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Analysis of publications on drug administration in nursing care: an integrative review

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ABSTRACT

Objective: Analyze the publications that focus on the administration of medications in nursing care in major databases in the period 2007 to 2011.

Method: An integrative review study conducted in the databases of the Virtual Health Library (Lilacs and Scielo) in the period from 20/05/2011 to 18/06/2011 in 16 references analyzed between the years 2007 to 2011.

Results and Discussion: Stand out as keynote discussions, training with the help of the virtual environment of learning through distance education, errors in prescriptions that led to errors in medication administration, importance of prevention to avoid mistakes.

Conclusion: Yet if such occurrences are attacks with directions, recommendations and staff training, better communication between them, then the work environment will be better and the risks related to errors in medication administration will decrease sharply.

Keywords: Administration of Drug Therapy, Nursing Care, Nursing

INTRODUCTION

Drug administration in a health institution is a complex and multidisciplinary task; in which all involved professionals aim to provide a quality care service, with safety and efficacy to the patient. The organization of the process of administration of drugs of an hospital institution and the efficiency and safety offered to the patients depend on the management of the therapeutic plan established by the responsible nurse and the participation of the whole multidisciplinary team.

About the complexity of the administration of drugs on a multidisciplinary team, there is the need to think about the challenge of the actual health system, characterized by the technological revolution and of elevated specialization within this context.

Basically, this team is constituted by doctors, who are responsible for the prescription of the drugs, the responsible nurses for the administration of the medication, and the pharmacists, for the manipulation. Under doctor's function, the prescription needs to be easy reading and yet answer the needs of the patient, which demands a practical diagnosing analysis in consonant with the reality of the patient. About the nurse, the function requires the thought and the exercise of professional judgment into the analysis of drugs to be administrated. The pharmacists will manipulate the medication and will refer it to aid the whole team, through the identification of patient data, verification of dose correspondence, evaluation of components in relation to stability, compatibility and possible interactions.

Therefore, it can be observed that this whole process involves a considerable amount of attention, including the communication among the members of the team, which is made significantly important, as any fault in any phase of the process to be can cause some disorder to all multidisciplinary team and to the patient, leading to errors in the administration of medication⁽¹⁾ that can develop into serious problems.

For an assistance which is safe and in excellence, it is needed that the communication system is efficient of the administration of drugs, allowing the multidisciplinary team to

exchange information in a clear and concise way, and this information must be transmitted among all professionals⁽¹⁾.

The verbal or non-verbal multidisciplinary communication originated from the register must give relevant data about the patient and qualify the assistance given. Besides that, as a basic care instrument, it has to reflect compatible abilities with the performance of the multidisciplinary team⁽²⁾.

Another relevant matter is referred to the adverse effects, that are undesired implications from the use of a certain medication. An adverse effect comes from an unplanned, undesired effect originated by a medicine. These effects can come as toxic effects or collateral effects. A toxic effect is an effect that ignites in consequence of the intensification of the same pharmacological effect responsible for the therapeutic effect of the drug; as a consequence, it is treated as an effect related to the dosage. A collateral effect is meant to be an adverse effect that comes from some pharmacologic reaction different from the one that produces a therapeutic effect (these effects can be related or not with the dosage)⁽³⁾.

In the drug therapy, there are some necessary information to understand an adverse effect, which are: adverse reaction that can occur due to losses related to drug in normally used dosage in a man in prophylaxis, diagnose and/or treatment of a certain illness; some sort of mistake in medication that will be defined as a flaw to the process of administration of drugs, that can come from the prescription, preparation, administration or monitoring; it can also arise potential errors as occurred events, but won't cause any damage to the patient, since the mistake was corrected even before causing any harm to the patient, or the dosage that was administrated was fixed, without causing an injury to the patient.

The adverse effects are those unexpected and that can cause damage or lesion to the patient by the health team, either caused by the use or by the lack of use of any medicine when needed.

