



International Journal of Research in Pharmacology & Pharmacotherapeutics



ISSN Print: 2278-2648

IJRPP |Vol.8 | Issue 2 | Apr - Jun - 2019

ISSN Online: 2278-2656

Journal Home page: www.ijrpp.com

Research article

Open Access

Role of clinical pharmacist in reporting medication errors

Dr.Sneha P, HajeraNooreen, Rafiya Fatima, RuhinaTabassum, Gulafsha Fatima

Department of Clinical Pharmacy Practice, MRM College of Pharmacy, Chinthapaliguda (V), Ibrahimpatnam (M), R.R. Dist. Telangana 501 510.

Approved by AICTE, PCI and Affiliated to JNTUH (Kukatpally, Hyderabad)

***Corresponding author: Dr.Sneha.P**

Email:dr.snehamythri@mail.com

ABSTRACT

Aim

The aim of the study is to assess the medication errors in a secondary care hospital. A medication error is a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient. Further, the study was aimed to categorize medication error in hospitalized patients in general ward and in pharmacy.

Method

A prospective observational study was carried out for period of 6 months from September 2018- February 2019 in secondary care hospital for inpatient and pharmacy department. Major and minor findings are recorded for the demographic details, drug details and criteria for identifying errors and rationality of prescription.

Results

The study was conducted in 350 patients, among them 248 errors was identified and non-error identified was 102. Out of 350 cases 34% are major errors and 66% are minor errors. The majority of errors were found in nursing (47%) followed by prescription errors (46%).

Conclusion

The prospective study was carried out in inpatients and pharmacy of secondary care hospital. The primary objective of the study was to find out incidence and types of medication errors. Our result comply with the ASHP guidelines for addressing numerous areas in the medication use process where errors may occur. In our study we found majority of errors occur in nursing followed by prescription. All healthcare professionals have a responsibility in identifying contributing factors to medication errors and to use that information to further reduce their occurrence. The clinical pharmacist has major role in identifying, assessing and preventing the medication errors.

INTRODUCTION

Medication error

A medication error is outlined as any preventable event which can cause or lead to inappropriate medication use or patient harm while the medication is in the management of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, and systems, including prescribing, ordering, product labeling, packaging, compounding, dispensing, administration, education, monitoring, and use .

Medication errors can occur at any point in the clinical setting during the medication use process. Pharmacists are more responsible for the appropriate use of the medicines and safety of the patient in all pharmacy practice setting.

Guidelines

These guidelines will serve as an exceptional resource for the entire patient care team and reflect ASHP's 76-year commitment to constantly improving medication safety through the development of cutting-edge guidelines and other resources. According to ASHP (American society of hospital pharmacist) guidelines, medication errors can be categorized into 11 types.

- Prescribing error
- Omission error
- Improper dose error
- Unauthorized drug error
- Deteriorated drug error
- Wrong time error
- Wrong dosage form error
- Wrong drug preparation error
- Wrong administration technique error
- Monitoring error
- Compliance error.

PRESCRIPTION ERROR

A Prescription error is defined as a failure in the prescription writing which results in a wrong instruction about one or more of the normal features of a prescription. Prescription error is a written order, prescribed by doctor which gives detailed instructions of what medicine should be given to whom, by what route, when to take and how to take, for how long to take. The normal features include the

identity of the drug, dose, formulation, route, frequency, timing, duration of administration.

Prescription errors are an important form of medication errors. Studies have shown that 15-21% prescriptions contain at least one prescribing error.

In a US study of about 900 medication errors in children, ~30% were prescription errors, 25% were dispensing errors and 40% were administration errors. In one study the most common form of prescription error was writing the wrong dose.

Errors in prescribing can be divided into irrational prescribing, inappropriate prescribing, ineffective, prescribing, under prescribing and overprescribing, and errors in writing the prescription.

Irrational or inappropriate prescribing

Prescribing of medicines when no medicine therapy is indicated. Irrational prescribing can be described as the medically inappropriate and economically ineffective use of pharmaceuticals.

Ineffective prescribing

Ineffective prescribing is the prescribing of a drug that is not effective for the indication for specific patient

Under prescribing

Failure to prescribe a drug that is indicated or appropriate dose for the patient (too low dose).

Over prescribing

Prescribing a drug in too high dose.

Illegible handwriting

In writing the prescriptions, the use of abbreviations, incomplete or unclear directions, and missing or unordered details of the drug.

