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ORIGINAL ARTICLE

NURSING TEAM'S PERCEPTIONS OF PREPARATION AND ADMINISTRATION OF MEDICINES IN PEDIATRICS[1]

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ABSTRACT

Objective: to analyze the nursing team's perceptions of preparation and administration of medicines in pediatrics. **Method:** qualitative study conducted in the pediatric clinic of a public hospital. Twenty nursing professionals were interviewed by using guiding questions about the medication administration process in their workplace and factors that contribute to medication errors. The interviews were recorded and later transcribed. The results were categorized according to content analysis and the theoretical framework was patient safety. **Results:** the categories that have been identified are medication-related work process; poor health work conditions; medication system: medical prescription; and medication-related protocols. Medical prescription has been pointed out as one of the factors that lead to medication errors, in addition to interruption during the preparation and administration of medicines and the absence of a protocol on specific care in pediatrics. Situations such as professional overload, conflicts, lack of materials, and poor physical structure have been noticed in the medication process in pediatrics. **Conclusion:** the nursing team's perceptions have shown the need for spaces of dialogue within the multiprofessional team and greater management commitment and involvement in the search for safe patient care.

Palavras-chave: Nursing team. Patient safety. Pediatrics. Medication errors.

INTRODUCTION

The concept of patient safety is defined as reduced risk of unnecessary avoidable harm associated with health care(1). The milestone for the onset of patient safety actions was the report published in 2000 in the United States of America (USA) entitled *To err is human*, which estimated the occurrence of 44,000 to 98,000 deaths in that country as a result of health care-related errors(2).

In Brazil, patient safety gained public-policy status in 2013, following the implementation of the Brazilian National Patient Safety Program (Programa Nacional de Segurança do Paciente [PNSP]), whose main aim was qualifying care for safer health actions nationwide. Thus, health care qualification takes place through the deployment of international goals, e.g. the goal of improving safety in the prescription, use, and administration of medicines(1).

It is estimated that medication incidents affect between 1.6% and 41.4% of patients, and this can generate an additional cost between 25 and 35 million dollars per year. In 2017, the World Health Organization (WHO) launched the global challenge in order to reduce up to 50% of serious medication-related harm within the next 5 years and, consequently, aiming to reduce these expenses(3,4).

Medication errors are any preventable event that can cause or lead to improper use of the medicine, causing or not causing patient harm(5). The pediatric population is more susceptible to medication errors; among the factors that justify them there are physiological immaturity and lack of public and pharmaceutical policies aimed at the pharmacological specificity of this population. It is also estimated that the possibility of making a harmful mistake is three times greater in hospitalized children when compared to the adult population(6).

Nursing plays a major role in preventing medication-related errors, whereas the medication system is complex and most of

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these mistakes are caught in the preparation and administration of medicines. Among the incidents analyzed in the emergency room, 93.7% were preventable and a large part implicated the nursing team[3].

Research studies on the perceptions of nurses working in pediatric patient care that address medication errors are still scarce[7]. Also, activities associated with the medication process mostly affect nursing work in hospitals[8], and this highlights the importance of expanding investigations on preparation and administration of medicines in pediatric patients from the nursing perspective, thus contributing to a continuing incorporation of safer practices, fostering advances towards a culture favorable to child care safety.

Given the above, this study aims to analyze the nursing team's perceptions of preparation and administration of medicines in pediatrics.

METHOD

This is an exploratory study with a qualitative approach, carried out at the pediatric clinic of a public hospital located in the countryside of Midwestern Brazil. This hospital is a regional referral center for pediatric care.

As for the research participants, the 38 nursing professionals who belong to the permanent staff of the pediatric clinic were included. Professionals who were not working or those who were not fulfilling their professional duties at the time of data collection (due to medical certificates and sick-leave days) were excluded. Thus, 20 nursing professionals participated in this research, i.e. 3 nurses, 15 nursing technicians, and 2 nursing assistants. All agreed to participate by signing the Brazilian Free and Informed Consent Form (Termo de Consentimento Livre e Esclarecido [TCLE]).

Data were obtained by using a characterization form, with questions such as sex, educational level, career length in nursing and length of experience in pediatrics, as well as by means of semi-structured interviews conducted from March to October 2018 by the researcher, a female nurse who works at the hospital institution. The interviews took place at a hospital setting, when the participant had time available.

The interviews were recorded on audio, based on these guiding questions:

- How does the medication administration process occur in your workplace?
- Which factors can contribute to medication errors?
- What would you like to discuss about medication?

