

HEALTHCARE PROFESSIONALS' PERCEPTIONS OF INFECTION PREVENTION AND CONTROL IN PEDIATRIC NEUROPATHIC CARE IN A HOSPITAL IN NORTHERN BRAZIL

CONCEPÇÕES DOS PROFISSIONAIS DE SAÚDE SOBRE A PREVENÇÃO E O CONTROLE DE INFECÇÕES NO CUIDADO PEDIÁTRICO A PACIENTES NEUROPATAS EM UM HOSPITAL DO NORTE DO BRASIL

CONCEPCIONES DE LOS PROFESIONALES DE LA SALUD SOBRE LA PREVENCIÓN Y CONTROL DE INFECCIONES EN LA ATENCIÓN PEDIÁTRICA DE PACIENTES NEUROPÁTICOS EN UN HOSPITAL DEL NORTE DE BRASIL



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ABSTRACT

This study, conducted as a requirement for the completion of a Medical degree, investigated healthcare professionals' conceptions regarding infection control and prevention in pediatric neuropathic patients. The research was approved by the Research Ethics Committee of the State University of Roraima, under CAAE number 77089124.3.0000.5621. A qualitative and descriptive approach was adopted, grounded in Thematic Content Analysis proposed by Laurence Bardin and informed by Cecília Minayo's methodological reinterpretation. Data were collected through semi-structured interviews with professionals working in the Long-Term Care Unit of a pediatric hospital located in the northernmost region of Brazil. The analysis resulted in five thematic categories that reflect participants' perceptions and understandings of infection control and healthcare-associated infection prevention. The findings reveal elements of knowledge, perceptions, and subjectivities that influence professional practice in the care of neuropathic children and in preventing infectious complications. The study contributes to advancing the understanding of the educational role in preventive practices and highlights the need to strengthen medical training, particularly regarding the specificities involved in caring for pediatric neuropathic patients.

Keywords: Infection Control. Health Education. Health Professionals.

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RESUMO

Este estudo, desenvolvido como conclusão do curso de Medicina, investigou as concepções de profissionais de saúde acerca das práticas de controle e prevenção de infecções em pacientes neuropatas pediátricos. A pesquisa obteve aprovação do Comitê de Ética em Pesquisa da Universidade Estadual de Roraima, sob o CAAE nº 77089124.3.0000.5621. Adotou-se uma abordagem qualitativa e descritiva, utilizando a Análise de Conteúdo em sua vertente temática proposta por Laurence Bardin, a partir da releitura metodológica de Cecília Minayo. A coleta de dados ocorreu mediante entrevistas semiestruturadas realizadas com profissionais da Unidade de Cuidados Prolongados de um hospital infantil localizado no extremo norte do Brasil. A análise resultou na construção de cinco categorias temáticas que exprimem as concepções dos participantes sobre o controle e a prevenção de infecções relacionadas à assistência à saúde. Os achados evidenciam elementos de conhecimento, percepções e subjetividades que influenciam a prática profissional no manejo de pacientes neuropatas e na prevenção de agravos infecciosos. Conclui-se que o estudo contribui para ampliar a compreensão do papel educacional no âmbito das práticas preventivas e destaca a necessidade de aprimoramento da formação médica, especialmente no que se refere à abordagem das especificidades do cuidado a crianças neuropatas.

Palavras-chave: Controle de Infecções. Educação em Saúde. Profissionais de Saúde.

RESUMEN

Este estudio, desarrollado como proyecto final de carrera de medicina, investigó las concepciones de los profesionales sanitarios sobre las prácticas de control y prevención de infecciones en pacientes pediátricos con neuropatía. La investigación fue aprobada por el Comité de Ética en Investigación de la Universidad Estatal de Roraima, bajo el CAAE n.º 77089124.3.0000.5621. Se adoptó un enfoque cualitativo y descriptivo, utilizando el Análisis de Contenido en su vertiente temática propuesto por Laurence Bardin, basado en la reinterpretación metodológica de Cecilia Minayo. La recolección de datos se realizó mediante entrevistas semiestructuradas realizadas a profesionales de la Unidad de Cuidados a Largo Plazo de un hospital pediátrico ubicado en el extremo norte de Brasil. El análisis resultó en la construcción de cinco categorías temáticas que expresan las concepciones de los participantes sobre el control y la prevención de infecciones asociadas a la atención médica. Los hallazgos resaltan elementos de conocimiento, percepciones y subjetividades que influyen en la práctica profesional en el manejo de pacientes con neuropatía y en la prevención de enfermedades infecciosas. En conclusión, este estudio contribuye a una comprensión más amplia del papel de la educación en las prácticas preventivas y destaca la necesidad de mejorar la formación médica, especialmente en lo que respecta al abordaje de las necesidades específicas de la atención a niños con trastornos neurológicos.