DRUG INTERACTIONS

Drug-Drug Interactions (DDIs) are defined as a pharmacokinetic or pharmacodynamics influences of drugs on each other, which may result in undesired effects, reduced efficacy or increased toxicity. Published studies have reported rates of potential DDIs ranging from 2.2% to 30% in hospitalized and from 9.2% to 70.3% in ambulatory patients

Drugs with a narrow therapeutic range or low therapeutic index are more seems be the objects for serious drug interactions. Medications in common use include anticoagulants, fluoroquinolones,

antiepileptic drugs, oral contraceptives, cisapride, and 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors. Serotonin syndrome is a potentially life-threatening disorder of excessive serotonergic activity often due to drug interactions. Many other drugs act as precipitants or objects, and a number of drugs act as both.

Pharmacokinetics interaction

It occurs when one drug changes the concentration of another drug taken at same time with clinical consequences. It occurs by altering processes such as drug bioavailability, distribution, metabolism, and excretion.

Pharmacodynamics interactions are those where the effects of one drug are changed by the presence of another drug at its site of action.

Nursing error

In the nursing profession these errors can be simple in nature and easy to fix, or they can be life threatening. This means that you just cannot assume that the medication ordered (eg the dose or route) is correct for the patient – nurses ought be familiar with usual doses of medications, routes, therapeutic and side effects and correlation with blood results (eg, you wouldn't expect to be giving adenosine to a patient who needs atropine – the doctor may have written the wrong drug order).

Administration error- wrong patient, wrong route, wrong time, wrong dose, wrong drug, omission, failure to administer, inadequate documentation. One third of the errors that harm patients occur during the nurse

Administration phase

Administering medication to patients is so a insecure activity

Pharmacy error

A dispensing error could be a discrepancy between a prescription and the medicine that the pharmacy delivers to the patient or distributes to the ward on the basis of this prescription, including the dispensing of a medicine with inferior pharmaceutical or informational quality

Psychological classification of medication error

The following psychological classification relies on the work of Reason on errors generally. (54) This methodology yields four expansive kinds of medication error Mistakes can be divided into (i) knowledge-based errors and (ii) rule-based errors. Failure of skills are often divided into (iii) action-based errors ('slips', including technical errors) and (IV) memory-based errors ('lapses')

Knowledge based error (through lack of knowledge)

It is noises that antibiotic drug's will cause allergic reactions; knowing that your patient is allergic to penicillin is restricted knowledge; knowing that co-fluampicil contains penicillin's is professional knowledge. Mental object of any of those facts could lead on to a knowledge-based error. (55)An Australian study said that they are a communication problem with senior staff and difficulty in accessing drug-dosage information contributed to knowledge-based error.

Ruled based error (using bad rule or misapplying rules)

For example: injecting diclofenac into the lateral thigh instead the buttock. This type of error is avoided with proper knowledge

Action based error (called slip)

This type of error occurs during prescribing and dispensing of drug. For example: illegible hand writing of physician or intended to write ♣ chlorpromazine but instead writing chlorpropamide.

For example: picking up a bottle containing diazepam from the pharmacy shelf when intending to take one containing diltiazem.

These will be reduced by making conditions within which they're unlikely (for example, by avoiding distractions, by cross-checking, by labelling medicines clearly and by exploitation identifiers, like bar- codes)

Memory based error

Administration of drug unknowingly or knowingly that causes harm to a patient.

Causes of medication error

- Complex or poorly designed technology.

- Access to drugs by non-pharmacy personnel
- Dose miscalculations
- Lack of information to prescribers
- Lack of patients' understanding of their therapy
- Using acronyms of names
- Lack of therapeutic training
- Lack of drug knowledge and experience
- Lack of knowledge of the patient
- Lack perception of risk
- Overworked or fatigued health care professionals
- Physical and emotional health issues
- Poor communication between health care professional and with patient
- Limitations or prohibition on use of verbal orders.
- Mechanism to ensure validity/authenticity of the prescriber.
- To provide guidelines for clear and effective prescription.
- Training for all health-care professionals in drug use, adverse effects, and medication errors in patients.
- More involvement of pharmacists in clinical practice and during ward rounds.
- The use of non-ambiguous abbreviations instead of proper instructions. For example, writing "q.d" rather than writing "daily", could be misinterpreted as "q.i.d"(causing a drug to be given four times a day instead of only once).
- Prescribe exact dosage strengths (such as milligrams) rather than dosage form units (such as one tablet or one vial). An exception is the combination drug products, for which the number of dosage form units should be specified

