

## Errors in medicinal therapy and the consequences for nursing<sup>1</sup>

Erros na terapia medicamentosa e as consequências para a enfermagem

Errores en la terapia de medicamentos y consecuencias para la enfermería

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### ABSTRACT

**Objective:** To identify the consequences of errors in drug therapy from the point of view of the nursing team.

**Method:** Descriptive-exploratory cross-sectional study with qualitative approach, performed with four nurses, three auxiliaries and 19 nursing technicians. Data collection through semi-structured interviews analyzed through the Bardin Content Analysis. **Results:** The consequences of the errors were considered negative in the cases of layoffs, sector change, emotional/moral impact. However, it was demythologized that errors only have negative consequences, because situations such as dialogue, permanent education offer, self-criticism of the worker and better attention in the preparation/administration of medications exemplified that the error can be reverted to the improvement of care practices. **Conclusion:** the results of this study may encourage the implementation of a more consistent safety culture in health institutions, not by personifying the error to those who committed it directly.

**Descriptors:** Nursing, Medication errors, Patient safety.

### RESUMO

**Objetivo:** Identificar as consequências dos erros na terapia medicamentosa sob a ótica da equipe de enfermagem. **Método:** Pesquisa descritivo-exploratória de caráter transversal com abordagem qualitativa, realizada junto a quatro enfermeiros, três auxiliares e dezenove técnicos de enfermagem. Coleta de dados mediante entrevistas semiestruturadas analisadas por meio da Análise de Conteúdo de Bardin.

**Resultados:** As consequências dos erros foram consideradas negativas nos casos de demissões, troca de setor, impacto emocional/moral.

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Entretanto, desmitificou-se que erros trazem somente consequências negativas, pois situações como o diálogo, oferta de educação permanente, autocritica do trabalhador e melhor atenção no preparo/administração dos medicamentos exemplificaram que o erro pode reverter-se para a melhoria das práticas de cuidado. **Conclusão:** os resultados deste estudo poderão encorajar a implementação de uma cultura de segurança mais consistente nas instituições de saúde, não personificando o erro a quem o cometeu diretamente.

**Descritores:** Enfermagem, Erros de medicação, Segurança do paciente.

## RESUMEN

**Objetivo:** Identificar las consecuencias de los errores en la terapia medicamentosa bajo la óptica del equipo de enfermería. **Método:** Investigación descriptiva-exploratoria de carácter transversal con abordaje cualitativo, realizada junto a cuatro enfermeros, tres auxiliares y 19 técnicos de enfermería. Recolección de datos mediante entrevistas semiestructuradas analizadas por medio del Análisis de Contenido de Bardin. **Resultados:** Las consecuencias de los errores se consideraron negativas en los casos de despidos, cambio de sector, impacto emocional/moral. Sin embargo, se desmitificó que errores traen solamente consecuencias negativas, pues situaciones como el diálogo, oferta de educación permanente, autocritica del trabajador y mejor atención en la preparación/administración de los medicamentos ejemplificaron que el error puede revertirse a la mejora de las prácticas de cuidado. **Conclusión:** Los resultados de este estudio pueden alentar la implementación de una cultura de seguridad más consistente en las instituciones de salud, no personificando el error a quien lo cometió directamente.

**Descritores:** Enfermería, Errores de medicación, Seguridad del paciente.

## INTRODUCTION

Medication therapy is a complex process, requiring attention and commitment from a multidisciplinary team, in which all professionals involved aim to provide quality, safe and effective patient care. This process encompasses the prescription of medicines by medical professionals, the dispensing directly by the pharmacy and also the administration, which is a practice commonly performed by the nursing team.<sup>1-3</sup>

It is known that nursing is a profession committed to health and quality of life, exercised exclusively by nurses, technicians and nursing auxiliaries. According to the Brazilian Code of Ethics, the nursing professional acts in the promotion, prevention, recovery and rehabilitation of health, with autonomy and in accordance with ethical and legal precepts; participates, as a member of the health team, in actions aimed at meeting the health needs of the population and in defense of the principles of public health and environmental policies; respect for life, dignity and human rights in all its dimensions; and carries out its activities with competence for the promotion of the human being in its entirety.<sup>4</sup>

Regarding the participation of each professional of the nursing team in the administration of medication, it is the responsibility of the nursing auxiliary and the nurse technician to prepare and administer oral and parenteral medications; while the nurse must have the knowledge to prepare and administer, as well as to supervise the activities

of the technicians and auxiliaries and, also, to record the prescribed medications.<sup>5,6</sup>

