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Perception of nursing students in patient safety with unit dose medication system

ABSTRACT | Objectives: To describe the perception of nursing students on patient safety in the Distribution System of Medicines by Unit Dose - SDMDU. Method: Exploratory, quantitative, qualitative, non-probabilistic, intentional field research. Held in a children's hospital that uses the SDMDU. 126 nursing graduates were interviewed. Results: Positive perception for 99 (78.57%) of nursing students, categorized by Sistema Seguro 45 (45.45%) and 30 (30.30%) report that the SDMDU decreases errors. However, 21 (16.67%) reported a negative perception, affirm that the Preparation and Administration of medicines 10 (47.61%) must be performed by nursing staff and, considering the System unsafe, 9 (42.85%) interviewed. Final Considerations: The SDMDU is a process that brings greater safety to the patient. The nurse must know the responsibility for medication administration as something important within the set of activities that he performs, since the implementation of the SDMDU reflects directly on the activities of the nursing team.

Keywords: Patient Safety; Fractional Medicines; Preparation of Medicines; Hospital; Nursing.

RESUMEN | Objetivos: Describir la percepción de los estudiantes de enfermería sobre la seguridad del paciente en el Sistema de Distribución de Medicamentos por Unidad Dosis - SDMDU. Método: Investigación de campo exploratoria, cuantitativa, cualitativa, no probabilística e intencional. Se lleva a cabo en un hospital de niños que utiliza la SDMDU. Se entrevistaron 126 graduados en enfermería. Resultados: La percepción positiva para 99 (78.57%) de estudiantes de enfermería, categorizados por Sistema Seguro 45 (45.45%) y 30 (30.30%) informan que el SDMDU disminuye los errores. Sin embargo, 21 (16,67%) informaron una percepción negativa, afirman que la preparación y administración de medicamentos 10 (47,61%) debe ser realizada por personal de enfermería y, considerando que el sistema no es seguro, 9 (42,85%) entrevistados. Consideraciones Finales: SDMDU es un proceso que brinda mayor seguridad al paciente. La enfermera debe conocer la responsabilidad de la administración de medicamentos como algo importante dentro del conjunto de actividades que realiza, ya que la implementación de la SDMDU se refleja directamente en las actividades del equipo de enfermería.

Palavras claves: Seguridad del Paciente; Medicinas Fraccionadas; Preparación de Medicamentos; Hospital; Enfermería.

RESUMO | Objetivos: Descrever a percepção do graduando de enfermagem sobre a segurança do paciente no Sistema de distribuição de Medicamentos por Dose unitária - SDMDU. Método: Pesquisa de campo exploratória, quantitativa, qualitativa, não probabilística intencional. Realizada em um hospital infantil que utiliza o SDMDU. Foram entrevistados 126 graduandos de enfermagem. Resultados: Percepção positiva para 99(78,57%) dos graduandos de enfermagem, categorizado por Sistema Seguro 45 (45,45%) e, 30(30,30%) relatam que o SDMDU diminui erros. Entretanto 21(16,67%) referiram percepção negativa, afirmam que o Preparo e Administração dos medicamentos 10(47,61%) devem ocorrer pela enfermagem e, consideram o Sistema inseguro, 9(42,85%) entrevistados. Considerações Finais: O SDMDU é um processo que traz maior segurança ao paciente. O enfermeiro deve conhecer a responsabilidade sobre a administração de medicamentos como algo importante dentro do conjunto de atividades que realiza, uma vez que a implantação do SDMDU reflete diretamente nas atividades da equipe de enfermagem.

Palavras-chaves: Segurança do Paciente; Medicamentos Fracionados; Preparação de Medicamentos; Hospital; Enfermagem

Sandra Alves Neves Araújo

Nurse. Master in Health Sciences from Universidade Guarulhos. Specialist in Patient Safety from Fundação Oswaldo Cruz. ORCID: 0000-0002-7341-0911

Ana Maria Abrunhosa Vasconcelos

Nurse, Specialist in Patient Safety from Fundação Oswaldo Cruz. Technical Health Directorate of Hospital Infantil Cândido Fontoura. Preceptor of internship at Nove de Julho University. ORCID: 0000-0003-4786-4298