Causes of pharmacy error

- Too many telephone calls
- Overload/ unusually busy day
- Too many customers
- Lack of concentration
- No one available to double check
- Staff shortage
- Similar drug names
- No time to counsel
- Illegible prescription
- Misinterpreted prescription

Medication error rate

MER is calculated by finding the percentage of errors. The medication error rate is the ratio of number of errors observed by opportunities of error into 100. The opportunities of errors may include all the doses which are administered and the doses ordered but not administered.

$$\text{Medication Error Rate} = \frac{\text{Number of Errors Observed}}{\text{Opportunities for errors}} \times 100$$

Recommendation for prescribers

The National Coordinating Council on Medication Error Reportage and Prevention makes the subsequent recommendations to cut back medication errors:

Verbal orders should be limited only in the emergency conditions, where written and electronic orders are not feasible.

The prescribers should take the accurate drug histories. Healthcare organizations should establish their policies and procedures to follow:

Recommendation for nurses

- Nursing staff are more involved in medication administration than other health care professionals which are identified as major contributors to medication errors.
- Recent studies reveal that medication administration errors is most common than the prescribing and preparing and it ranges from 19% to 28% of medication errors in hospitalized patients
- In a study of deaths caused by medication errors reported to the FDA from 1993 to 1998, injectable drugs were most often the problem;7 the most common type of error was a drug overdose, and the second most common type of error was administering the wrong drug to a patient
- Lack of updated knowledge, poor drug dose calculation among nurses may affect the health of patient. However researcher interested in assessing the nurse's knowledge on prevention of medication errors so that various continuing nursing education programmers can be organized to inculcate the nurses knowledge on prevention of medication error, hands on training for safe administration of medication5. • Studies has examined the types of medication errors

which is divided into the categories, according to the description of the event: omission error, wrong drug error, wrong patient error, wrong route error, wrong time error, wrong technique error, wrong dosage-form error. To avoid any type of medication error which are made by nurse, the implementation of preventive measures is more beneficial

- Lack of proper documentation for the medication which is needed by the patient can result in error. Ex: nurse forgot to document the medication name in the medication chart can result in another dose is being administered by another nurse.

Recommendation for pharmacist

When dispensing medications to ambulatory patients (e.g., at discharge), pharmacists should counsel patients or caregivers and verify that they understand why a medication was prescribed and dispensed, its intended use, any special precautions that may be ascertained, and other needed information. For inpatients, pharmacists should make their services available to counsel patients, families, or other caregivers when appropriate.

Pharmacists should be familiar with the medication ordering system and drug distribution system to provide for the safe distribution of all medications and related supplies to inpatients and ambulatory patients. That dispensing and storage procedures are followed and to assist nurses in optimizing patient safety

Pharmacists should observe how medications are actually being used in patient care areas to ensure Pharmacists should participate in drug therapy monitoring (including the following, when indicated: the assessment of therapeutic appropriateness, medication administration appropriateness, and possible duplicate therapies; review for possible interactions; and evaluation of pertinent clinical and laboratory data) and DUE activities to help achieve safe, effective, and rational use of drugs.

AIMS AND OBJECTIVES

Aim

To determine the medication errors in inpatient and pharmacy of a secondary care hospital.

Objectives

To perform the qualitative and quantitative analysis of prescription.

- To detect and assess the drug interaction.
- To identify the cause and source of medication error.
- To reduce the risk of medication errors through application of prevention strategies
- To determine the incidence of medication errors in the hospital.
- To maintain the patients safety.
- To assess irrationality of the drug use.
- The main objective is to report the prevalence of medication error

METHODOLOGY

Materials and methods

Study design

This is a prospective study conducted over a period of six months using questionnaires' as a tool. The study conducted at general ward, sharing room or ICU of the hospital and those visiting of OPD during a six months period from October 2018-March 2019 will be eligible for enrollment patient who meet the following criteria will be enrolled.

Collection of data

Using a suitably designed data collection from the following details

- Patient demographics
- Prescription chart
- Medical record
- Nursing notes
- Pharmacy in hospital

Inclusion criteria

All the inpatients from the general ward, ICU and prescriptions at pharmacy in secondary care hospital. All age group patients with co morbidities

Exclusion criteria

- Emergency department.
- Gynecology department.
- Outpatient departments.

Method and collection of data

Patient will be interviewed to determine the chief complaint, history of present illness, past medical and medication history

- Medical records of inpatient
- Patient prescription.