In general, it should be considered that any action of patient care requires practical and theoretical knowledge in order to maintain its safety and quality of care; as well as consistency with the ethical and legal principles governing the professions. Still, there is the possibility of iatrogenic occurrence in the care process, which is understood as an intervention of the health team, whether correct or wrong, with or without justification, that implies some damage to the patient's health. Among the studies related to nursing and medication therapy in recent years, there are considerable results that address the existence of errors in this process and highlight this inadequacy as one of the main types of iatrogenic condition produced by the nursing team, which compromises patient safety.<sup>7,8</sup>

In this context, a study referred to nursing as responsible for 46.4% of errors in medication therapy, which was considered the phase with the highest incidence of errors (35.5%). However, physicians and pharmacists are also involved in the occurrence of medication errors, being responsible, respectively, for 32.4% and 19.4% of the errors initially evaluated in the mentioned study. Consequently, the prescription and distribution phases of the drugs corresponded to a percentage of 34.5% and 19.6%.<sup>9</sup>

Medication errors may be related to professional practice, health products, procedures, communication problems among the multidisciplinary team, and/or prescriptions, labels, packaging, names, preparation, dispensing, administration, education, and monitoring. Therefore, it is called a medication error, any preventable event that may lead to inappropriate use of medication, being under the control of health professionals or the patient, and may or may not cause harm.<sup>10</sup> Factors that may be responsible for medication errors include lack of human resources; the time spent with documentation, which diverts physicians, nurses, and pharmacists from direct patient care; besides administrative work and the lack of standard protocols in health institutions.<sup>3</sup>

Other causal factors of the errors mentioned in the literature are: work overload, lack of attention and/or unpreparedness of the professional, illegible prescription, lack of professionals in the health services, automation of care, lack of planning of the work by the professional, lack of interest/lack of motivation for work and inadequate physical environment. In addition to these causes may also be the lack of interaction between the multidisciplinary team, lack of familiarity with medication and pharmacological knowledge, lack of knowledge to solve any difficulty in administering the medication; besides the inexistence of a system of communication of errors and financial resources.<sup>11,1,12,3</sup>

Regarding the consequences of identifying a mistake, few studies are found in the national literature. Among this shortage, Dias et al.<sup>12</sup> state that nurses report some case of error only when they realize that they are not being recorded. And they say that most of the participants in their research believe that the best behavior is the orientation

and training of the employee who made the mistake, emphasizing the importance of communicating what occurred to the health team and the need to notify the responsible bodies. These behaviors, in turn, can be called positive consequences of medication error, considering their potential for preventive measures. Nevertheless, it is assumed that, in the event of an error, the consequences for the nursing team and the professional who committed it are, mainly, negative, since many studies refer to the fear of punishment in case of identification of the adverse event.<sup>13,14,12,3</sup>

Bearing in mind that nursing professionals are at the forefront of the medication therapy process and that during this process several errors can be committed, the following questions appear: what consequences exist for those who commit a medication error? How the consequences of errors have been perceived from the point of view of the nursing team? Indirectly, are there any consequences for the entire nursing team?

Given the aforesaid, this study was carried out with the objective of identifying the consequences of errors in medication therapy from the nursing team point of view, by considering the own nursing team and the professional who made the mistake.

## METHODS

It is a descriptive-exploratory and cross-sectional study with a qualitative approach. It was performed at the Medical Clinic Unit (MCU) of the University Hospital linked to a Federal University in the extreme South of Brazil. It is currently under the management of the *Empresa Brasileira de Serviços Hospitalares (EBSERH)* [Brazilian company engaged in hospital management] and has 203 effective beds, providing health care, exclusively, by the *Sistema Único de Saúde (SUS)* [Unified Health System] in different areas, such as the medical clinic, constituting a reference in specialized treatment in HIV-AIDS and chronic diseases.

The study participants were the professionals of the nursing team, who met the following inclusion criteria: being a nurse, technician or nursing auxiliary; have been in the unit for at least six months; be part of the staff, admitted by public tender or under contract with the Hospital Support Foundation. Professionals who were on leave or health leave during the period of data collection, as well as those who were in the professional practice for less than six months in the unit and/or were admitted by Autonomous Payment Receipt (APR), were excluded from the study.