Then, it is important to identify which are the most common errors when a medication is placed by the nursing team (nurse, technician or assistant), there is the necessity to

visualize the risk factors that lead to these mistakes, and as soon as possible, to take necessary steps to prevent and avoid at all costs the mistakes in the administration of drugs⁽⁴⁾.

Due to the ethical aspect, the nurse must prepare and administrate venous medications, saline and any other type of medicine to be given to the patient, so then the code of ethics will be respected and the nurse will avoid administrative penalties that are applicable, and are a result from the violation with patient's care/. These penalties are seen on the Code of Ethics of Nursing Professionals⁽⁵⁾.

According to the Code of Ethics of Nursing Professionals, based on the COFEN Resolution 311/2007, the nurse must have ethic, scientific, technical and legal competence to safeguard the attributions given, aiming the safety of the patient and family members, without damages caused by malpractice, negligence or imprudence. These are the basic principles of nursing care⁽⁶⁾.

Besides that, the nursing professional, according to the Law 7,498, from June 25th 1986, has as privative activity the following attributions: planning, organizations, coordination, execution and evaluation of the services of nursing care; prescription of nursing care; nursing direct care to critical patients, whose life is at risk; nursing care of higher technical complexity that demand scientific base knowledge and capacity to take immediate decisions. These privative activities draw attention upon the responsibilities facing the specific attributions to professional exercise of the nurse no in relation to the administration of drugs⁽⁷⁾.

Those tasks are single and only responsibility of the nurse, who has to practice them with a total attention and responsibility on the execution of his professional activities.

Then, according to these statements, the goal of this paper is to analyze the publications that aim to the administration of drugs under the nursing assistance on databases from 2007 to 2011.

This study has shown as relevant to the research and to the teaching of nursing since there are still some errors found in the administration of medicine and the critical consequences of these mistakes can cause to the team and especially the patient. The

relevance has been also proven by the vast use of this study, such it is a research that involves multiple professions, and besides the fact this topic has been reported and commented many times, there are few papers discussing this issue.

METHODOLOGY

For this study, a integrative review was performed. The data collection period was from May 20th to June 18th 2011, on the following databases of the Virtual Health Library: Lilacs (Latin American and Caribbean Literature in Health Sciences) and Scielo (Scientific Electronic Library Online).

The integrative review is a method that provides a synthesis of all the knowledge and the incorporation of the application of results in significant studies in practice⁽⁸⁾.

Another relevant aspect is that the integrative review is a broader methodological approach than other reviews, allowing the inclusion of experimental and non-experimental studies to a complete comprehension of the analyzed phenomenon. It also matches information from theoretical and empirical literature, and incorporates a wide range of proposals: concept definitions, review of theories and evidences, analyses of methodological problems of a particular topic. The wide sample, added with a multiplicity of proposals, may generate a consistent and comprehensible panorama of complex concepts, theories of health problems relevant to nursing⁽⁸⁾.

It is needed to say the following descriptors were used: Administration of Drug Therapy; Nursing Assistance; Nursing.

The Criteria of Inclusion of the references were the following: articles published in Portuguese, English and Spanish; to be adherent to the proposed goal; they have at least one year of publication between the years from 2007 to 2011; they also must mention the topic of administration of drugs in the nursing field. The analysis of the references was based on the publications of the past five years (from 2007 to 2011) as a virtue to analyze the recent data referred to the administration of medicine.

The criteria of exclusion were the articles that had repetition in the databases; no adherence to the questions referred to the administration of drugs by nursing assistance; papers not published in full and that the approach did not contributed to the knowledge in the field of nursing.

We have performed a superficial reading of the references and, therefore, from the 14 found references on Lilacs, only five references had adherence to our goal; from the 36 references found on Scielo, 11 had adherence and were used based on the inclusion criteria established previously.

