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ERROR DETECTION IN THE PROCESS OF DISPENSING OF INTERNAL MEDICINE AT A HOSPITAL PHARMACY OF SOCIAL SECURITY

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ABSTRACT

The present study aimed to identify errors in the process of dispensing drugs at the Internal Pharmacy of the Hospital Social Security, in Paraguay, South America. A descriptive observational study was designed, whose main variables were identification of errors and its classification according to international standards (LASA). The unit of analysis was recipes, which were aleatory chosen to be included in the study. The data collection tool consisted in a file record specially prepared for this purpose, in order to characterize and evaluate the detected errors. 1349 recipes performed during the period of the study were analyzed. There were detected 85 errors, which were classified according to LASA standards in errors caused by two major causes: similar package and similarity in medication's sounding names. Both increased the possibility of errors either in fingering, dispensing, provision and administration of these drugs. Of all the mistakes committed, only one was due to an adverse drug reaction. The result of our work indicates that the prevalence of errors found was due to lack of care and training of health's staff.

Keywords: Adverse Drug Reactions - Medication errors - Pharmacists

INTRODUCTION

Pharmaceutical Care means a responsible provision of pharmacological treatment in order to achieve concrete results that improve the patient's quality of life. These results are relate to the cure of the disease, elimination or reduction of patient's symptomatology, interruption of the pathological process, prevention of a disease or symptomatology and modification of the natural history of the illness[1]. The National Coordinating Council for Medication Errors and Prevention Report (NCCMERP) defines medication errors (ME), as "any preventable incident that may cause harm to the patient or an improper use of drugs, when medication is under the control of any of the health professionals or the patient/consumer[2]. Medication errors (MS) have been present since the beginning of medication use. At present, errors in the dispensing of medicines have gradually increased in pharmacy services, a situation that is present not only in underdeveloped countries, but also in developed countries[3]. A study carried in Spain by a group of community pharmacists in Valencia found a percentage of 0.23%, of which 38% were detected when the user collected the medication, 30% were detected during the subsequent review of the prescriptions and 32% once the patient was at home. That means that 6 errors out of 10 reach the patient. Regarding the type of error in 36% the mistake was due to a wrong dispensed, another 36% the error was related to dosage, 14% was associated to a different drug formulation than the original prescription and 14 % implicated a different package sized than the one prescribed. Dispensing medicines need well trained human resource and requires a suitable education and willingness to work, all under the supervision of a qualified Regent in order to achieve success in the institutional efforts[4,5]. This research was carried

out in an Internal Pharmacy of a Social Security Hospital located in the City of Coronel Oviedo, Paraguay. This Hospital offers the services of Ambulatory care in the specialties of gynecology, pediatrics, general surgery, medical clinic, cardiology, ophthalmology General Urgency Area, as well as health's practices like Laboratory, RX, Ultrasound, PAP, Vaccination, Electrocardiogram and Internal Pharmacy dispensation service and pharmaceutical counseling that operates 24 hours with 5 Pharmaceutical Chemists, 4 technicians and 3. Patients who demands pharmaceutical service have mostly chronic disease (hypertensive, diabetic) and / or terminal patients. About 10,000 consultations are performed each month. To determine the prevalence of errors detected in the dispensing of drugs for technicians and pharmacists who perform their duties in an Internal Pharmacy Service of the Social Security Hospital (IPS-SSH) we initiated the present study.

MATERIALS & METHODS

A descriptive observational study was designed in order to determine the prevalence of errors in the dispensation committed by the officials (Pharmacists and Technicians) who exclusively perform the dispensation of medicines in IPS-SSH). All dispensations performed by staff of both sexes and ages were included in the study while dispensations made by the Regent, Keeper of Deposit and Head of Pharmacy were excluded from the protocol of analysis. The period of the study was from 1st of November 2014 to 1st January 2015.The variables of interest were prevalence of errors by dispensation; the type of mistake (dosage, similar package presentation, pharmaceutical presentation); adverse drug reactions (R.A.M.); dermatological, gastrointestinal and neurological problems associated to drug use (P.R.M.); drugs interactions and doses duplicity problems. It was also registered at what level the errors were detected (ambulatory level, inpatients, making daily inventory, pharmaceutical periodical controls). Sampling was a non-probabilistic for convenience method. The collecting instrument was a formulary (record prepared by the authors) specially designed for the purposes of the investigation. The data collected from the applied sheets were categorized and downloaded in a master sheet in Excel spreadsheet. For the analysis and interpretation of them, they were summarized by graphical representation through frequency shown in tables and graphs, taking into account the variables under study and the objectives of the research.

NOTIFICACION FORM
TYPE OF MEDICATION ERROR
(Check the following options according to your choice)

1. Medicament not indicated/apropiado	2. Therapeutic Duplicity	3. Dose Omission
4. Incorrect dojage: Major Minor	5. Drug with similar package	6. Wrong pharmaceutical presentation
7. Inpatient manipulation Operating room	8. Similar active ingredients	9. Wrong route of administration
10. Wrong patient	11. Incomplete Medication	12. Expired Medicine
13. Stock replacement		
16. Otro (especificar).		

