

A Review on Medication Error in Tertiary Care Hospital

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ABSTRACT

Medication error is an important cause of patient morbidity and mortality, yet it can be a confusing and underappreciated concept. This article provides a review on the medication errors in tertiary care hospital, terminology and definitions, classification of medication error, adverse drug effect, causes of medication error, and disclosure and legal consequences. A medication error is any error that occurs at any point in the medication use process, patient. Consequences faced by physicians after medication errors can include loss of patient trust, civil actions, criminal charges, and medical board discipline. Methods to prevent medication errors from occurring have been used with varying success. When an error is discovered, patients expect disclosure that is timely, given in person, and accompanied with an apology and communication of efforts to prevent future errors. Learning more about medication errors may enhance health care professionals' ability to provide safe care to their patients.

I. INTRODUCTION

Improving medication safety has been an important part of the history and professional attention of pharmacists for several decades, even though this has been a topic of public interest only recently. Research by pharmacists as long as forty years ago documented the incidence of drug administration errors in hospitals in the United States as being 10 per cent or higher. This provided the evidence and impetus to develop drug distribution systems that were safer, including unit dose drug distribution systems and intravenous admixture programs. These systems were demonstrated to be at least twice as safe as the floor stock system that they replaced. Systems where the responsibility for preparing, distributing and administering medications was transferred to pharmacy personnel were a further advance in

improved medication safety. These integrated systems were shown to reduce medication error rates to less than one per cent. This is the lowest medication error rate ever documented in a hospital.

MEDICATION ERRORS

A medication error is an episode associated with the use of medication that should be preventable through effective control system. Pharmacists have had a long-standing interest in improving medication safety and have studied ways to reduce medication error. The definition used in medication error studies by the pharmacists was a more restricted definition of error. A medication error was defined as any deviation from the prescriber's order.

The American Society of Health System Pharmacist definition of medication error includes prescribing, dispensing, medication administration and patient's compliance error. They define the following categories for medication error:

- Prescribing error
- Omission error
- Wrong time error
- Unauthorized time error
- Improper dose error
- Wrong dosage form error
- Monitoring error
- Compliance error
- Other medication error

Classification Of Medication Errors

The multiple steps in the medication chain, from when a drug is prescribed to when a patient receives the drug, leads to significant scope for error. However, significant improvements can be achieved from the prevention of medication errors, in terms of reduced patient morbidity, length of hospital stay, and healthcare costs. A classification system based on a psychological

approach has been proposed which allows one to identify broad categories of error, quantify them, and develop an intervention to prevent them. The medication errors is classified into three types

1. Prescribing Error
2. Dispensing Error
3. Administration Error

1. PRESCRIBING ERRORS

Prescribing errors may be defined as the incorrect drug selection for a patient. Such errors can include the dose, quantity, indication, or prescribing of a contraindicated drug. Lack of knowledge of the prescribed drug, its recommended dose, and of the patient details contribute to prescribing errors. Other contributing factors include:

- Illegible handwriting.
- Inaccurate medication history taking.
- Confusion with the drug name.
- Inappropriate use of decimal points.
- Use of abbreviations
- Use of verbal orders.

2. DISPENSING ERRORS

Dispensing errors occur at any stage of the dispensing process, from the receipt of the prescription in the pharmacy to the supply of a dispensed medicine to the patient. Dispensing errors occur at a rate of 1–24 % and include selection of the wrong strength or product. This occurs primarily with drugs that have a similar name or appearance. Lasix®(frusemide) and Losec (omeprazole) are examples of proprietary names which, when handwritten, look similar and further emphasise the need to prescribe generically.

Approaches to reducing dispensing errors include:

- Ensuring a safe dispensing procedure.
- Separating drugs with a similar name or appearance.
- Keeping interruptions in the dispensing procedure to a minimum and maintaining the workload of the pharmacist at a safe and manageable level.
- Awareness of high-risk drugs such as potassium chloride and cytotoxic agents.
- Introducing safe systematic procedures for dispensing medicines in the pharmacy

3. ADMINISTRATION ERRORS

Administration errors occur when a discrepancy occurs between the drug received by the patient and the drug therapy intended by the prescriber. Drug administration has long been associated with one of the highest risk areas in nursing practice, with the ‘five rights’ (giving the right dose of the right drug to the right patient at the right time by the right route) being the cornerstone of nursing education. Drug

administration errors largely involve errors of omission where the drug is not administered for a variety of reasons. Other types of drug administration errors include an incorrect administration technique and the administration of incorrect or expired preparations. The intravenous route of administration is a particularly complex process during which errors frequently occur and is associated with significant risk to patients as some have died as a result of the administration of cytotoxic drugs intrathecally instead of intravenously

Approaches to reduce drug administration errors include:

- Checking the patient’s identity.
- Ensuring that dosage calculations are checked independently by another health care professional before the drug is administered.
- Ensuring that the prescription, drug, and patient are in the same place in order that they may be checked against one another.
- Ensuring the medication is given at the correct time.
- Minimising interruptions during drug rounds.