The interviews were transcribed and categorized according to Bardin's content analysis, taking patient safety as the theoretical framework. According to Bardin, content analysis is a set of methodological instruments in constant improvement, which applies to extremely diverse discourses (content and continents)[9]. Also according to this author, the data organization criteria are divided into pre-analysis, material exploration, and processing of results.

Concerning patient safety, the theoretical framework is supported by national and international literature, mainly by health regulatory bodies, such as the Brazilian Ministry of Health (Ministério da Saúde [MS]) and the WHO.

In order to ensure participants' anonymity, the letter N was used for nurses, NT refers to nursing technicians, and NA means nursing assistants, followed by the number corresponding to the order of interviews.

The study stemmed from the Brazilian Certificate of Submission for Ethical Assessment (Certificado de Apresentação para Apreciação Ética [CAAE]) No. 76745317.8.0000.8030, approved by the research ethics committee of a public state-level university, following the precepts of Resolution No. 466/2012 by the Brazilian National Health Council (Conselho Nacional de Saúde [CNS]), which provides for research involving human beings.

RESULTS

Out of the 20 professionals participating, 18 were women and 2 were men.

The average age of the participants was 36.7 years, with 13 years of professional practice in nursing and 4.9 years in average of experience in the pediatric clinic, with the shortest length

of experience in the sector was 8 months.

The resulting data was organized as follows: medication-related work process; poor health work conditions; medication system; medical prescription; and deployment of new health technologies.

The categories that emerged from data analysis reflect the organizational environment, the interpersonal relationships, and the organizational culture in which the nursing team is inserted.

Medication-related work process

Nursing work is characterized by technical and social division when executing its practices, delimited by Technical High School and Higher Education[10]. Regarding the research scenario, participants reported that it is up to the nurse to divide the health care tasks and assignments to the other nursing team members. This division is made so that each nursing technician and assistant is responsible for providing comprehensive care to a number of patients, including the preparation and administration of medicines to pediatric patients:

> First, each nursing technician receives the list of her/his patients [...] **(N01)**.

> Well, in the beginning of the shift, we look, we grab the medical record, write down the medicines and each one provides her/his child with medication, sometimes doubts arise and we talk to each other, and as far as possible we end up asking the nurse for help [...] **(NT01)**.

In the medication-related work process, it is up to the doctor to prescribe the medicines, the nurse has to divide the tasks related to attention to medicines, and the nursing technician shall fulfill the tasks assigned, such as the preparation and administration of medicines:

> In this case, the medication comes from the pharmacy, so we can dilute it. Then we dilute it. We prepare everything in the medication room and administers it to the patient. First, we identify whether that medication belongs to the patient, the dose, the amount, and then we administer it **(NT08)**.

> I only provide my patient with medication, and if there is a need to do it with another patient it is always checked, and the nurse is always properly informed **(NT02)**.

Within this process, the practice of transcribing the medical prescription from the medical record in a draft to facilitate medication preparation was admitted.

> We start the work shift, we grab the prescriptions, each professional transcribes her/his patient's medication, and then we take a look at the schedules, what we are supposed to do with the administration, how it is administered. Usually we grab the prescription and transcribe it for our patients **(NT10)**.

It is known that this practice can lead to errors, in addition to using more nursing work hours. Another major point to notice was the specificity of pediatric care, concerning the administration of medicines, as shown in the following utterance about the knowledge needed to provide care:

> I think that, first, I think of the lack of knowledge of a nursing technician when she arrives at the pediatric clinic. Medication is different for children, so I think that first of all it comes to the knowledges needed to administer that medicine **(NT03)**.

Poor health work conditions

This category refers to the scenario in which the nursing team is inserted, e.g. professional overload, poor physical structure, and lack of materials. These factors were mentioned by professionals as error inducers:

> And due to their number, as there are 29 beds in the pediatric clinic, sometimes they are overloaded; there is a lot of children, it ends up being a problem, the rush can be harmful, too **(N01)**.

> Look, sometimes it's important for us to be overwhelmed, there's a mother who wants medication at the right time, we have to pay attention at that time **(NT04)**.

> The children's demand is quite high. There are children who have many medicines, and we end up not dividing more critical children and less critical children. We end up working with a preestablished number of children (NT05).

> Some medication cases were addressed in the wrong way [...] I don't know whether due to

> overload, something that can happen, prescription, work overload and [...] emotional stress, a very stressed person **(NT06)**.

Professionals mention physical structure and lack of materials as factors that hinder patient care safety:

> I think there is a lack of physical and material structure, like a medication pump. There is no specific equipment for this. You always stop the saline flow to administer medication. So, if we had material, equipment for this, things would be much easier, and we would do things properly, just like he [the doctor] wants us to do **(NT07)**.