1. Prescription	2. Transcription	3. Dispensation	4. Storage
5. Drug Manipulation	6. Administration	7. Monitoring	8. Other (specify)

1. Pacient	2. Nurse	3. Pharmacist
4. Nurse Operating room	5. Stocktaking	6. Medical doctor

1. Dermatological	2. Gastrointestinals	3. Neurological
1.1 Rashes	2.1. Mucositis	3.1. Convulsion
1.2. Blisters	2.2. Constipation	3.2. Vertigo
1.3. Hives	2.3. Sickness	3.3. Psychiatric Disorder
1.4. Erythema	2.4. Colitis	3.4. Tremor
1.5. Dermatitis	2.5. Renal failure	3.5. Psychomotor agitation
1.6. Others	2.6. Vomiting	3.6. Headache
	2.7. Others	3.7. Insomnia
		3.8. Others

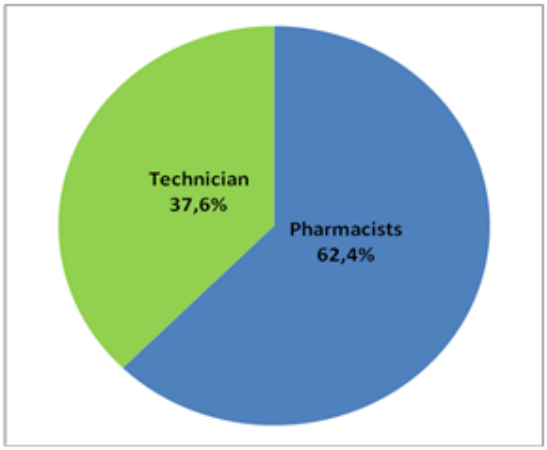
RESULTS

During the duration of the research, a total of 1,349 prescriptions were evaluated. Of them 6.3% (n = 85) presented errors in the medication. When differentiating by month, we found a higher prevalence of errors in the month of December than in November, 7.8% and 5%, respectively (Figure 1)

Figure 1
Prevalence of errors during the research

total of 1349 recipes were received during the period of research, 85 errors of them were recorded in the pharmaceutical service, of which 62.4% were committed by technicians and 37.6% by pharmacists (Figure 2).

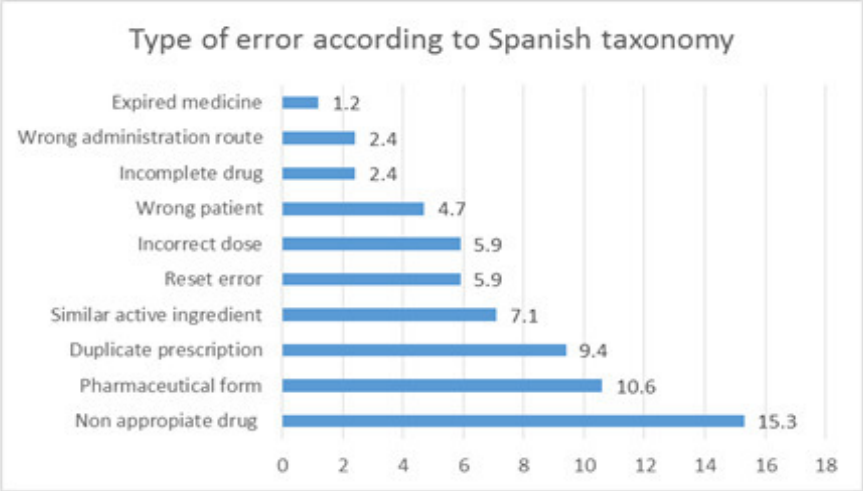
Figure 2
Errors committed by pharmaceutical officials



The errors were classified as follows:
1) Medication not indicated / not appropriate
2) Wrong pharmaceutical form
3) Therapeutic duplication
4) Similar active principle
5) Drug error reset
6) Incorrect dose
7) Wrong patient
8) Incomplete medication
9) Wrong management route
10) Overdue / impaired drug

In the 15.3% of the cases the medication not prescribed. According to the Spanish Taxonomy Classification only 1.2% of the errors was due to the use of expired or deteriorated drug (Fig. 3).