Data collection was performed in September and October 2016, using semi-structured individual interviews, using an instrument containing closed questions, to characterize the participants and open questions, so that they were free to express their experiences with focus consequences of errors in medication therapy.

Subsequently, the interviews were transcribed and submitted to content analysis, followed by three stages: 1) Pre-analysis, in which the initial ideas contained in

the transcriptions were organized, operationalized and systematized, based on a floating reading and obeying the rules of completeness, representation, homogeneity and relevance of the data; 2) Exploitation of the material, in which the elements were codified and classified according to their similarities and by differentiation, with later regrouping according to common characteristics; 3) Treatment of the results obtained and interpretation, in which the raw results were treated and the units of analysis were submitted to simple statistical operations, highlighting the information obtained, culminating in the interpretations provided in the basic theoretical reference of the research.<sup>15</sup>

The study was approved by the Institution's Ethics Committee, based on the Legal Opinion No. 86/2016, and in compliance with the Resolution No. 466/12 from the National Health Council. In order to guarantee the anonymity of the interviewees, alphanumeric coding was used, followed by ordinal numbers, according to the order of the interviews, in which "N" represents the nurses, "T" the technicians and "A" the nursing auxiliaries.

## RESULTS

Twenty-six nursing professionals participated in the interviews, including 4 nurses, 3 nursing auxiliaries, and 19 nurse technicians. Among them, 23 (88.5%) are female and three (11.5%) are male. The average age of the participants was 41 years old, the youngest professional being 27 years old and the oldest being 53 years old. According to the weekly workload, all participants work 30 hours, and 13 professionals (50%) work 12 hours a day, corresponding to night shifts (1 and 2) and the other 13 (50%) work for six hours daily, corresponding to the morning and afternoon shifts. Only three (11.5%) reported having another employment relationship, being in another health institution in the city. As for the time of professional performance, we obtained an average of 12 years of work in nursing, six years of work in the Institution and five years of work in the MCU.

The consequences of errors in medication therapy had different perspectives according to the professional attributions of the research participants. Initially, the participants did not meet the study objective, due to the conceptual ignorance about the different types of errors in medication therapy. After a brief conceptual approach, it was still found that they ran away from the main subject and many reports involved mistakes made in other health institutions. Despite this, it was possible to identify errors made by the respondents themselves and errors that they witnessed or were aware of having occurred in the Unit with other colleagues.

Regarding the consequences for the nursing team, the nurses reported not exposing the individual error to the whole team and, after the event, talk to everyone to have more attention in the preparation and administration of medications. So, they also increase nursing supervision in this process. Moreover, they cited a situation of notification

of the error by the medical professional, referring to the coordination of the nursing service, who dialogued with the team. One of the nurses did not identify any consequences in this regard.

*[...] nor did I comment on these cases for the rest of the team, because she got really shaken and I thought it was going to be worse, then after a while I talked to the team, so we got more attention in general (N2). [...] Sometimes the doctor sees the error and goes there and makes a FROM/TO [document] from the technician or nurse, and we are called to talk; the coordinator of the nursing service has already made some clarification terms for the people respond [...] then answered and that's it (N1).*

From the point of view of nurse technicians and nursing auxiliaries, the consequences of the errors for the team were little recognized, being mentioned: the risk to the team, in which all the professionals are affected, at least emotionally; the accountability of the team in cases of serious damage; the dialogue with the team, in which the nurse asks for more attention in the medication therapy process; the immediate attention to the intercurrent caused by an error; informal verbal warning, which the professional reports as "problem"; more staff attention in therapy; stress and; invitation for activity of the permanent education, promoted by the Institution. In the reports, it was still possible to identify the banalization of prescribing and dispensing errors when professionals do not recognize that these also have consequences for the organization of the nursing team.