On Scielo database, the 11 selected references were all related to the field of knowledge in health and nursing, and as a consequence, while performing a detailed reading, there was an evaluation they, in fact, dealt with errors in the administration of drugs.

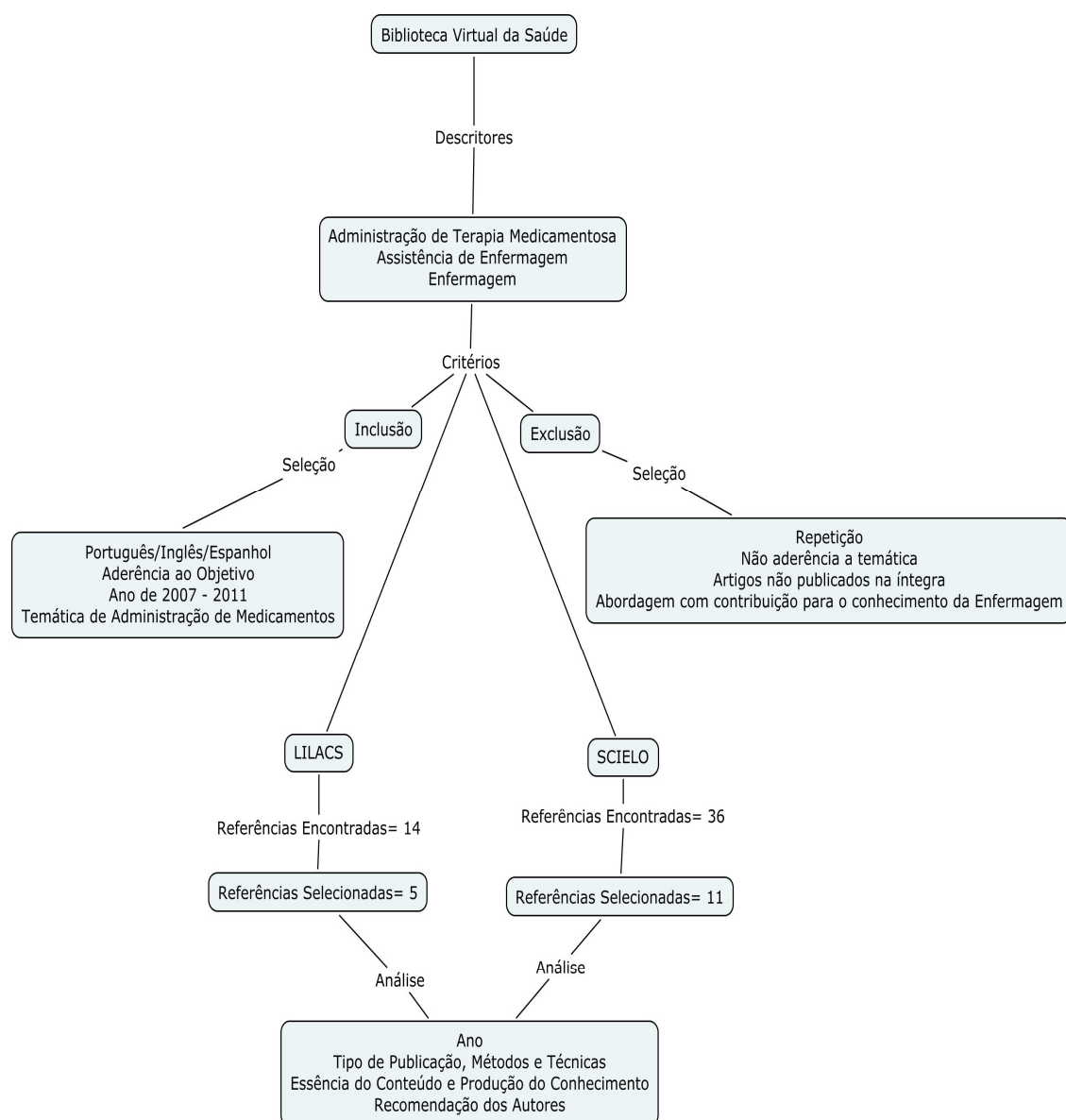
On the Lilacs database, there were 5 selected papers, and all were approved. In other words, the analyzed references were 16, as 11 (68,75%) came from the Scielo database and 5 (31,25%) from Lilacs.