Maria Wilsa Cabral Rodrigues de Sousa

Nurse. Master in Health Systems Management from Universidade Nove de Julho (UNINOVE) and Specialization in Nursing in Intensive Care and Emergency to Children and Adolescents by ICR / FMUSP. ORCID: 0000-0002-3062-7168

Wilza Cabral Rodrigues da Silva

Nurse. Master in Health Sciences by the Postgraduate Program in Health Sciences of the Institute of Medical Assistance to the State civil servant. ORCID: 0000-0003-2353-8332

Paula Cristina Xavier de Souza

Graduating from the nursing course at Universidade Nove de Julho. ORCID: 0000-0002-4699-8123

INTRODUCTION

During the Nursing undergraduate course, we acquired technical and scientific knowledge about two drug distribution systems, during the internships we observed about the focus of care; we also perceive that the professionals focus on the task and not on the care, giving more value to the preparation and administration of medicines, which, in turn, consumes many hours of these professionals, it seems that preparing and administering the medicine is a priority task, which distances them of patients. We realized how long the nursing team takes to handle and prepare the medication, as well

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as to organize the room when preparing the medication. From there, we observed the importance of an effective medication distribution system that can meet the needs of the nursing team and bring safety to the hospitalized patient.

In traditional practice, there are four types of drug distribution system: collective, individualized, mixed and unit dose. The collective system has more disadvantages than advantages since the pharmacy participates truly little in the whole process. The many failures of the collective dispensation system result from the fact that pharmaceutical assistance is practically nil, and the nursing service ends up assuming the role of the pharmacy. Mixed system is when the same hospital adopts more than one type of system. To select the system that adapts to the conditions of the hospital, it is essential to know the basis of each one of them. The individualized system has more advantages than the previous one, the pharmacist participates in the process⁽¹⁻³⁾.

The unit dose system of medication distribution (UDSMD) is considered one of the most important strategies to decrease medication errors and increase safety in the use of medications. ⁽¹⁾ In Brazil, the UDSMD is little used. The professionals involved with the medication distribution process in hospitals are doctors, pharmacists and the nursing team. ⁽²⁾

The UDSMD is characterized by a few basic points: "medicine in the form suitable for its prompt administration, individual packaging of doses, supply for up to 24 hours and availability at any time that is necessary" ⁽⁴⁾.

In addition, the UDSMD is the ordered quantity of drugs with forms and dosages ready to be administered by the nursing team to a specific patient, according to the medical prescription, over a certain period. In this system, the manipulation and fractionation of medicines are performed by pharmacy techniques under the supervision of the pharmacist. ⁽⁴⁾

This method increases the quality of care, reducing possible errors in the prepa-



It is important to understand the unit dose system as a production line, in which all steps are carefully monitored, controlled and checked by the pharmacist, ensuring operational efficiency and patient safety.



ration, dilution and administration of drugs, since the Hospital Pharmacy fractionates the drugs using the maximum concentration and the minimum volume - pharmacokinetics and pharmacodynamic. ⁽²⁾

It is important to understand the unit dose system as a production line, in which all steps are carefully monitored, controlled and checked by the pharmacist, ensuring operational efficiency and patient safety. ⁽⁵⁾ When delivered to the nursing service, the doses of the medications must pass through a check with the medical prescription and analysis of the maximum concentration and minimum volume, before administration by the nurse. ⁽²⁾

In view of the above, this study aims to identify the perception of nursing students about the Unit Dose System of Medication Distribution (UDSMD) and patient safety during clinical teaching at a Pediatric Hospital of the State Health Network in São Paulo, mainly seeking to answer the following question: "What is the perception of the last year nursing student about patient safety in the Unit Dose System of Medication Distribution in a Pediatric Hospital of the State Health in São Paulo?"

METHOD

It is an exploratory, descriptive, and transversal field research, according to the outline, a survey in the quantitative and qualitative aspects. The research was carried out in a children's hospital located in the city of São Paulo belonging to the State Health Department - CSRMG / SP. The institution has a hospital pharmacy whose main activity is the preparation of medicines in unit dose and has a team of pharmacists and pharmacy technicians. The volume of doses prepared in the UDSMD averages 18.000 doses / month. Graduates of the last year of nursing who attended clinical teaching at the study hospital participated.