*[...] usually they [nurses] put us in the ballroom, and they talk, or when the team is very agitated when they call in the hall of punishment, they solve without going to direction, when it is an ugly thing, they go (T2). [...] that rush that happens... goes there to call the doctor, everything to intervene in order to not happen anything wrong (T4). I think the consequence was even positive, because everyone started to take care of what they were doing, to policing more [...] was positive because it ended up generating a certain amount of concern about what we are doing [...]. it was all that stress, almost generated a cardiorespiratory arrest, hence involves the whole team (T10). Here in the Institution there is a permanent education, they act very strongly in relation to when they have some mistake, they give training, there is even a course [...] that is even more directed to the staff of the Medical Clinic, [...] but only that most of the professionals do not adhere (T11). [...] the error would be theirs [at the pharmacy] but at the same time, it would be more serious for us, because we cannot do without reading [...] (T3).*

Regarding the consequences identified for the professional who makes the mistake, the nurses cited: the withdrawal from work for training, not being a common behavior; dismissal, especially when there is no employment relationship; the dialogue with the professional; emotional consequences such as fear, shame, uncertainty and despair; more attention on medication use; referral to the nursing administration, when the error is more serious and; finally, administrative proceedings. These consequences are the result of their immediate action or, therefore, the coordination of the nursing service.

*[...] he [a professional who made a mistake] did a training time and returned to the sector [...] when it is APR [professional admitted by Autonomous Payment Receipt] I will be very sincere, several went fired [...] because it was a contract week, they found it better to dispense than [silence], but when you're with employees, you usually talk (N1). [...] they came to talk to me, terrified, trembling, one of them cried, cried because it had never happened in six years, there had never been an error, so we went to see what it was and why it happened, I talked, I brought her here so I did not have any exposure and everything and I asked for more attention, of course, but not to worry that it had not happened... and that it would not bring a major inconvenience to them ..." I realized that she doubled or tripled her care, so for a while she kept calling me "look here, help me, let's check" (N2). [...] when it is a grotesque mistake, she goes straight to the nursing administration to see what they are going to do with that technique [she] can make that mistake again, so if it is very serious, it goes straight [...] Some were dismissed, I know of one who was dismissed, others received administrative proceedings (N4).*

From the point of view of nursing auxiliaries and technicians, the consequences for the professional are related to the fragility of the employment relationship, considering the large number of reports on the dismissal of professionals hired by Autonomous Payment Receipt (APR) and also the reports on the difference between the official hired by the Hospital Support Foundation and those who are admitted by public tender, in a Single Legal Regime. Consequences were also cited, such as the exchange of sectors; written warnings from the ombudsman service; the verbal warning by the physician.

*[...] generally, when there is an error and it is APR [professional admitted by Autonomous Payment Receipt], they send him/her away, I do not know very well how the questions that they advocate work, but they send it away (T12). [...] He suffered nothing, especially as a federal employee. I guarantee that if it is from the Hospital Support Foundation I was on the street, even able to*



take the COREN [professional identity card] (T7). [...] it was with the function of the diet, they were going to put her on the street at the time because she had gone wrong, a controversy came about... what happened to her was that they put her to the CME [Center for Sterilized Material]. It's a punishment because they took her away from patients (T13). [...] warnings have already appeared there because of the schedule, which they do before [...] only makes a complaint there in the ombudsman and comes to the warnings... nominal, individual, with the right name (T16). [...] it happened until the doctor came to charge me one day (T5).

In addition to these, the emotional consequences were highlighted in which, after an error occurs, feelings such as fear, uncertainty, shame, despair, and guilt arise, as well as the judgment, defamation and accusation on the part of the patient's relatives.

[...] But then, I felt at first sad to be doing something that you are trying to help and when you see you worsen that person's situation [...] it is a feeling of fear because you do not know what is going to happen with the patient. Not with me! I am not afraid of what is going to happen, but I am afraid of what will happen to him [...] (T7). [...] she was very upset, she would have had a follow-up with some psychologist, because she did, but what will do very bad for the patient, will do for you too, because soon you will never go to do that (T13). [...] you saw that she felt very guilty, very embarrassed by it, only, in fact, it was not totally her fault (T10). [...] You come with a medication and they [patients] already say: "Oh! that's where it came with the wrong things." The patients already look with a face of "there comes the one who knows nothing" or "the one who did wrong" (T13). [...] a small thing becomes a huge thing and the whole hospital learns, it's your profession at stake because you're branded as a bad employee, even murderous, I do not know, killed the patient, a small thing that happens sometimes it is not even that, a wrong pill already makes a problem (T18).

On the other hand, nursing technicians and auxiliaries also reported consequences that can be considered positive, such as: more attention in the preparation and administration of medications; the dialogue with the nurse, in which the nurse requests more attention; self-criticism and dialogue by the institution's management.