Within this context, the integrative review offers to the professionals from different health areas a quick access to relevant research results that support these conductions or decision making processes, generating a critical understanding⁽⁹⁾.

It is worth to highlight that to analyze and validate the proposed content, we counted with a second evaluator with professorial experience, who is a full-time professor in his original institution.

The following flowchart shows the abovementioned information:

FLOWCHART OF THE METHODOLOGICAL PROCEEDING: INTEGRATIVE REVIEW



RESULTS

For the analysis of the information obtained, the content found was organized by the year, type of publication and methods/techniques used, essence of the content and knowledge production, and recommendation of the authors.

Therefore, the quantitative of the references per year, we have the following: on the period of 2011, there wasn't any reference that fit the established criteria. However, 37.5% of the references were found in the year of 2010; 18.75% of the references were found in the year of 2009; 18.75% of the references were found in the year of 2008; 25% of the references were found in the year of 2007. This demonstrative allows us to affirm that, in the period from 2007 to 2011, there was a slight increase of the publications referred to the mistakes in the administration of medicine, taking into consideration the questions of nursing assistance and iatrogenic situations.

When analyzing the type of publication referred to the type of method and techniques of research used, we found 43.75% of the references using a descriptive-exploratory type; 25% of the references are literature review; 6.25% of the references are from data collection; 6.25% of the references are performed through literature review.

This tendency demonstrates the importance of the development of the studies about the topic of administration of drugs and its implications to the professional exercise of nursing, and consequently, to aid the clientele.

Besides that, about the type of publication, 6.25% of the references were developed through experimental study; 6.25% of the references are descriptive-retrospective study, and 6.25% are descriptive studies with transversal design. In this period, the majority publications were aiming the descriptive-exploratory study, neglecting the other modes.

Concerning the essence of the content and production of knowledge, we found 18.75 % of the references that showed a tendency to suggest a qualification, with the help of the virtual learning environment such as Long Distance Learning, in 18.75% of the references showed many errors in prescriptions, 12.5% of the references reported the importance of prevention.

Yet about the essence of the content, 6.25% of the references were data collections of doubts of the nursing team, 6.25% referred the categorization of articles and journals about the topic of administration of drugs, 6.25% of the references were through applied questionnaires to the nursing team to evaluate the knowledge of the team itself, to verify the knowledge of the team about the topic, 6.25% reported labor accidents during the preparation of drugs, 6.25% showed the procedures, actions and tasks the nurse must proceed for the administration of medicine, 6.25% of the references mentioned that the nurse himself that prepared the drug is the one that must administrate it, 6.25% of the references reported diverse methods, techniques of administration of drugs in patients through nasogastric tube, 6.25% of the references mentioned that nursing is yet a conservative towards the progress in the administration of drugs.

We could perceive that, according to the studied references, 25% of the errors in the administration of drugs are related to the lack of interaction amongst the multidisciplinary team members, because of the lack of proper information to know how

to solve any struggle during the administration of the medicine. Among these 25%, we found many labor accidents that are also related to the lack of previous knowledge by the nursing team to the administration of drugs.

As mentioned previously, in 18.75% of the references use the learning-teaching model through many existing medias, such as: the internet, videos and other medias, that have been used to assist distance learning as a very useful, with positive results. Thus, it is perceived that the many modes of communication are quite functional for educational purposes nowadays, in any area of knowledge.

In 6.25% of the references show that technicians and assistants have some doubts related to the administration of drugs, and then they normally look for the responsible nurse of the institution or of the sector to clear out doubts, but when these questions are not answered, the probability of errors during the procedure rises.