The sample was an intentional non-probabilistic type that accepted to participate freely in the study. We applied

a questionnaire, from May 21st to June 29th, 2018 together with the Informed Consent Form (ICF). The study met ethical issues, according to the Resolutions of the National Health Council (Conselho Nacional de Saúde - CNS) No. 466/2012 and 510/2016 approved at the place of study and by the Research Ethics Committee of Nove de Julho University, CAAE: 89228418.3.00005511 and under Opinion No. 2.920.66 (6-8). We used standard Excel® spreadsheet for statistical treatment. For quantitative questions, we analyzed and presented them in graphs and tables using absolute and relative numbers; for qualitative questions, we categorized the content of the justifications and then discussed in front of the literature addressing the theme. (9)

RESULTS

One hundred and twenty-six undergraduate nursing students participated in the research, 100 (79,36%) of whom were female, 21 (16,66%) were male and 05 (3,96%) did not inform. Of these, 74 (58,73%) attended the 8th semester and 51 (40,47%) the 7th semester. One respondent (0,79%) did not inform the pe-

riod. The majority, 73 (57,93%) are between 21 and 30 years of age and 01 (0,79%) between 51 and 60 years. From Figure 1, we present the negative and positive perceptions of Nursing students about the UDSMD, as well as the justifications.

We found that 99 (78,57%) reported a positive perception of the UDSMD. We categorized it as Safe System 45 (45,45%). They described that the UDSMD reduces errors, as we found 30 (30,30%). Considering an organized system, 03 (3,03%) nursing students and, optimizing the time to care for the patient was mentioned by 01 (1,01%) graduating. Only 18 (18,18%) did not justify the answer.

Portray negative perception 21 (16,67%) of respondents. The category preparation and administration of medicines by Nursing was found in 10 (47,61%). We identified in the category unsafe system, revealed by 9 (42,85%) nursing students to use the UDSMD. Only 02 (9,52%) undergraduates did not justify the reasons why they have a negative perception of this system, different from preparing and fractioning the medications. They reported not knowing their UDSMD 01 (0,79%) and did not answer item 05 (3,97%) of the interviewees.

DISCUSSION

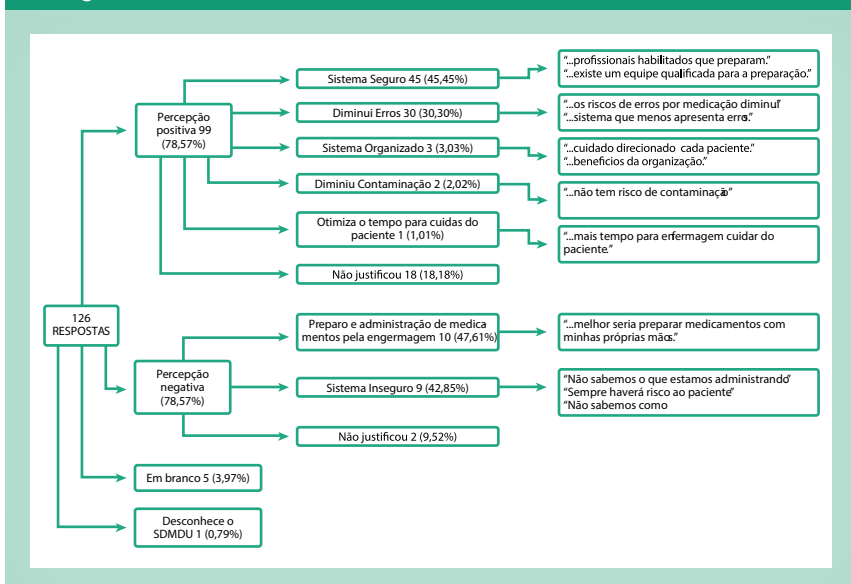
The nursing team is predominantly female, comprising 84,60% women, as reinforced by the Federal Nursing Council – COFEN (10). Regarding the age group, nursing graduates include professionals from the beginning of their careers (nursing technicians and assistants, who start at 18; and nurses, at 22) to retired professionals - up to 80 years. (10)

The Health Ministry, through Ordinance No. 1.377, of June 9th, 2013, approved the safety protocols in the administration as well as the use of medicines and brought important considerations regarding the functions performed in the pharmacy sector, such as: dispensing medications and it must be ensured that the medications are available for administration to the patient at the appropriate time, in the correct dose, ensuring the maintenance of the physical, chemical and microbiological characteristics, contributing to their safe use. (11,12).