Duration of study

The Study will be conducted for a period six months

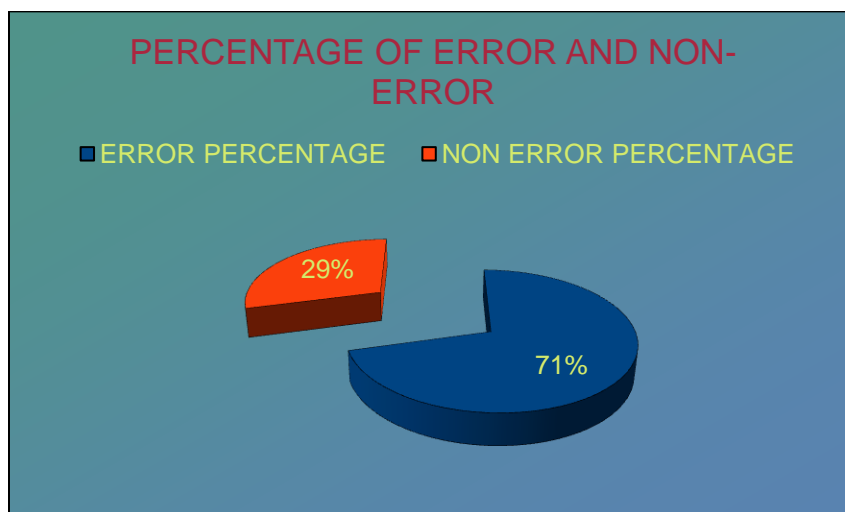
Place of study

Secondary care hospital

RESULTS

Different types of medication errors were noticed and reported among the study population. Our observation has been represented in tabular and graphical form. Various observations and interferences were compared and reviewed.

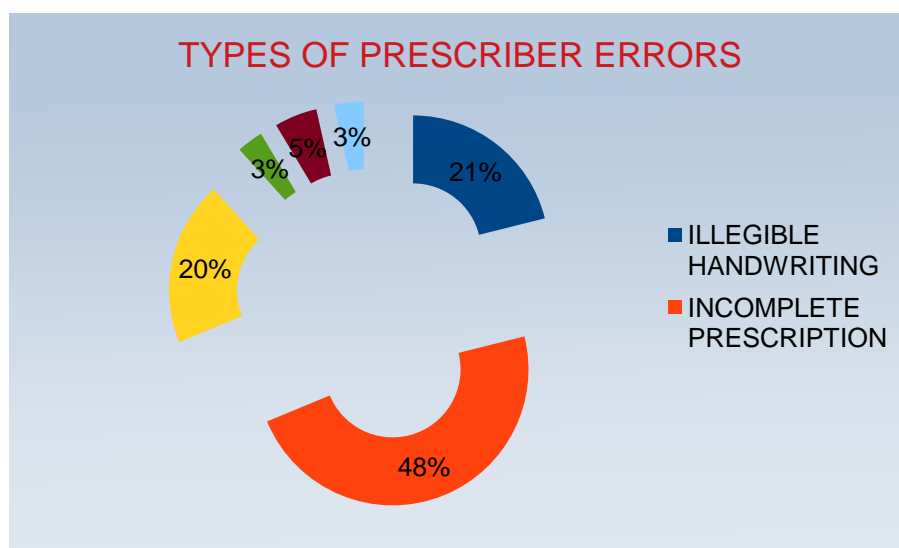
Number of error and non-error prescriptions



Percentage of prescription error

Among the total prescriber errors (i.e., 256), the drug interactions in the prescriptions are found to be