Palabras clave: Control de Infecciones. Educación para la Salud. Profesionales de la Salud.

1 INTRODUCTION

Health Care-Associated Infections (HAIs) are defined as infections that occur during the hospitalization period or after the patient is discharged, the latter scenario being considered only when the infection can be related to the hospitalization period, either in a hospital environment or in any health care center that exposes the patient to risk. These types of conditions are often associated with disturbances in the interaction between the patient's body and the care environment, and may result from imbalances in the patient's own body due to the use of certain medications, which can lead to microbial resistance and greater susceptibility to infections, both by exogenous contact and by endogenous microorganisms (TEIXEIRA; MIRANDA; ARDISSON, 2021).

The Ministry of Health states that Hospital Infections affect 14% of hospitalizations. It should be noted that one million patients die due to hospital infections and seven million have some type of complication after surgical procedures (AQUINO, 2019). In addition, it is estimated that between 16 and 37 individuals acquire infections for every 1,000 patients treated.

In view of these numbers, the relevance of the prevention and control of HAI is verified, and the scientific production promoted by the National Health Surveillance Agency (Anvisa) in collaboration with the Ministry of Health (MS) stands out. The Research Plans released by Anvisa and the Priority Research Agendas of the Ministry of Health converge in their purpose: to stimulate the generation of scientific knowledge focused on issues considered relevant to public health, so that, through knowledge, problem-solving measures can be implemented (ANVISA, 2022).

In this line of thought, the objectives of this research were: 1) To analyze the knowledge of health professionals about infection control protocols in neuropathic patients in a children's hospital in the State of Roraima, 2) To identify the influence of continuing education on the application of biosafety standards and protocols of the institution and 3) To describe the conceptions of health professionals about infection control protocols in pediatric neuropathic patients.

2 CONCEPTUAL FRAMEWORK

The need to correlate specific conceptual references motivated the structuring of the research based on multireferentiality expressed in three dialogical components: National Program for the Prevention and Control of Infections Associated with Health Care (PNPCIRAS), National Patient Safety Program (PNSP) and National Policy for Permanent Education in Health (PNEP).

2.1 NATIONAL PROGRAM FOR THE PREVENTION AND CONTROL OF HEALTHCARE-ASSOCIATED INFECTIONS

HAIs are prevalent and serious events in the hospital environment, increasing morbidity, mortality, and hospital costs. Prolonged hospitalization and the use of invasive devices increase patients' vulnerability to infections (LIMA et al., 2022).

The increasing costs resulting from failures in patient management and the expenses associated with iatrogenic diseases have driven the development and implementation of practices aimed at mitigating these problems. In order to apply specific security actions, the PNSP was instituted. (DA SILVA; NOVARETTI; PEDROSO, 2019).

2.2 NATIONAL PATIENT SAFETY PROGRAM

The Ministry of Health (2013), through the dialogue between prevention and control of HAI and the PNSP, pointed out the importance of biosafety practices and risk management and quality control. The establishment of Hospital Infection Control Committees since the 1980s has stood out in the national scenario as a fundamental intervention for the quality of care. The program proposes measures such as health education regarding infection prevention and control, improved notification, implementation of Antimicrobial Use Management Programs, and quality of microbiology laboratories (ANVISA, 2021).

Thus, it was established by Ministerial Ordinance No. 529 of 2013, aiming at the qualification of health care in the public and private spheres, as well as the management of patient safety. Cavalcante (2023), states that the PNSP emerged in response to incidents to hospitalized patients, which boosted research on the subject and the creation of the Patient Safety Centers (RDC No. 36/2013) by Anvisa. The education and training of health professionals are fundamental for the prevention and control of hospital infections, converging on the main purposes of the PNSP and PNPCIRAS.

2.3 NATIONAL POLICY FOR CONTINUING EDUCATION IN HEALTH

The PNEPS approved in 2004 aims to integrate the health education system with management, promoting the training of SUS professionals to respond to local demands (SILVA; SCHERER, 2020). In this way, it encourages the construction of knowledge and the improvement of professional practice through activities such as In-Service Education, Health Education, Teaching-Service Integration and Support for scientific production (RIBEIRO et al., 2020).