More attention, more focus on the moment, when this happened I was in the morning, so in the morning it is very tumultuous [...] I prefer to focus there and talk later, otherwise, I will divert my attention [...] then attention redoubled in the face of this situation (A1). [nurses] have already called us, they have already talked to us to pay more attention, we could have done something more serious

(T2). [...] you yourself are self-critical: "Why did you do it?! You know it is not "(T7). [...] she was called to talk to the nurse, then the supervision also called, asked to pay more attention (T10).

Given the aforementioned, **Table 1** summarizes the results found about the consequences of errors in medication therapy for the nursing team and the professional who made the mistake.

**Table 1** - The consequences of medication errors for the nursing team and for the professional who has done it, by considering the nurses' viewpoint and the perspective of nursing auxiliaries and nurse technicians. University Hospital from the extreme South of Brazil, 2016.

Consequences of errors from the nurses' viewpoint	
<b>Nursing Team</b>	Dialogue, requesting more attention; direct supervision by the nurse; notification of error by the physician; dialogue with the nursing coordination.
<b>Professional</b>	Removal and training; resignation; dialogue with the nurse; emotional consequences; more attention; referral to the nursing administration; administrative process.
Consequences of errors from the perspective of nursing auxiliaries and nurse technicians	
<b>Nursing Team</b>	Risk to the team; professional answerability; dialogue with the team; immediate attention to the intercurrent; informal verbal warning; more attention from the team; stress; invitation for permanent education; neglecting the prescribing and dispensing errors.
<b>Professional</b>	Removal and training; resignation; dialogue with the nurse; emotional consequences; more attention; referral to the nursing administration; administrative process.

Source: Author, 2016.

Subsequently, the discussion of the most relevant points obtained from the nursing team reports will be shown.

## DISCUSSION

Reflecting upon the analyzed results, it was identified the difficulty of professionals, mainly nursing auxiliaries and nurse technicians, in dealing with the subject of the research. Half of the participants presented resistance at the first moment of the interview, denying the existence of errors in their daily life at the institution researched, reporting on situations experienced at another health institution. According to Dias et al.<sup>12</sup>, the first response of the nurses when they were asked about the errors was that they had no knowledge of events at their institution, they only commented on behaviors to be taken in a probable situation and, but when they realized that it was not being recorded, then they reported that some cases occurred.

Likewise, a study conducted in India showed that most participants did not report medication errors in their daily lives, highlighting among the reasons the lack of awareness about what constitutes a medication error and when it should be reported; as well as the lack of a system for reporting and analyzing incident reports and feedback to the team. Besides these, the fear of punitive action, both in public hospitals and in corporate hospitals, were reasons for errors not to be mentioned.<sup>3</sup>

Regarding the consequences of errors in medication therapy, in this study, more evidence was highlighted by nursing auxiliaries and nurse technicians, a result that was related not only to the fact that they were the largest number of participants in the study, but also because they were more involved with the process of preparation and administration of medicines, in Brazil. With this, they are directly the professionals that identify, accompany and even suffer the consequences of medication errors.

In other settings, such as in Belgium, auxiliaries are a more recently recognized and minority category among nursing professionals, whose attributions with medicinal products are limited to the oral route. Among them, they help the patient to take the medication after it has been prepared and personalized by an automatic distribution system, guided by a nurse or pharmacist; besides informing and advising the patient and the family about this activity. Therefore, they are workers with different perceptions of nurses regarding the barriers to the safe use of medicines, restricting themselves to specific issues, such as insufficient knowledge about crushing the medication; the calculation of doses, the interactions of the drugs with each other and with the food and the lack of knowledge of its therapeutic effects. Organizational factors are less perceived by these professionals as hindering safety in the use of medicines.<sup>11</sup>

Bearing in mind the consequences of the nursing team, in this study, the positive results were highlighted, in which the nurses affirm that they do not expose the individual error, reinforcing the issue of not personalizing the error and not punishing the professional that committed it. It is, however, a personal conduct of every nurse. Although they are adopting a non-punitive measure, it was evident that each one follows its own "protocol" of conduct and does not obey a common flow for the recording, analysis, and feedback of adverse events, since the institution researched does not yet formally present this culture, with clearly established norms and routines to treat errors in medication therapy.

The insufficiency and inefficiency of systems and protocols for the adequate management of medication use is not only a problem in Brazilian institutions. A study developed in Belgium also refers to it as an organizational barrier to patient safety.<sup>11</sup> Reis, Laguardia, and Martins<sup>16</sup> also found that safety culture is an emerging practice in Brazil and that although some institutions have already adopted it, accidents, adverse events and errors, are not really dominant.