> Oh no, there is something that we always complain about, the light in the rooms, there is a lot of bedside light, for us to check, it is very dark, this makes things very hard **(NT05)**.

> So, in terms of administration, material is lacking, I think it is absurd, you don't have a burette to administer these medicines or even a syringe pump that is more accurate and easier nowadays **(NT06)**.

The utterances showed that safe attention to preparation and administration of medicines presupposes, in addition to professional commitment and involvement, other factors that go beyond the control of nursing professionals, e.g. the acquisition of materials or technological resources that provide greater precision in all stages of the medication process, the proper physical structure, such as bright rooms for patients, and the nursing team size. Therefore, safe care implies, primarily, the hospital administration's commitment and involvement in this process.

Medication system: medical prescription

This category encompasses, according to the respondents' view, the main factor that can lead to medication errors in the pediatric clinic: the flaws or difficulties to interpret the medical prescription.

> The prescriptions, the new prescription model, very descriptive, which ends up being a little confusing. We also have the copy and paste behavior. We say that sometimes the medication has not been administered, and it still remains in the medical record **(NT08)**.

> So, first, the prescription, which is often doubtful, and doubts emerge. In the prescription itself, there are doubts **(N02)**.

> Generally, the most important thing I see, that I experience the most, is confusing medical prescription, mainly in terms of doses; when providing guidelines too, the medical prescription guidelines are very confusing **(N03)**.

Out of the 20 respondents, only 1 nursing assistant did not mention medical prescription as a daily trouble capable of causing adverse events. Thus, it is necessary to think how this situation interferes in interprofessional relationships and which spaces created for knowledge exchange aimed at solving the problem can directly interfere with patient care. The following testimony demonstrates a scenario permeated by conflicts:

> Then my turn came. I said listen, do I really have to administer all this? Yes, is there all at once [...]? **(NT09)**.

Doubts related to medical prescription, as this utterance demonstrates, favors an increase in the conflicts between nursing and medical professionals.

Protocols related to safe practices in the medication process

The preparation and administration of medicines require the adoption of protocols, constant training, and the provision of information to ensure safe nursing care for pediatric patients:

> Look at the vancomycin, I'm really worried, because it has hepatotoxicity. I think vancomycin is used a lot in pediatrics, along with other drugs, other antibiotics **(NT01)**.

> There is no specific medication, at least the amount, how long each medication is stable, whether it is in the refrigerator or not, if it is at room temperature. Medicines after dilution, how long they can be infused, sometimes this raises a lot of doubts **(NT03)**.

> Not more specific medication, so we are very used to it, with vancomycin, antibiotics, but for example oh the polymyxin, the infusion time, I think that turning and moving polymyxin has been used to infuse children (**N01)**.

The situation pointed out had much more to do with the absence of institutional protocols

and reference materials for solving doubts than to the knowledge gaps of the studied population, taking into account the difficulty to grasp and memorize all the medicines that can be prescribed in the pediatric clinic.

Respondents also expressed concern about the preparation and administration of specific antibiotics, such as vancomycin and polymyxin, mentioning adverse reactions, including hepatoxicity and nephrotoxicity. Thus, lack of knowledge on specific actions related to the preparation and administration of medicines can directly impact care:

> Some medicines, like polymyxin and vancomycin [...] because with vancomycin you realize that you lose a lot of accesses in children. Administering vancomycin admits no mistake. How much has been re-diluted, how much has been, how fast this medication has been infused. If you don't have a bomb, you don't have an accurate time measurement, and you end up causing phlebitis to occur **(NT09)**.

The professionals reported other situations that should be discussed by the teams in order to alleviate risk situations for patients:

> I think it's important to talk about paying attention to the child's name because there may be two children with the same name, in the same room, but the ages are different, so the dose is completely different and there is a risk of confusing the children and switching the medication **(NT03)**.

> And another thing I think they are implementing now is that they don't have so far, in pediatrics, they don't have bracelet identification, they don't have it, yet, I've worked in many hospitals where things were much easier, even if we have the identification on the headboard. Here they are still implementing the identification bracelet **(NT10)**.

The utterances showed the need for effective implementation of other patient safety goals, e.g. the international patient identification goal, as well as other goals:

> Sometimes there is a conversation inside the medication procedure room and I think that is not good. I don't like that anymore [...]. I think it has to be worked on regarding the medication, and considering the issue that I mentioned about talking at the time you are administering the medicine [...] it takes your attention away from what you're doing **(NT04)**.