It is worth mentioning that the duties of the hospital pharmacy run through Management; Infrastructure Development; Pharmaceutical Logistics and Drug Preparation; Optimization of Drug Therapy; Pharmacovigilance and Patient Safety; among others. (11) The preparation, fractioning and repackaging of the drugs must be carried out under environmental, technological and human resources conditions appropriate to the degree of complexity of the proposed handling, under the responsibility of the pharmacist, considering the current professional and sanitary regulations. (12) We verified that the studied institution has a mixing center equipped with a laminar flow hood and benches for this purpose.

As for the administration of a medication (prepared / diluted) by another health professional, it can occur after certification that an identification label containing the patient's name, dose / dosage, active principle and solution used for the dilution of the medicine, schedule, and professional identification (name and registration in the respective Council) can

Figure 1. Distribution according to the positive and negative perception of the nursing student about SDMDU. São Paulo, SP, Brazil, 2019



be found in the container in question. It should be noted that, before administration, the integrity of the packaging, the color of the drug, and the possible presence of foreign bodies, as well as the expiration date of the medication, must be checked.⁽¹³⁾ In relation to the preparation and administration of medications, the professionals involved in this task share the responsibility for care, and the refusal in administration may occur if the professional does not find all the information necessary to ensure a safe practice, for himself and for the patient.⁽¹³⁾

The dispensing and fractionation of medicines in the pharmacy, including the unitarization of doses, which is part of pharmaceutical assistance, is an activity that has goals, professionals involved and the Pharmacist's responsibility⁽¹⁴⁾. Therefore, the nursing professional will be able to administer to his client the dose prepared by the pharmacist, according to the existing medical prescription and after inspection of the product, that is, identification, integrity of the packaging, coloring, presence of foreign body and expiration date⁽¹⁵⁾.

Patient safety is an essential component of the quality of care and has acquired an increasing importance worldwide for patients and their families, for managers and health professionals, in order to offer safe care. Among the six basic patient safety protocols of the Ministry of Health implemented in all health establishments in Brazil, improving safety in the prescription, use and administration of medicines is what motivated the World Health Organization (WHO) to elect patient safety protocols as a strategy for implementing measures that reduce risks for patients: the little investment necessary for their implementation and the magnitude of errors and adverse events resulting from their lack.⁽¹²⁾

In 2017, recognizing the high risk of harm associated with the use of medicines, WHO launched the third Global Patient Safety Challenge with the theme "Medication Without Harm". The goal



It is essential that the nursing professional is endowed with knowledge, skills and attitudes that guarantee technical and scientific rigor for the realization of the different medication distribution systems that involve the preparation and administration of medications.



of this challenge is to reduce serious and preventable drug-related damage by 50% over the next five years, by developing safer and more efficient health systems at each stage of the medication process: prescription, distribution, administration, monitoring and utilization.⁽¹⁶⁾

The opinion of the Regional Council of Bahia (COREN / BA) No. 001/2014⁽¹⁷⁾ emphasizes that, traditionally, the nursing team is responsible for the preparation and administration of medications to hospitalized patients. With technological advances, the increase of services in hospital institutions and their diversification, the form of distribution of medicines in these institutions has become more intricate. It also emphasizes that it is necessary to adjust this activity of preparation and administration of medicines, one of the most conservative nursing activities, to the new trends, becoming an emerging need of the profession. The same opinion concludes that nursing professionals will be able to administer the doses prepared by the pharmacist to their patients / clients, according to the existing medical prescription, and after product inspection.⁽¹⁷⁾

It is essential that the nursing professional is endowed with knowledge, skills and attitudes that guarantee technical and scientific rigor for the realization of the different medication distribution systems that involve the preparation and administration of medications.⁽¹³⁾