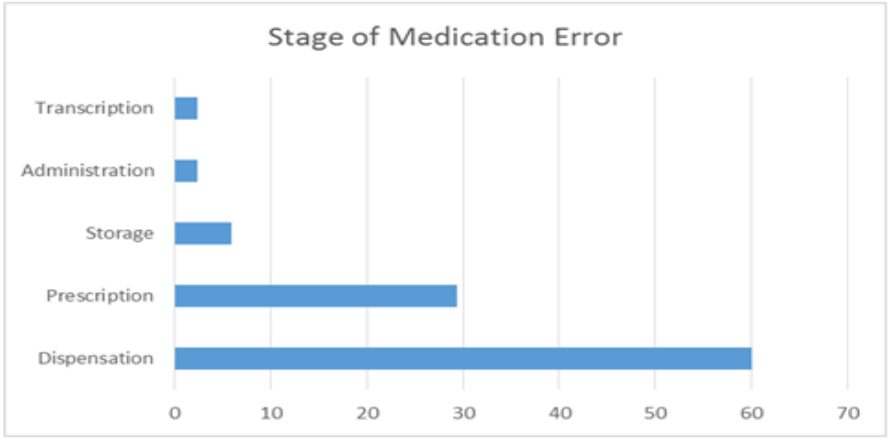
Figure 3
Types of medication errors according to Spanish Taxonomy



STAGES IN WHICH THE ERROR WAS PERFORMED

Sixty percent of the errors detected occurred during the dispensing stage, prescription 29.4%, storage 5.9%, drug administration 2.4%, recipe transcription 2.4% (Figure 4).

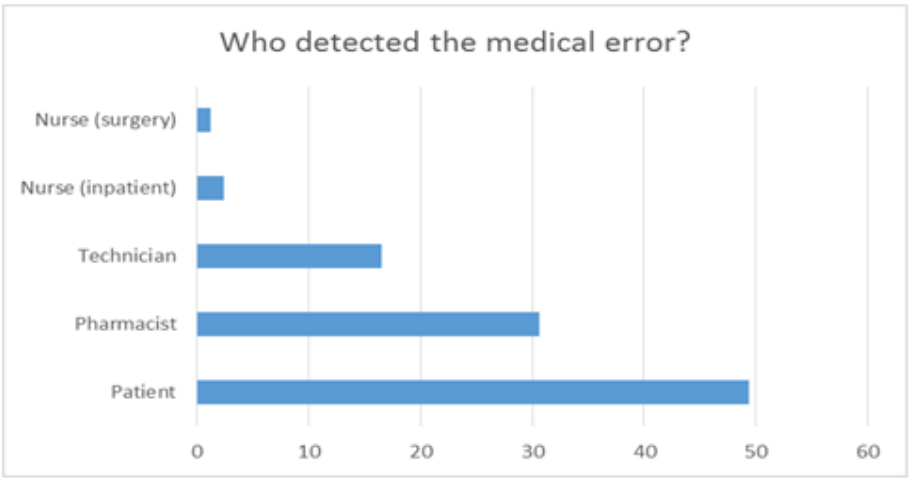
Figure 4
Stage of medication errors



ERROR DETECTION

In the classification of the files it was found that 49.4% of the errors were detected by the own patients and the lowest percentage was detected by the operating room nurses (1.2%) (Figure 5).

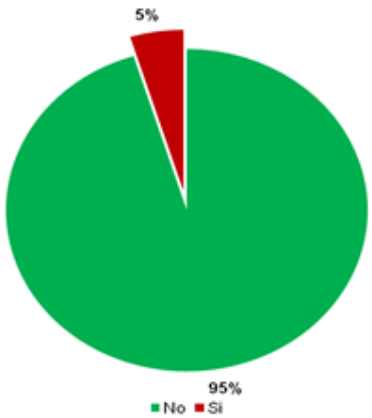
Figure 5
Who detected the medication error ?



ADVERSE REACTIONS FOUND

Of all the errors found, only 5% represented an adverse drug reaction and this reaction was due from colitis to ova ingestion (Figure 6).

Figure 6
Frecuency of adverse reactions



DISCUSSION

The errors that occur in the medication of patients once the study was initiated, is a measure to determine the frequency of errors in drug dispensation[6,7]. In order to establish the importance of the problem, it is imperative to use an incidence design, which takes into account the period of observation, as developed in the present research. The study carried out by pharmacists group in Valencia found an overall a percentage of errors in medication of 0.23%, and, as we already mentioned 38% of them were detected when the user collected the medication[3]. Comparing this research and others performed by other authors[8,9], we could said that in our hospital the medication errors are much frequent (6.3%) that other places. We could also say that in 60% of the cases the mistake was observed during the dispensation period. In 49.3% of the errors, the same patient was the person that first noted the mistake according to the work in the Pharmacy of the Institute of Social Welfare. Similar studies in other institutions and with longer period

of time of follow up[10], will be required to demonstrate the frequency tendency observed, however, this is a first work in that sense that might alert health local authorities about this problem.

CONCLUSSION

The frequency of medication errors in the total sample was higher than those reported by other authors. Half of the medication errors were committed by pharmaceutical technicians. Regarding the type of errors identified, the most prevalent mistake was because drugs were not indicated, followed by wrong pharmaceutical presentation administration, while the less prevalent cause was drug expired or deteriorated. The errors were detected in the majority of cases during the dispensing period, and almost half of the errors were identified by the own patients. Only one of the 85 identified errors reported adverse drug reactions. It is important to highlight the need for a professional to monitor the occurrence of errors since this problem could be higher than what we think. Pharmacists, as drug experts, must take the lead in preventing and eradicating medication errors by detecting, investigating and correcting them in order to propose new measures to ensure patient safety in each one of health's institutions.

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