As far as the patient's safety culture is concerned, in 1999 the "To Err Is Human" report focused on health institutions to strengthen a culture at the organizational level, a key step towards the quality of care provided with greater safety. Nevertheless, achieving some sustained improvements in the safety culture, besides not being easy, demands time and organization. According to studies, specific measures such as the training of professionals, teamwork and the establishment of safety measures are directly linked to safety culture.<sup>17-8</sup>

With regards to the consequences identified for the professional who makes the mistake, in this study, the statements of dismissal and exchange of sector were highlighted in the study, when there is no employment relationship; the emotional consequences such as fear, shame, uncertainty and despair; and the trial, defamation and prosecution, on the part of the patient's relatives. In the same sense, Rocha et al.<sup>19</sup> identified that in the occurrence of adverse events, many emotional consequences affect the professionals, such as: panic, despair, worry, guilt, shame, fear and insecurity. These elements may be strongly related to Burnout Syndrome, which is characterized by emotional exhaustion in response to the tension experienced in the work environment. It arises when personal confrontation with stressful situations is ineffective and when institutional organization has weaknesses in being a mediating variable between this perceived stress and its consequences.<sup>20,21</sup>

The challenge of patient safety specialists in seeking to reduce adverse events in health facilities has been the managers' understanding that the cause of adverse events and errors is multifactorial and that practitioners are likely to occur, and technical and organizational processes are complex and poorly planned. The understanding of which systems fail and that the failures of the professionals reach patients, allows hospital management to review their processes, study and reinforce their defense barriers and latent failures that are present in the workplace and that make the system fragile and susceptible to errors.<sup>22</sup>

Given these issues, it is also important to reflect upon the labor relationships, especially the lack of stability of professionals in health facilities, provided by work regimes such as the temporary professional, which gets its income by the Autonomous Payment Receipt and by the *Consolidação das Leis do Trabalho (CLT)* [A Brazilian regimen for labor laws]. It is believed that the fragility in the work links, from the point of view of the subject studied, can lead to the underreporting of errors since the resolution of cases is strongly related to the punishment, in particular, represented by dismissal. Thus, there is a strong need to implement the safety culture in order to confront error as a broader indicator of the collective work process, in order to elaborate strategies for the prevention of new events, from a contextual perspective and not individualized and corrective, especially since there is an increasing tendency towards the precariousness of employment relationships

in Brazil. It is necessary, therefore, to establish a safety culture in order to protect the workers, highlighting, in this conjecture, the nursing professionals.

In order to demystify the culture of punishment and to discourage the negative consequences of the medication error for the nursing team, and in particular, for the professional directly involved with the error.

A study carried out in two hospitals in *Florianópolis* city, *Santa Catarina* State, recommended suggestions based on current principles of patient safety to improve procedures and work processes in the use of medications, such as protocols definition, risk barriers, patient identification, dose unit and double check; in addition to recommendations that involve professional conduct, including dedication, commitment and conscience in work, respect and affection.<sup>23</sup>

In a study carried out in India, it was verified that the safety culture was driven by hospital accreditation processes, from which institutions are adopting best practices to promote a culture of quality and health security. In addition to this management strengthening process, the most readable, computerized and written generic names were suggested as strategies to improve patient safety; the issuance of computer-generated automatic alerts in case of drug-related prescription errors, dose and drug resistance; as well as greater awareness of the professionals for the processes subject to errors, requirements of communication of medication error and analysis of reports prepared by agents of quality and safety.<sup>3</sup>

In China, a study was developed in a general hospital, based on a strategy called five-point management, which consisted primarily of building a protocol based on real clinical drug administration problems in the institution. The points raised concern the knowledge and skills of nurses in drug safety; drug management systems and administration criteria; administration of key drugs such as analgesics, anesthetics, emergency and high-risk drugs; the standardization of nurses' conduct in the administration of medicines and the guarantee of drug safety. To that end, the following strategies were proposed, respectively: 1) to carry out training programs; 2) optimize drug policy; 3) classify refinement and specific care with key medicines; 4) improve the safety process for intravenous drugs and; 5) oversee the drug administration process. From these interventions, carried out over a period of approximately four years, the post-intervention results obtained the reduction of the error rate from 6% to 4%, as well as the reduction of complaints related to medication administration, which decreased 73.9%, culminating with the best inpatient satisfaction, which reached 98.3%.<sup>24</sup>

