation of MDR PIs in the care of the critically ill patient

DSC3: *I have observed that many times we end up not giving such importance to injuries by devices when compared to injuries involving bony prominences, for example. This often goes unnoticed. These injuries have very little value in the face of such a large number of services we provide, in view of the things we have to observe. But I found this question to be very interesting, it is a new thing. Actually, I heard about it at the university and at the technical course, but here in the ICU we don't talk so much about it. We talk a lot about traditional pressure injury, from the sacral region, but we are often faced with this type of device injury. It's really something we should pay a little more attention to.* (E3, E4, E5, E7, E9, E11)

CI4: MDR PIs can be inevitable

> **DSC4:** *There are cases where it is understood that it is very difficult to avoid them [injuries] due to the need for the device, which, because it is a foreign body, will have a deleterious effect. Because there is a whole context of the patient's condition, such as the use of vasoactive drugs, obesity, in short, which is inherent to the patient unrelated to the care we implement. Because no matter how much care you take, there's a patient that can't avoid it.* (E4, E5)

CI5: Lack of knowledge of the professional about the impact of MDR PIs on the lives of people after discharge from the ICU

> **DSC5:** *I cannot assess how weak the patient leaves the ICU. Because many of the patients who are discharged leave with an injury, and I cannot follow what kind of harmful effect has arisen or arises in the patient's life in the activities of daily life outside of here. An example: a male patient who leaves with a urethral meatus lesion through the bladder probe, which almost cracks the penis... I don't have the information on how he deals with this suffering, with this damage, with this injury in the future. If he goes through some type of plastic surgery, if he does any specific treatment. How the patient and family deal with it, we have no knowledge. Our care is still very limited to the Intensive Care Unit, because there are "simple" injuries such as a nose wing injury by nasoenteral tube or a more "serious" injury such as that of the urethral meatus that will require medical treatment that can limit the person in some specific activities, some activities of daily life. (E4)*

The perceptions of the Nursing professionals about MDR PIs, expressed in the speeches, were synthesized and are presented in Chart 1.

DISCUSSION

DSC 1 shows that the professionals' perception of the theme under study is centered on the types of device and on the occurrence of MDR PIs in the context of intensive care. Definitions and etiology of MDR PIs were discussed, which converge with

Chart 1. Synthesis of the perceptions of the professionals on the medical device-related pressure injuries. Florianópolis, Santa Catarina, Brazil, 2018.

Central Ideas	DSC	Perceptions of the professionals
Types of device and occurrence of MDR PIs in the ICU	DSC1	- They believe that patients in the ICU are more susceptible to MDR PIs.
		- They define MDR PI as secondary damage to a therapeutic procedure for the critically ill patient (e.g.: intubation, probing).
		- They notice cases of MDR PIs daily, including more than one in the same patient.
		- They use the bed bath to identify MDR PIs.
Profile of the critically ill patient and risk to develop MDR PIs	DSC2	- The use of devices, length of stay, severity, isolation from contact, use of vasoactive drugs, edema, advanced age, psychomotor agitation are mentioned as risk factors.
(In)visibility and (de)valuation of MDR PIs in the care of the critically ill patient	DSC3	- They usually pay more attention to traditional pressure injuries that affect bone prominences.
		- They recognize a (de)valuation of MDR PIs in the context of critical care.
MDR PIs can be inevitable	DSC4	- They understand that, in some cases, even with care, MDR PIs are inevitable.
		- They mention the permanent need for the device, clinical condition and characteristics inherent to the patient as factors that interfere with prevention.
(Lack of) knowledge of the professional about the impact of MDR PIs on the lives of people after discharge from the ICU	DSC5	- They report difficulty in measuring the impact that MDR PIs have on the patients' lives after discharge.
		- They reflect on the suffering of patients and their families and on the possible need for additional treatments to repair the damage caused by the MDR PIs.

the definition of the *National Pressure Injury Advisory Panel, when it refers that pressure injuries related to devices are the result* of the use of devices created and applied for diagnostic and therapeutic purposes.[2] Understanding this phenomenon is paramount when considering prevention, considering that the team's lack of awareness and recognition of pressure injuries are additional risk factors for their development.[6,7]

The professionals reported observing cases of MDR PIs daily, including more than one in the same patient. A study carried out in an ICU in Saudi Arabia showed that 26.7% of the patients had at least one MDR PI and that 10.4% developed more than one injury.[13]

Also in DSC1, the identification of MDR PI cases was mentioned by the participants. It is known that in Nursing care, bathing is a care action in which a careful skin inspection is performed, aiming at its integrity. When it comes to MDR PIs, skin inspection is an important premise to promote focused and quality care.[14] In addition to this assessment, it is essential that nurses prioritize the early identification of these injuries by means of regular skin inspections, at least once each shift, particularly in the case of patients with risk factors for the development of injuries, such as localized or systemic edema.[6,15]