In this vein, it is possible to clarify the interrelationship between the theoretical frameworks explained, namely, the National Program for the Prevention and Control of

Infections Associated with Health Care, the National Policy for Patient Safety and the National Policy for Permanent Health Education.

3 METHODOLOGY

This study was a qualitative research, descriptive character, whose core encompassed understanding the subjective conceptions of each social actor. According to Minayo:

[...] Doing empirical qualitative research is not just using an adequate observation or interview instrument, which could be considered a technicality. It is rather, to be part of a current of thought and action that respects the uniqueness of each interviewee or observed, in the certainty that the knowledge he carries is built in subjective interlocution (MINAYO, 2021, p.130).

A data collection instrument developed for a semi-structured interview was used, elaborated from the investigation conducted by Fernandes (2008). The objective of this research was to verify the perception of physicians, nurses and nursing technicians about nosocomial infections and their respective control and prevention practices in several hospitals in the city of São Paulo. This instrument was previously validated and, for similar purposes, adapted and used in this investigation.

This research followed the ethical guidelines of the National Health Council, according to Resolution No. 466 of 2012, and was approved by the Research Ethics Committee of the State University of Roraima (UERR), under the number CAAE 77089124.3.0000.5621. The protection of the participants' anonymity was guaranteed through specific codes and the signing of the Free and Informed Consent Form, with the authorization of the hospital management and the Municipal Health Department for data collection, including for unit identification.

The qualitative approach focuses on understanding the values and meanings of the subjects, investigating human experiences and behaviors (RHODEN; ZANCAN, 2020).

From the collection instrument, the participants' answers were recorded in audio through a Motorola G10 mobile phone device, with a total storage of 64GB referring to the interviews and later transcribed. This technique aimed to promote greater proximity and *rappor*⁶ between researcher and participants, clarifying and resolving doubts, in addition to providing flexibility in data collection. (OLIVEIRA et al., 2016). Data collection took place in the first half of 2024.

⁶ It is a term of French origin (*rappor*) that means "to create a relationship", referring to a positive bond between two parties (LINO et. al, 2023).

The subjects of the investigation were physicians, nurses and nursing technicians from the Santo Antônio Children's Hospital. Inclusion criteria involved professionals with an institutional contract of at least one year and from the long-term care unit, while professionals from other categories, interns, academics, individuals who refused to participate, on leave/vacation, and foreigners were excluded.

4 RESULTS AND DISCUSSION

The data analysis was inspired by the dissertation of Santos (2019) and followed the thematic analysis of content according to Laurence Bardin (1979) based on a rereading of Cecília Minayo (2010). A non-inferential descriptive statistical analysis was performed for the sociodemographic characterization of the participants, which will be the subject of another article. Content analysis involved three stages: pre-analysis, exploration of the material, and treatment of the results, including inference and interpretation.

In the pre-analysis, there was an initial organization of the material for a "floating reading" and selection of pertinent information. In the exploration of the material, categories defined by significant words or manifestations related to the theme were identified. The categorization followed the method of Minayo (2010) and Bardin (2015), condensing the text into categories and cutting it into registration units. The final phase involved the formulation of inferences and interpretations, connecting the data to the initial and emerging theoretical panorama during the research (KOHLS-SANTOS; MOROSINI, 2021)

In this dynamic, five context units were constructed, which summarized the predominant emerging ideas of the health professionals' discourses:

1. Hospital infection and its concepts.
2. Susceptibility factors to HAIs.
3. Knowledge of institutional protocols.
4. Mishaps and difficulties in control and prevention.
5. Education in HAI control and prevention.

The unit of registration is also called "unit of analysis" or "unit of meaning" (BARDIN, 2015), it is the unitary element of content to be submitted later to classification. In this research, 101 units of analysis were found. Regarding the classification of units into categories (or categorization), it is a procedure of grouping data considering the common part existing between them. The thematic categories listed in this study were:

- A. The conception of the concept – the definition of HAI by professionals
- B. HAI and care practice – precipitating factors and most common infections.

- C. From existence to science – how much professionals know about HAI control and prevention protocols
- D. Obstacles to control and prevention – the paths and detours of HAI control practice
- E. Education and importance – the influences of health education on the construction of knowledge and prevention practices

Regarding the investigation of factors related to instruction, practice and their conceptions about control and prevention, it is essential to focus on the ideas and meanings expressed. To ensure the anonymity of the research participants, they were identified by letters according to their areas of expertise – **"M"** for physician; **"E"** for nurse and **"TE"** for Nursing Technician; followed by the corresponding number, from **1 to 12**.