In Iran, the effect of a clinical supervision model on the safety of high-risk drugs has been verified. This clinical supervision included checklists for high-risk medications, such as heparin, dopamine, dobutamine, noradrenaline, and warfarin. Each list contained two sections. The first is about function in preventing medication errors, and the

second is about function in preventing adverse events in the use of these medications. In the prevention of errors were supervised eight to 13 nursing care, depending on the medication. In the prevention of adverse events, we monitored the main side effects of each drug, which any professional must be alert to administer it. This section contained eight to 12 items. Clinical supervision was performed at two different times, one before and one after an educational intervention. In the educational intervention, in turn, the results of the first supervision were used, from which the main nursing care that should be taken was discussed, based on indicators of local errors in the use of the five high-risk medicines. After the intervention, we identified an improvement in the drug safety score for all high-risk drugs, with a greater emphasis on dobutamine, which increased from 13.8 to 19.3. Therefore, it was concluded that clinical supervision could be applied as an organized system to promote the role of nurses in reducing medication errors and adverse events in the administration of high-risk drugs, especially in intensive care units.<sup>25</sup>

Conclusively, a study developed in a tertiary hospital in Brazil used the positive deviation strategy to reduce medication errors. This is a process improvement tool that uses the suggestions of those involved. It is a behavioral change approach, based on the premise that in any situation individuals faced with the same type of problem have innovative ideas and are able to find the best solution.<sup>9</sup>

In this case, physicians, nurses, pharmacists, technicians and nursing auxiliaries, pharmacy assistants and storage members integrated the so-called drug safety groups, whose meetings were held periodically for two years, in order to discuss the errors in their work units and devise strategies to alleviate them. Initially, the process was triggered by hospital management, but the continuity of implementation actions was conducted by the participants themselves.<sup>9</sup>

Among the actions, one can mention the campaign "Safe route in the medication process", in which the monthly medication error rate was disclosed in a wide-view banner by the staff of each unit, in order to encourage workers' security goals established by the institution. Among the actions established by Rota were: double verification of vasoactive drugs, insulin, multiple dose psychoactive drugs and those administered by means of an infusion pump; as well as changes in the storage locations of medications with similar spelling, sound, and packaging.<sup>9</sup>

Furthermore, noteworthy actions of any patient allergy were included in the prescription form; the purchase of carts for the nurses to prepare the medicines next to the patients; the preparation of doses of morphine higher than 6mg exclusively in the pharmacy service; the prescription of drugs in doses instead of unit (tablet, vial, ampoule); double verification of the medical prescription among nurses during the shift; the reinforcement for the nursing staff to immediately return to the pharmacy suspended medications; the insertion of the volume of diluent and the



infusion rate of the medicinal products with the potential to cause phlebitis by the pharmacist in the prescriptions; as well as the education of the patient to conference their identification wristband with prescription at the time of administration of the drug and increased reporting of medication errors. At the end of the experiment, the units that reduced the rate of medication errors and the group that implemented the largest number of interventions throughout the hospital were awarded prizes.<sup>9</sup>

## CONCLUSIONS

It is believed that this study has accomplished the proposed goal, by identifying different consequences of errors in medication therapy for the nursing team and the professional who committed it. These consequences can be considered negative when it comes to discharges, sector change, emotional and moral impact on workers, and their strictly punitive character. Nonetheless, it is considered that it was possible to demystify that errors made in medication therapy only have negative consequences. Situations such as the dialogue with the nurse and the direction of the institution, the offer of permanent education, the self-criticism of the worker and the improvement of care during the preparation and administration of medicines were examples of the fact that, when understood more widely, can potentially revert to the review and improvement of care practices, allowing professionals to constantly reflect and modify their work. Although these are positions adopted individually by nurses and, in some cases, by hospital management, the study has produced results that may encourage the implementation of a more consistent safety culture in health institutions, as it draws the professionals of the nursing team to the collective dialogue, not personifying the error to those who committed it directly.

The limitations identified in this study refer, at the same time, to suggestions for future research with regards to this topic, from the systematic observation of the nursing team in the preparation and administration of medications. Therefore, it is believed that by obtaining better results, it will be possible to elucidate the processes of coping with the error and, consequently, the visualization of potential and institutional weaknesses in the implementation of the safety culture.

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