About the authors' recommendations, it was found in 18.75% of the references that reported the media, the internet and other mass medias are essential for distant teaching-learning, which those communication venues are considered of a great value.

Concerning the other recommendations, it was found 6.25% of the references in relation to the following items: the multidisciplinary task of the team, the elevation of the number of paper publications, prescription and records with more information about the medication used, more technical-scientific knowledge to obtain less amounts of errors, higher attention to the discard of the used material and the administration of drugs, drug therapy and general orientation, the search of elements that lead to the mistakes in drug administration, improvement in communication between the patient and the nurse, the respect to the Code of Ethics of the Brazilian Federal Nursing Council, the following of correct techniques of drug administration, raise of the number of members in the team, elaboration of strategies and recommendations to avoid errors and search for a more supportive therapy.

DISCUSSIONS

Some of the mistakes in drug administration could be avoided if there was a double-checking of medical prescription orders (hour schedule, dosage and presentation of the drugs sent by the pharmacy). This is an attitude that aims to reduce the flaws in medicine administration. It is important to mention that nursing is the final Bond of the process of drug administration, and the actions here performed can prevent or not the occurrences of errors. Besides that, there is also a report of errors by the patient. The client will only know what is being administrated if the collaborator speak out which drugs is being used, dosage, via, among others. The patients are starting to participate more of their own drug therapy and end um recognizing the medicine by the color,

format, and consistence and, as a consequence, they end up giving a hand while preventing mistakes. An error detected during the scheduled time for the prescription, a moment that demands considerable attention by the professional, allows the nurse to detect it and prevent future other errors, besides the wrong set sent by the pharmacy⁽¹⁰⁾. Aiming the prevention of these mistakes, among others, it is important to consider the written and electronic prescription whenever possible (hoping for it is legible enough) or that it is coherent to the necessity of the client, use of a code for some drugs and patient's identification, dispensation by unitary dosage, preparation of medicine always observing the basic principles of drug administration for a chemical safety of the drug itself, notification of any adverse effects found, multidisciplinary interaction (pharmacy, doctors and nurses) and continuous review of the prescription.

The development and implementation of distance courses to enhance the knowledge of nursing professionals are a relevant tonic, once they promote, through the use of the information and communication technology, a certain education that requires interactivity, stimulates the research based on the active participation of the nursing professionals, and therefore, also contributes to the patients to obtain a singular nursing assistance.

The elaboration and planning of this learning format were done in accordance to the activities to be implemented by the students. Many formats of interaction between student-student and student-teacher were developed, such as: reading support, frequent questions, among others. This enabled another learning format, which demonstrated to be more dynamic and comprehensive⁽¹¹⁾.

According to the analyzed references about labor accidents in a micro region of the Brazilian state of Minas Gerais, nursing professionals from a vast range of age, pointed that the errors are related to the academic background, insufficient professional qualification, and huge workload, among others. These labor accidents affect negatively the image of the health professionals, as they are predictable, which they are not, thus creating an idea that the care dispensed to the patient is deficient⁽¹²⁾.

The analysis of the references in relation to the main cause of the errors in drug administration shows that the most influential reasons are: dosage mistakes, non-authorized drugs, mistakes of time scheduled and technique, via errors, prescription mistakes, among others. On the other hand, the same analyzed reference mentions that the process of medicine administration is applied in accordance to protocols established by every hospital institution, thus it varies from one institution to another⁽¹³⁾.

According to the references, we can thus deduce when the technical-scientific knowledge is not being applied in consonant to the regimented parameters dictated by the regulation institutions of the nursing practice, and that is taught by universities and high schools, therefore develop a certain deficit in their knowledge background and then it

becomes necessary previous orientation by the team responsible person to avoid such errors in drug administration.

The distant learning proposal through the use of technology, as observed in the references, has shown itself quite useful for education and capacitating of nursing professionals, leading them to learn and insert themselves gradually into the labor market. Despite that, it is also observed that distance learning using many other ways of communication has, at the same time, helped the nursing professionals to update themselves.