4.1 CATEGORY A: THE CONCEPTION OF THE CONCEPT – THE DEFINITION OF HAI BY PROFESSIONALS

The growing incidence and relevance of topics related to HAI has fostered debates and initiatives for its control and prevention, aiming to promote greater safety for patients and professionals. Although the topic has been addressed, failures persist and the human factor is a reason for attention (SOUSA, 2015). It is crucial to assess the level of knowledge of health professionals about HAI because effective and prior education increases adherence to the protocols and the application of the proposed measures (DA SILVA, 2017).

The research professionals, although from different academic backgrounds, provide care to the clientele of the Long-Term Care Unit, resulting in similar definitions of HAIs. According to ANVISA (2021), HAI "are infections acquired after health care procedures or hospitalizations, considering HAI to be any clinical manifestation of post-procedure infection, whether the patient is hospitalized or not."

The conceptions expressed by the participants about HAI are in line with the definition institutionalized by ANVISA.

"Hospital germ infection in hospitalized patients." (M1)

"Any infection caused by a hospitalization process." (E1)

"Hospital-acquired infections due to procedural breakdown." (E2)

"Infection acquired in the hospital environment." (M2)

"Infections from the contaminated hospital environment and professionals." (E3)

"Cross-infection, surgical or due to a break in a procedure in the hospital." (TE1)

"Infection contracted inside the hospital." (E4)

"Infection acquired in the hospital environment." (E5)

The three specific records in bold above stand out, which add the assistance factor to the concept of HAIs.

The narratives indicate that the health team associates infections with both the environment and care practices.

4.2 CATEGORY B: HAI AND CARE PRACTICE – PRECIPITATING FACTORS AND MOST COMMON INFECTIONS

This category describes the interviewees' conceptions about invasive procedures and higher risk of infection. In addition, it describes recurrent etiological agents in the unit. Procedures identified as having a higher risk of infections include:

- "External ventricular shunt" (M1)*
- "Bloodstream infections due to prolonged use of central access" (E1)*
- "Tracheostomy pneumonia" (E1)*
- "Procedures related to hydrocephalus" (E1)*
- "Ventilator pneumonia" (E2)*
- "Central Access Infection" (E2)*
- "Catheter tip infection" (E2)*
- "Infections caused by EVD and dentures" (M2)*
- "Tracheostomy" (E3, TE2)*
- "Probe, central venous access and intubation" (E4)*
- "Infections in the surgical wounds" (NT2)*
- "Gastrostomy (GTT)" (TE1, TE2, E5)*

Reports highlight intervention-related infections in children with hydrocephalus, such as external ventricular shunt (EVD). Proper management of patients with EVD is essential for infection prevention and the Nursing team plays a vital role in maintaining the device and early detection of complications (DE MOURA SILVA, 2021).

Respiratory infections, especially ventilator-associated pneumonia (VAP), are frequent. Ventilator-associated pneumonia (VAP) is frequent in patients undergoing mechanical ventilation for prolonged periods, constituting an important field of care and responsibility for the nursing team (CORREIA, 2023). Among the fundamental preventive measures carried out by these professionals, adequate airway aspiration and systematized oral hygiene stand out, both essential for reducing the risk of infection (BRASIL, 2022).

Infections related to venous accesses and gastrostomy (GTT) are also highlighted, and GTT is necessary for neurological patients with impaired swallowing, but increases the risk of infections (AMORIM, 2023).

4.3 CATEGORY C: FROM EXISTENCE TO SCIENCE – LEVEL OF KNOWLEDGE OF PROFESSIONALS ABOUT HAI PREVENTION AND CONTROL PROTOCOLS

The data reveal that the participants' knowledge about institutional protocols is restricted, with unknown or unrecognized protocols, a situation that suggests possible weaknesses or gaps in continuing education.

"There is no specific protocol." (M3)
"I don't know, there must be a protocol, but I never had contact." (M1)
"I don't know about a specific protocol." (E1)
"We don't have a specific protocol." (E2)
"It's not to my knowledge." (E6)

Botossi (2021) points out that the lack of specific protocols for neuropathic patients and the need for team training are evident, in line with the findings. The WHO recommends palliative care for patients with severe neurological sequelae, according to the profile of this clientele, indicating the need for appropriate protocols (ENZVEILER, 2024). The existence of general protocols is recognized, but their practical application and the need for specific protocols are highlighted.