The professionals' understanding of the risk for the development of MDR PIs, present in DSC2, is in line with the literature. An Australian study identified that people hospitalized in the ICU are 3.8 times more likely to develop a pressure injury when compared to those hospitalized in the wards. Among the factors that justify this vulnerability are critical illness itself, hemodynamic instability, prolonged immobility, and the use of multiple medical devices.[4]

In this discourse, the professionals also expressed that patients with psychomotor agitation are more vulnerable to the occurrence of MDR PIs, a perception that is supported by a multicenter study that evaluated the effects of non-sedation on the occurrence of pressure injuries in patients on mechanical ventilation. The results revealed that non-sedated patients had a higher prevalence of MDR IPs when compared to those who were sedated.[16] On the other hand, sedation can lead to a longer ICU stay, compromising physical mobility, increasing the time of mechanical ventilation, and contributing to the need for prolonged use of medical devices.[5]

Although the professionals perceive that MDR PIs are recurrent in the ICU (DSC1), they recognize their (de)valuation in the context of critical care, as shown by DSC3. In the participants' statement, "*a very small value*" is attributed to these injuries in view of the dimension of care provided in intensive care. This issue was also observed in a survey conducted by Australian nurses, in which the professionals stated that, when vital priorities come into play, problems such as MDR PIs are neglected.[5]

This "(in)visibility" of MDR PIs was called "Hidden Epidemic", in the sense that, historically, this type of injury has not received due attention[17]. Factors such as high workload, inadequate staffing and scarcity of resources and training, can have a direct relation with the care provided for pressure injuries, with these elements being pointed out by Nursing professionals as the main barriers for preventing these injuries.[18] Despite the evidenced (in)visibility of MDR PIs in DSC3, the professionals recognize the need to pay more attention to these adverse events.

In DSC4, the participants expressed that, in some cases, even if preventive care is performed, injuries tend to occur. MDR PIs are more complicated to prevent when compared to traditional pressure injuries, as the devices can be an essential diagnostic/therapeutic component in the treatment, and their repositioning is not always possible.[5] In addition, the clinical condition of the patients, such as anemia, low levels of albumin, hypotension, vasopressor therapy, and mechanical ventilation, can increase the risk of MDR PIs.[7]

One of the difficulties mentioned by the nurses in DSC5, is to measure the impact that MDR PIs have on the patients' lives after discharge. An example of pressure injury in the urethral meatus by the Urinary Catheterization (UC) was mentioned and it was briefly reflected on the suffering involved in these individuals and their families and on the possible need for additional treatments to repair this damage. Specifically in cases of pressure injuries caused by a urinary catheter, a study carried out in Israel, showed a 36% prevalence of PIs in the urethral meatus of men due to the use of UC.[19] In such cases, urethral reconstruction and/or urinary deviation may be necessary, with physical and psychological implications for the person due to pain and disfigurement of body image.[20]

Obviously, it is necessary to consider repercussions a posteriori; however, it is also essential to understand the effects of these injuries even in the context of critical care, considering that MDR PIs can contribute to infectious processes and pain, even impacting on the increase of the hospitalization time in the ICU.

In view of the above, the need for greater surveillance and awareness of the Nursing and multi-professional team for MDR PI cases is emphasized, as satisfactory results are achieved when all team members understand and value their role in preventing this harm,[7] prevention that requires evidence-based interventions and dissemination of information to the entire multidisciplinary team.[14]

As it recognizes that the identification and prevention of MDR PIs is the responsibility of the entire multidisciplinary team, a limitation of the study was the approach restricted to Nursing professionals. Also pointed out as a limitation is the fact that the interviews were not submitted to validation by the participants which, associated to the peer review carried out, could give more credibility to the study.[12]

FINAL CONSIDERATIONS AND IMPLICATIONS FOR THE PRACTICE

The perception of the Nursing professionals about medical device-related pressure injuries comprises the recognition of

the devices that cause the injuries, as well as the occurrence of these injuries and their daily identification in the ICU, especially during the bath performed by the Nursing team. The participants believe that patients in the ICU are more susceptible to these injuries and recognize an (in)visibility and (de)valuation of these adverse events in the context of critical care. For professionals, in some cases, MDR PIs are unavoidable and, when they occur, they fail to measure their impact on people's lives after discharge from the ICU.

It is believed that this research aroused individual and collective reflections in the Nursing team on the problem of MDR PIs in the intensive care setting, as it brought up a theme little explored in daily work, as exposed by the professionals, in order to raise awareness regarding the need for surveillance and care to prevent or minimize the occurrence of these adverse events. It is also appropriate to recommend new studies that also involve other health professionals.

AUTHORS' CONTRIBUTIONS

Study design. Sabrina Guterres da Silva Galetto. Eliane Regina Pereira do Nascimento

Data collection or production. Sabrina Guterres da Silva Galetto

Data analysis and interpretation of the results. Sabrina Guterres da Silva Galetto. Eliane Regina Pereira do Nascimento. Patricia Madalena Vieira Hermida. Danielle Delacanal Lazzari. Josefine Busanello. Nara Reisdorfer

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