The RDC No. 67 of 2007 of the National Health Surveillance Agency (Agência Nacional de Vigilância Sanitária - ANVISA), which provides for Good Practices in Manipulation of Magistral and Workshop Preparations for Human Use in Pharmacies, integrates the activities developed in hospital pharmacy, be they, fractionation, preparation or dispensing of medications, must be carried out under the supervision and responsibility of a qualified pharmaceutical professional⁽¹⁸⁾ and, the Joint Commission on Accreditation of Healthcare Organizations makes recommendations for the prevention of errors in the administration of medicines, with emphasis on the intro-

duction of systems that eliminate or reduce the possibilities of error; the search for standardization and promotion of training and qualification of nursing professionals. ⁽¹⁹⁾

The fractioning of the medications or their repackaging must be carried out under conditions like those used by the manufacturer, so that there is no change in the stability of the medication and there are no contaminations. The most used materials for the repackaging of medicines are plastic, laminates, glass, and aluminum. ⁽⁴⁾

Storage is the stage of the pharmaceutical assistance cycle that aims to guaran-

tee the quality and safe storage of medicines in health institutions. It consists of a set of procedures that involves the receipt, storage / custody, security against physical damage, theft, conservation, stock control and delivery. ⁽²⁰⁾ The UDSMD reduces nursing time in medication-related activities, allowing them to be more available to the patient. ⁽⁴⁾

FINAL CONSIDERATIONS

Nursing undergraduates demonstrate a positive perception about the pro-

cess of distributing medication, as it is a safe system. The nurse must know the responsibility for medication administration as something important within the set of activities that he performs, since the implementation of the UDSMD reflects directly on the activities of the nursing team.

The UDSMD is a process that brings greater safety to the patient. In addition, share with health professionals the development and technological advancement, which bring new challenges to these professionals and to hospital institutions. 🐦