4.4 CATEGORY D: OBSTACLES TO CONTROL AND PREVENTION – THE PATHS AND DETOURS OF THE PRACTICE OF HAI CONTROL

The main obstacles to the control and prevention of HAI include dissonant practices of the care team:

"Inappropriate handling and misuse of PPE" (E1)
"Use of adornments and inadequate hand washing" (M3)
"Replacing handwashing with alcohol" (M3)
"Do not change gloves" (E4)

Proper hand hygiene and the correct use of PPE are key elements to prevent infections (GREJO et al., 2022). The team's awareness of the importance of these practices is essential (DA SILVA CARLOS, 2020). Other obstacles include the devaluation of the topic and the lack of knowledge:

"Accepting guidance in something you don't see." (E1)
"The big problem is not valuing this information." (E1)
"Lack of awareness of professionals." (E4)
"The lack of knowledge." (E5)

In addition, structural problems and non-specific areas of isolation are mentioned:

"Structural problems." (E4)
"The location is not appropriate." (TE1)
"There is no isolation." (E2)
"We have few isolations." (E6)

The professionals reveal dissatisfaction with the inputs used in daily practice, indicating elements that need improvement:

"We don't have chloraPrep® to use." (M2)
"The lack of material." (M2)
"Lack of investment in technologies." (M1)

Finally, team sizing is a significant challenge:

"Incorrect sizing of professionals." (M3)
"You have a small number of professionals." (E5)
"Lack of reviewers⁷ in the morning and on the weekend." (M3)

The insufficiency in the dimensioning of personnel, combined with the overload of the nursing team, contributes to greater vulnerability to infections (SELL et al., 2018). Thus, the understanding of this variable and the correct application of this process are essential to ensure quality care practice.

4.5 CATEGORY E: EDUCATION AND IMPORTANCE – THE INFLUENCES OF HEALTH EDUCATION ON THE CONSTRUCTION OF KNOWLEDGE AND PREVENTION PRACTICES

This category explores the impact of respondents' professional training on biosafety knowledge and practice. In undergraduate and technical courses, biosafety is treated as a curricular unit or topic within specific disciplines. However, the approach is often described as "superficial" and "basic." The reports:

"At the undergraduate level, courses and seminars. But especially in the undergraduate program." (E1)
"I didn't have much in my undergraduate degree, it was really superficial." (E2)
"In college you leave with the basics." (E6)

⁷ "Reviewer" refers to a recurring term attributed to the professionals of the hospital unit responsible for issuing opinions. In the case of opinions related to antibiotic therapy, infectious disease physicians have these guardians.

For physicians, residency is pointed out as the moment of greatest learning in the area of biosafety, and the approach to these themes during the bachelor's degree in Medicine is not mentioned. Examples include:

"I attributed more relevance to residency, where I operated the most." (M1)

"I learned more in residency because of the time dedicated." (M3)

Other means of learning include other types of postgraduate courses and experience in other care and management units:

"I did a postgraduate degree in health surveillance at Sírío Libanês." (E2)

"It was more during my practice, my experience in the neonatal ICU." (E3)

These conceptions are fundamental to identify factors that encourage the team to focus more sparingly on the control and prevention of HAIs, as well as how the process of knowledge mobilization is instigated, apprehended, and applied.

5 FINAL CONSIDERATIONS

The results of this study showed that health professionals' conceptions of HAI prevention and control practices are strongly influenced by initial training, clinical experience, and the availability of continuing education. It was found that access to specific knowledge on HAI prevention is heterogeneous, and the perception of insufficient learning during undergraduate studies is common, which reinforces the centrality of clinical practice and graduate courses as the main sources of updating.

Structural obstacles related to communication between teams and management, low recognition of the relevance of HAI in daily practice, and conceptual fragility that limits professionals' perception of the complexity of interdisciplinary work also emerged. The analysis also highlighted the multicausality of infections in neuropathic patients, showing that, in addition to neurosurgical procedures, several secondary interventions necessary for the maintenance of life are important risk factors.

Thus, the findings point to the need to strengthen Permanent Health Education, improve institutional protocols, and expand spaces for dialogue that value the perceptions of professionals who work directly in care. The study contributes to the development of more effective strategies for the prevention of HAI and highlights the urgency of revisions of the curricular matrix related to medical education, in order to consistently integrate contents related to infection control in the care of patients in a transversal way.

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