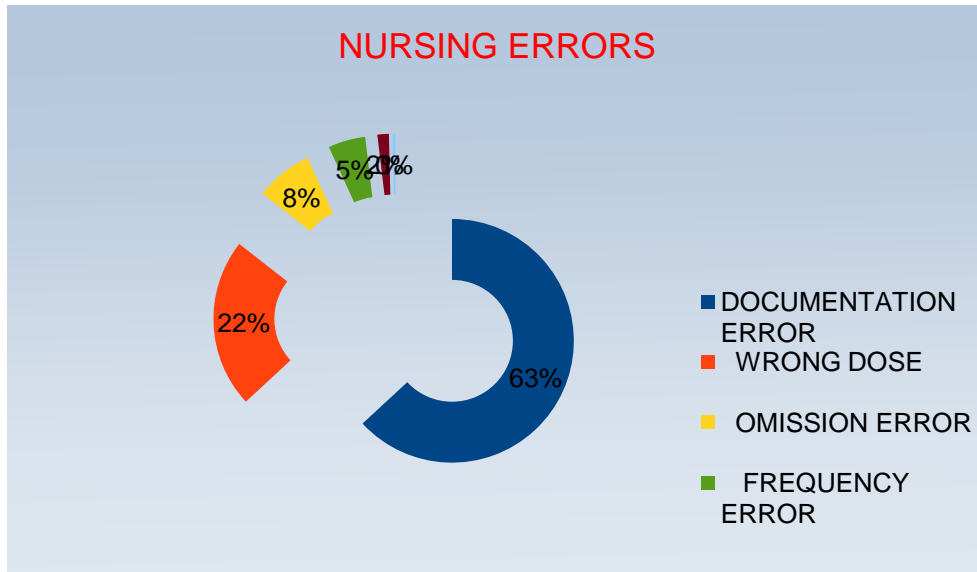
more which is of 50%, then followed by the incomplete prescription error and then by illegible handwriting.



Percentage of nursing errors

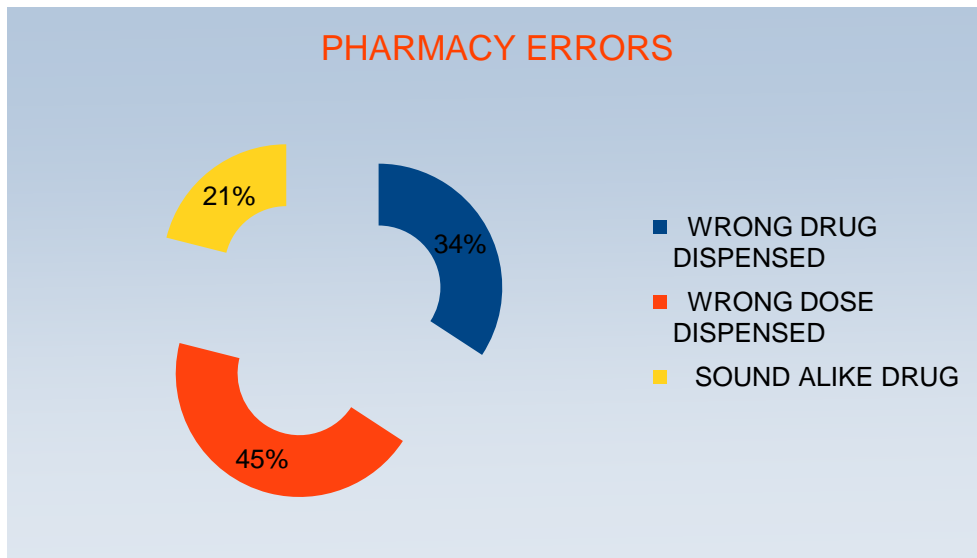
Among the total number of nursing errors which are 262, the percentage of documentation errors are found to be 63% , administration of wrong dose is

22.5%, omission error are 7.6% and frequency error are 4.9%.



Percentage of pharmacy error

Among the total of 38 pharmacy errors, wrong dose dispensed were 45%, wrong drug dispense were 34% and sound alike drugs were 21%.



Percentage of major & minor medication errors

Major medication errors

From the total of 556 medication errors around 33.9% (189) are found to be major medication errors which includes drug interactions(50), over dose(13), wrong dose(59), omission error(20), frequency error(13), route error(04), wrong dose dispensed(17),wrong drug dispensed(13).

Minor medication error

From the total of 556 medication errors around 66% (367) are found to be minor medication errors which includes incomplete prescription (122), illegible handwriting (54), under dose (08), irrational drug use (09), documentation error (166), sound alike drugs (08).

DISCUSSION

Medication errors are thought to be not a serious problem in health care system. Medication error is a source of significant morbidity and mortality in the health care system. Medication errors occur at any stage of treatment, like prescribing, administration and Dispensing. Clinical pharmacists play a major role in this situation for strong intervention by detecting and preventing medication errors to improve patient health. Medication errors are common in hospitalized patients.

In our study we observed that 71% are error prescription and 29% are non-error prescriptions The overall errors observed in our study was 71% from which, 34% found to be major and 66% found to be minor errors. The present study showed that male patients are more affected than females from medication errors.