References

1. Simão EAR. Distribuição em ambiente hospitalar - da distribuição clássica aos novos sistemas de distribuição mecânicos. (dissertação) Instituto Superior de Ciências da Saúde Egas Moniz, Almada, Portugal [Internet]. 2016 [acesso em 13 out 2019]. Disponível em: <https://comum.rcaap.pt/bitstream/10400.26/12383/1/Sim%C3%A3o%2c%20Ema%20Alexandra%20Roberto.pdf>.
2. Araújo SAN. Sistema de distribuição de medicamentos por dose unitária (SDMDU). In: Borrel JG, Barros L, Lens SAF, Costa SAF. Administração de Medicamentos em Pediatria. São Caetano do Sul-SP: Yendis; 2016. P. 57-93.
3. Ministério da Saúde, Agência Nacional de Vigilância Sanitária (BR). Protocolo de segurança na prescrição, uso e administração de medicamentos [Internet]. Brasília (DF): MS, ANVISA, FIOCRUZ, FHEMIG, 2013 [acesso em 13 jan 2020]. Disponível em: <https://proqualis.net/protocolo/protocolo-de-seguran%C3%A7a-na-prescri%C3%A7%C3%A3o-uso-e-administra%C3%A7%C3%A3o-de-medicamentos>.
4. Conselho Regional de Enfermagem do Estado de São Paulo (COREN-SP). Rede Brasileira de Enfermagem e Segurança do Paciente – REBRAENSP – Polo São Paulo [Internet]. 2010 [acesso em 22 mar 2018]. Disponível em: http://portal.coren-sp.gov.br/sites/default/files/10_passos_seguranca_paciente_0.pdf.
5. Ferretti JB. Estratégias para evitar erros de medicação no ambiente hospitalar. (monografia) Universidade Católica de Brasília, Brasília-DF [Internet]. 2013 [acesso em 16 mar 2018]. Disponível em: <https://repositorio.ucb.br/js-pui/bitstream/123456789/6785/5/1/C3%A9ssica%20Becker%20Ferretti.pdf>.
6. Ministério da Saúde, Conselho Nacional de Saúde (BR). Resolução CNS n.º 196, de 10 de outubro de 1996, Diretrizes e Normas Regulamentadoras de Pesquisas Envolvendo Seres Humanos, Diário Oficial da União, 10 de outubro de 1996.
7. Ministério da Saúde, Conselho Nacional de Saúde (BR). Resolução n.º 466, de 12 de dezembro de 2012. Trata de pesquisas em seres humanos e atualiza a Resolução n.º 196/1996. Brasília; 2012.
8. Ministério da Saúde, Conselho Nacional de Saúde (BR). Resolução n.º 510, de 07 de abril de 2016 [Internet] [acesso em 20 abr 2019]. Disponível em: <http://conselho.saude.gov.br/resolucoes/2016/Reso510.pdf>.
9. Bardin L. Análise de Conteúdo. Lisboa, Portugal: Edições 70; 2010. P. 25.
10. Conselho Federal de Enfermagem (COFEN). Pesquisa inédita traça perfil da Enfermagem. Portal COFEN [Internet]. Brasília (DF): COFEN/ FIOCRUZ, 2019 [acesso em 25 abr 2019]. Disponível em: http://www.cofen.gov.br/pesquisa-inedita-traca-perfil-da-enfermagem_31258.html.
11. Ministério da Saúde, Secretaria de Políticas de Saúde (BR). Portaria n.º 1.377, de 09 de julho de 2013. Aprova os protocolos de segurança do paciente [Internet]. Brasília (DF): MS, 2013 [acesso em 30 mar 2019]. Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt1377_09_07_2013.html.
12. Conselho Regional de Enfermagem de São Paulo (COREN-SP). Parecer Técnico n.º 010/2012. Dispensação de medicamentos e função privativa de farmacêutico [Internet]. São Paulo (SP): COREN-SP, 2012 [acesso em 30 mar 2019]. Disponível em: http://portal.coren-sp.gov.br/sites/default/files/parecer_coren_sp_2012_10.pdf.
13. Conselho Federal de Enfermagem (COFEN). Parecer n.º 013/2015/COFEN/CTLN. Sobre a Legislação profissional. Preparo de medicamentos por um profissional de enfermagem e a respectiva administração de medicamento por outro [Internet]. Brasília (DF): COFEN, 2015 [acesso em 25 abr 2019]. Disponível em: http://www.cofen.gov.br/parecer-no-0132015cofenctln_54431.html#:~:text=EMENTA%3A%20LEGISLA%C3%87%-C3%83O%20PROFISSIONAL%3A%20E2%80%9CPREPARO,que%20preconiza%20a%20legisla%C3%A7%C3%A3o%20vigente.
14. Sociedade Brasileira de Farmácia Hospitalar e Serviços de Saúde. Padrões Mínimos para Farmácia Hospitalar/ Sociedade Brasileira de Farmácia Hospitalar. 3ª Ed. São Paulo, 2017. 40p.
15. Conselho Regional de Enfermagem de São Paulo (COREN-SP). Parecer Técnico GAB n.º 016/2011. Dispõe sobre Administração de medicamentos injetáveis preparados pelos farmacêuticos. São Paulo (SP): COREN-SP, 2011.
16. World Health Organization (WHO). Medication Without Harm - Global Patient Safety Challenge on Medication Safety. Geneva: WHO, 2017.
17. Conselho Regional de Enfermagem da Bahia (COREN-BA). Parecer COREN-BA n.º 001/2014. Dispõe sobre Dúvidas de profissional farmacêutica [Internet]. Salvador (BA): COREN-BA, 2014 [acesso em 25 abr 2020]. Disponível em: http://ba.corens.portalcofen.gov.br/parecer-coren-ba-n%2E%81%B0-0012014_15227.html.
18. Agência Nacional de Vigilância Sanitária (ANVISA). RDC n.º 67/2007. Dispõe sobre Boas Práticas de Manipulação de Preparações Magistrais e Oficinas para Uso Humano em farmácias [Internet]. Brasília (DF): ANVISA, 2019 [acesso em 20 set 2019]. Disponível em: www.portal.anvisa.gov.br.
19. Joint Commission (JCAHO). Specifications Manual for Joint Commission National Quality Measures [Internet]. 2018 [acesso em 02 out 2019]. Disponível em: https://manual.jointcommission.org/releases/TJC2018A/assets/Manual/TableOfContentsTJC/TJC_v2018A.pdf.
20. Pinto VB. Armazenamento e distribuição: o medicamento também merece cuidados. OMS/OPAS [Internet]. 2016 [acesso em 10 nov 2019]; 1(12):2-3. Disponível em: https://www.paho.org/bra/index.php?option=com_docman&view=download&category_slug=serie-uso-racional-medicamentos-284&alias=1540-armazenamento-e-distribuciao-o-medicamento-tambem-merece-cuidados-0&Itemid=965.