> This is also an issue that contributes to making mistakes, dilutions, too, sometimes the prescription requires something; and we see that it's not consistent with reality. We often have to grab the prescription, and we have to look for the doctor **(NT12)**.

Thus, there was dissatisfaction about interruptions during the preparation and administration of the medicine as a factor that leads to medication errors, such as team conversations that interfere with this stage or the need to stop the preparation to clarify doubts about the prescription. The expression "*I think it has to be worked on*" showed that this situation needs to be further discussed in team meetings.

DISCUSSION

The characterization of the population under study has shown feminization in the health care field and, more specifically, in nursing. In Brazil, 85.1% of the nursing workforce consist of women, data similar to those found in this study[11].

There was a division of nursing work in the work process associated with the medication system[10]. As for the activities, where the doctor prescribes the medicine, the nurse organizes health care and the nursing technician executes it, the division of health work is reproduced in relation to the medication process. A fragmentation was identified in the health care process, i.e. a separation between planning and executing, so that the nursing professional is responsible for performing the task, detached from grasping and controlling the medication-related process[10,12].

Pediatric nursing care requires specific actions. So, the professionals mentioned these particularities in order to corroborate their differences in relation to the other sectors and to point out the complexities of nursing care in pediatrics[13]. Also, professionals pointed out factors that interfere with child care safety, such as various developmental stages and impaired self-care.

In an observation survey of oral administration of medicines in pediatrics and among the 29 situations observed, only 10

concerning preparation and administration were considered satisfactory[14]. In another study, in a pediatric hospital, weaknesses were identified in the observation of intramuscular administration of medicines that interfere with safe practices related to the medication process[15].

The conditions related to the nursing work process, such as high workload, inadequate staff sizing, and poorly structured organizations, are factors that favor an increase in the levels of stress and physical exhaustion among these workers, and this can negatively influence patient care[16]. In a study carried out in intensive care units, nursing workload and the number of hospitalization days of patients were the only factors in health care-related errors[17].

The factors that generate distress and contribute to medication errors signal the need for management commitment and involvement in order to think about strategies that promote patient safety. In this case, management will be responsible for decisions that prioritize basic principles to support a safer care, such as acquisition of specific materials in the administration of medicines, infrastructure adequacy, such as brightness and nursing team adequacy[18]. However, it is not always possible for health and nursing professionals to participate in decisions related to care management, they remain at the mercy of macro- and micro-policies, which do not take into account the needs of health workers and patients.

Medical prescription, which the participants pointed out as the main factor that could lead to medication errors, refers to greater clarity and convergence as important elements for medication, such as the dose, age, route, child's weight, reports of allergies, among other items, which were often presented in a confusing way. Flaws in the prescription of medicines, found in the results, are seen as another factor to be overcome by nursing in order to provide safe patient care.

In a survey conducted at the chemotherapy outpatient clinic, 5,012 incidents related to medical prescription (with and without harm) were found out of the total of 5,061 incidents observed in the period[19]. In a systematic review study on prevalence and medication errors in pediatric and neonatal intensive care units (PICUs), prescription errors were the most common in PICUs, especially in relation to medication dosages[20].

Medical prescription also contributed to increase conflicts between nursing and medical professionals. A conflictual relationship between doctors and nurses stems from the existing power relationships caused by the association of several factors, such as the economic, social, and cultural ones, besides the insertion of the multiprofessional team[21]. Health care spaces such as the hospital setting must promote relations based on knowledge exchange, respecting the professional scope and valuing the autonomy of all professionals involved in the medication system.

The need for medication-related protocols in favor of safer nursing practices reinforced the relevance of these health technologies, defined as applied knowledge that enhances health promotion and disease prevention and treatment, i.e. they do not refer only to medicines, but to clinical protocols, which contribute to the adoption of safe and effective care[22].

Therefore, doubts about the preparation and packaging of antibiotics could be clarified if reported in institutional protocols or by means of reference materials, providing relevant information, such as data on dose, drug stability, compatibility and incompatibility. In an observational study on factors associated with medication errors in pediatrics, it was found that the unavailability of technical manuals on administration of medicines increased the chance of medication errors by four times[6].

The need to follow a protocol for correct identification of patients and non-stop preparation and packaging of medicines were points cited by professionals as factors of discomfort and of importance in preventing health care-related errors.

Thus, ensuring correct patient identification prevents the occurrence of mistakes and errors, allowing the treatment and procedures to be aimed at the right patient[23]. In addition to the need for correct patient identification, with the use of wristbands, strategies that do not involve

financial costs could be adopted in the research scenario, such as the relocation of beds in cases of children with the same name and team organization, i.e. not assigning patients with the same name to a single nursing technician.