The administration of medicine is one of the biggest challenges a nursing team has while taking care of a patient. To execute this practice professionally, it has to be done responsibly, efficiently, safely and ethically, aiming to reach the objectives of the proposed therapy, and then, proportionate a development of the clinical situation of the patient and an elimination of the possibility of error occurrences. For such result, the practice of drug administration has as a base, the knowledge and the respect to human dignity⁽¹⁴⁾.

One error in medicine can cause or take inappropriate use of certain drugs, or even to a lesion to the individual. The mistakes in prescriptions cause damage to patient's health, and because of that it is important to prevent these accidents to happen. The process of drug administration involves many members of the multidisciplinary team. On the other hand, the nurse has a fundamental role in the preparation and administration of drugs, therefore, a total attention is indispensable to prevent errors⁽¹⁵⁾.

These health professionals can be targeted in judicial lawsuits, because of negligence, imprudence or even bad practice or inability when managing the medicine, which leads these professionals to be taken into court by the Brazilian civil legislation. This reality has been perceived by the hospitals, which are investing in training and in standard and proceedings orientations for these health professionals. This will lead to a reduction of errors at the time of medicine administration and to a better conduct of these nurses, technicians and nursing assistants⁽¹⁰⁾.

The doubts of assistants and technicians when performing the administration of any drug, as seen on the studied references, the generic name of brand name, the similarity of names, and so forth, can be factors of dubious elements by these professionals. There are also the doubts in medical prescriptions. As a whole, the pharmacist is one of the main sources to clear out doubts, although not the most indicated one, as there are doubts, which are related to the medicine administration, and only a nurse can solve those doubts.

In relation to one of these references, it was found within the context that the multidisciplinary task is of fundamental importance to the occurrence of a good and appropriate working environment. Thus, there is more interaction among the members of

the team, and then a decrease of the quantity of errors that were existent in this same team, coordinated by a nurse.

Many recommendations are important for the improvement in communication and the assurance of correct drug administration, such as the ones that follow: electronic prescription system; identification of the patient by watchband or bracelets; presence of a pharmacist in the team, among others⁽¹⁾.

Because of these references, it was observed that the majority of the errors in drug administration occur as a lack in technical-scientific knowledge, errors in preparation and in the disposal of material, and lack of communication and previous orientation towards the medicine therapy. Other than that, if such mistakes were to be avoided with proper orientation, recommendations and team training, a better communication system among the team members, leading to a working environment that would improve and the risks related to the drug administration would then reduce drastically.

FINAL CONSIDERATIONS

In fact, it is seen that many challenges in the field of drug therapy are related to the nursing team. And one of the most important goals is to reduce the errors in the administration of medicine from the understanding of originating factors and the creation of strategies to solve the problem. The administration of any type of drug requires from the nurse a certain background of scientific and technical understanding and also professional abilities to perform the medicine therapy.

The fundamental principals of drug administration by the nurse include: to evaluate if the prescribed drug is correct, to evaluate the capacity of the patient to self administrate the medication, to determine the best schedule to administrate the drug, and to monitor the effects. The nurse that prepares the medication should manage it, and not delegate the administration to assistants and technicians. These proceedings helped quite a lot into the reduction of errors in drug therapy, which led to an improvement in nursing care⁽¹⁵⁾.

Hence, beyond the exposed factors to diminish mistakes in drug administration, we must consider the workload, the number of professionals per sectors, the training through continuing education and the qualification of the professional to act as a nurse. Since these factors were taken into consideration, they will facilitate the prevention of errors and work-related accidents, making that the job of the nurses to be more and more respected everyday.

The updating of professionals, the expert technique development, the efficient communication within the teams, the good labor conditions and the respect to the regulation institutions permit an effective drug administration, avoiding at all costs any error

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