During our study period, we observed 556 incidence of medication errors, from which 46% are

prescription errors, 47% are nursing errors and 7% are pharmacy errors. The present study also revealed that the risk of medication errors increases as the number of medications per prescription increases. The present study also shows that length of hospital stay increases with the increase in number of medication errors.

In our study, overall prescription errors are 46%(256) among them different prescription errors, incomplete prescription 48%,illegible handwriting 21%,potential drug interaction 20%,over dose5%,underdose 3% and irrational drug use 3%. The nursing errors are 47%(262) among them, documentation errors 63%,wrong dose 22.5%,omission error 7.6%,frequency error 4.9%,route error 1.5%,wrong drug administration 0.3%. the pharmacy errors reported were 7%(38) among them, wrong drug dispensed 34%,wrong dose dispensed 45% and sound alike drug 21%.The severity level assessment of medication error, belongs to the nursing errors followed by prescription errors.

CONCLUSION

The prospective study was carried out in inpatients and pharmacy of secondary care hospital. The primary objective of the study was to find out incidence and types of medication errors. Our result comply with the ASHP guidelines for addressing numerous areas in the medication use process where errors may occur. In our study we found majority of errors occur in nursing followed by prescription.

All healthcare professionals have a responsibility in identifying contributing factors to medication errors and to use that information to further reduce their occurrence. The clinical pharmacist has major role in identifying, assessing and preventing the medication errors.

REFERENCES

- [1]. https://en.wikipedia.org/wiki/Medical_error.
- [2]. <https://www.nccmerp.org/about-medication-errors>
- [3]. <https://rishp.org/Resources/CE%20Events/MEDICATION%20ERRORS>
- [4]. www.scielo.br/pdf/bjps/v49n4a19.pdf
- [5]. <https://academic.oup.com/qjmed/article/102/8/513/1598923>.
- [6]. ASHP guidelines on preventing medication errors in hospitals. AmJHosp pharm. 50, 1993, 305-14.
- [7]. Dean B, Schechter M, Vincent C, Barber N. Prescribing errors in hospital inpatients: their incidence and clinical significance. Quall Saf Health Care. 11, 2002, 340e344.

- [8]. ASHP Publishes Guidelines on preventing Medication Errors-ASHP
- [9]. <https://www.ashp.org/.../ashp-publishes-guidelines-on-preventing-medicationerrors>.
- [10]. Miller MR, Clark JS, Lehmann CU. Computer based medication error reporting: insights and implications, *QualSaf Health Care*, 15, 2006, 20813. Google Scholar Crossref
- [11]. Ritland S, Kummen M, Gjerde I, Taranrød. Feil og mangelfull kurveføring—en potensiell kilde til feilmedisinering [Erroneous and unsatisfactory filling in of drug charts—a potential source of medication error] *Tidsskr Nor Laegeforen*, 124, 2004, 2259-60.
- [12]. Dean B, Schachter M, Vincent C, Barber N. Prescribing errors in hospital inpatients: their incidence and clinical significance, *QualSaf Health Care*, 11, 2002, 340-4.
- [13]. *Sudan Journal of Rational Use of Medicine*. 7, 2014.
- [14]. Bregnhøj L, Thirstrup S, Kristensen MB, Bjerrum L, Sonne J. Prevalence of inappropriate prescribing in primary care, *Pharm World Sci*, 29, 2007, 109-15.
- [15]. Angelo P, Cerio, Nikole Andrei Louise B. Assessment of the legibility of the handwriting in medical prescriptions of doctors from public and private hospitals in Quezon City, Philippines
- [16]. Jankel CA, Fitterman LK. Epidemiology of drug-drug interactions as a cause of hospital admissions. *Drug Saf* 9, 1993, 51-9.
- [17]. <https://www.nurseinaustralia.com/nurses-medication-errors>.
- [18]. Introduction To Medication Safety-World Health Organization
www.who.int/patientsafety/activities/technical/who_mc_topic-11.ppt
- [19]. Reducing medication errors in nursing practice – ResearchGate. <https://www.researchgate.net/.../2709629>.
- [20]. Beso A, Franklin BD, Barber N. The frequency and potential causes of dispensing errors in a hospital pharmacy. *Pharm World Sci*. 27, 2005, 182–90.
- [21]. *QJM: An International Journal of Medicine*, 102(8), 2009.
- [22]. *Health Administrator* XIX(1), 2009, 60-64. MEDICATION ERRORS: CAUSES & PREVENTION* Vijay Roy, Paneet Gupta, Shouryadeep Srivastava.