In the case of non-stop preparation and administration of medicines, a research that evaluated the nursing perception of interruptions and distractions in the operating room concluded that such interruptions and distractions affect quality in the work environment, as well as the care provided to surgical patients[24] and also in neonatal intensive care units (NICUs)[25].

CONCLUSION

The nursing team's perceptions regarding the preparation and administration of medicines in pediatrics have demonstrated the complexity and specificity of the medication process and the factors that interact there and influence pediatric patient safety, thus contributing to physical exhaustion and conflict situations.

Inadequate nursing team size, lack of materials for the safe administration of medicines, specific attention to medicines in pediatrics, unclear medical prescription, interruptions and distractions at the time of preparation, and the need for protocols denoted the aspects noticed by the nursing staff on pediatric medication. Thus, it is necessary to create spaces of dialogue within the multiprofessional team and greater management commitment and involvement in the process of continuous search for providing safe care.

This research addressed the preparation and administration of medicines in pediatrics from the perspective of the nursing team of a hospital, and it is recommended to also check the perceptions of other health professionals, e.g. physicians and pharmacists, as well as the children's parents or guardians, and this is one of the limitations of this study.

PERCEPÇÕES DA EQUIPE DE ENFERMAGEM SOBRE PREPARO E ADMINISTRAÇÃO DE MEDICAMENTOS EM PEDIATRIA

RESUMO

Objetivo: analisar as percepções da equipe de enfermagem sobre preparo e administração de medicamentos em pediatria. Método: estudo de abordagem qualitativa realizado na clínica pediátrica de um hospital público. Entrevistaram-sevinte profissionais de enfermagem por meio de questões norteadoras sobreo processo de administração de medicamentos em seu local de trabalho e fatores que contribuem para os erros de medicação. As entrevistas foram gravadas e posteriormente transcritas. Os resultados foram categorizados de acordo com análise de conteúdo e o referencial teórico foi a segurança do paciente. **Resultados:** as categorias identificadasforam processo de trabalho relacionado à medicação; precarização do trabalho em saúde; sistema de medicação: prescrição médica; e protocolos relacionados a medicamentos. A prescrição médica foi apontada comoum dos fatores indutoresde erro de medicação, além da interrupção durante o preparoe administração de medicamentos e ausência de protocolo sobre os cuidados específicos em pediatria. Situações como sobrecarga profissional, conflitos, falta de materiais eestrutura física inadequada foram percebidas no processo de medicação em pediatria. Conclusão: as percepções da equipe de enfermagem demonstrarama necessidade de espaços de diálogos dentro da equipe multiprofissional e maior envolvimento da gestão na busca de um cuidado seguro prestado ao paciente.

Palavras-chave: Equipe de enfermagem. Segurança do paciente.Pediatria. Erros de medicação.

PERCEPCIONES DEL EQUIPO DE ENFERMERÍA SOBRE LA PREPARACIÓN Y ADMINISTRACIÓN DE MEDICAMENTOS EN PEDIATRÍA

RESUMEN

Objetivo: analizar las percepciones del equipo de enfermería sobre la preparación y administración de medicamentos en pediatría. **Método:** estudio de abordaje cualitativo realizado en la clínica pediátrica de un hospital público. Fueron entrevistados veinte profesionales de enfermería por medio de preguntas orientadoras sobre el proceso de administración de medicamentos en su local de trabajo ylos factores que contribuyen para los errores de medicación. Las entrevistas fueron grabadas y posteriormente transcriptas. Los resultados fueron categorizados según el análisis de contenido yel referencial teórico fuela seguridad del paciente. **Resultados:** las categorías encontradas fueron proceso de trabajo relacionado a la medicación; precarización del trabajo en salud; sistema de medicación: prescripción médica; y protocolos relacionados a medicamentos. Laprescripción médica fue señalada como uno de los factores inductores de error de medicación, además de la interrupción durante la preparación yadministración de medicamentos y ausencia de

protocolo sobre los cuidados específicos en pediatría. Situaciones tales como sobrecarga profesional, conflictos, falta de materiales y estructura física inadecuada fueron percibidas en el proceso de medicación en pediatría. **Conclusión:** las percepciones del equipo de enfermería demostraronla necesidad de espacios de diálogos dentro del equipo multiprofesional y una mayor participación de la gestiónen la búsqueda de un cuidado seguro prestado al paciente.

Palabras clave Equipo de Enfermería. Seguridad del Paciente. Pediatría. Errores de Medicación.

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