Adverse drug events

The term Adverse drug event is a relatively new term that emerged as studies of the epidemiology of adverse medical events were published

The relationship between medication error, adverse drug events and potential adverse drug events is shown below

Causes of medication errors

In an analysis of system failures associated with ADEs, errors were classified according to proximal causes by a multidisciplinary team of physicians, nurses, pharmacists

The types errors detected include

- Overdose – 28.7 per cent
- Missing information - 22.3 percent
- Duplicate therapies - 5.5 per cent
- Wrong drug ordered – 5.5 per cent
- Wrong route ordered – 3.4 percent
- Wrong patient – 1.1 per cent

A subsequent study by Lesar found the prescribing error rate to be 3.99 errors per 1000 orders

Tools to measure the performance of the medication use process

Errors occurs at all steps in the medication use process and measurement system should be designed to evaluate each step. Voluntary medication error reports often focus only on the drug administration step, making the assumption

that the prescription is correct. Nurses can be very sensitive that medication error reporting programs focus disproportionately on this step of the process. errors can occur at all four of these steps

Voluntary, self-reporting systems also often miss medication errors. Investigation have evaluated other ways to detect medication errors and ADE. Including chart reviews, computer screening and combination of methods that can improve detection. Even the best result in 2 abnormal laboratory values or the use of antidote. Not all ADEs result in this and are therefore not detected by computer detection system. These are all good ways to identify errors without waiting for an incident report, but a voluntary reporting system is advisable

What can pharmacists do to improve medication use safety?

Traditional methods

a) Unit dose drug distribution systems

The first study was to demonstrate that the medication errors was a relatively common occurrence was published in 1962. The error rate in the study was found to be 16.2 per cent. subsequently, these investigations and other studied the impact of providing medication that were packaged, labelled and distributed to the point of care. It was shown that significant improvement could be achieved by a unit dose system. Studies cited in this review have shown that error rates can be paradoxically higher when comprises such a dispensing multidose containers increasing cart exchange rate and increasing floor stock. until the safety of properly configured

b) Intravenous admixture systems

Concerns about the safety of drugs administered by the IV route also began to be expressed in the 1960s. Patterson and Nordstrom reported that 60 per cent of IV solutions being infused to hospitalized patients contained more than half of the medication were prepared more than one hour before administration. A pharmacy based; IV admixture program was proposed.

Using a decision analysis model based on the consensus development method used by U.S. national institute of health these systems were compared by an independent, interdisciplinary panel of experts. their recommendation was based on comparing these systems using four criteria. safety, cost, simplicity, and training

APPLICATION OF TECHNOLOGY

The emergence of new technology offers great potential to improve both the efficacy and

accuracy of care accuracy of care, resulting in improved patient safety. Technology and automation also have the potential to worsen patient safety or simply change the kinds of patient safety problems if not properly used

1. Computer prescription order entry system

Computer prescription order entry is a computer application that accepts the prescriber's orders for diagnostic and treatment services electronically rather than recording them in writing on a order sheet or prescription pad. This includes orders for medications. the computer can compare the orders against standards for dosing, check for allergies standards or interaction with other medication and warn the prescriber about potential problems. A medication safety expert panels assembled by ASHP recommended this as the top priority action

2. Integrated clinical information systems

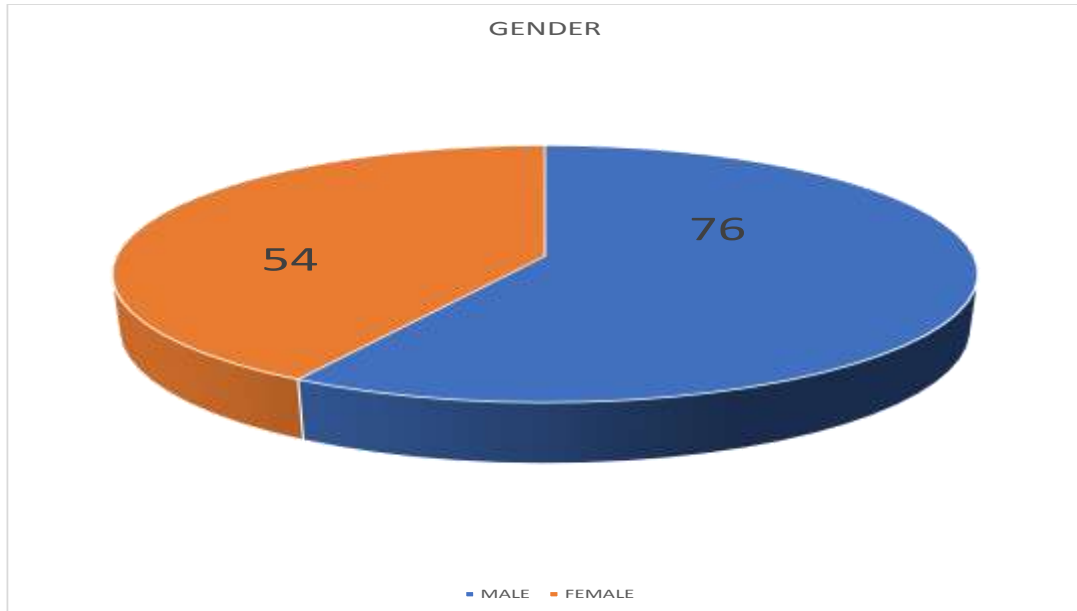
Information systems within healthcare are often configured as stand-alone systems that meet the needs of individual departments but can be difficult to integrate. The healthcare industry has under-capitalized information systems in comparison to other industries. The result is fragmented information and difficulty in obtaining the complete clinical information needed to care for patients. Physicians often do not have access to medication profiles. Pharmacists often do not have access to diagnosis, weight, organ system function or allergy history. As a result, medication related problems occur.

It is imperative that clinical information among caregivers who do not practice in contiguous sites and see patients at different times, be integrated. Only with access to complete information about why the patient is being treated, previous experiences with medication conditions and foods that may affect the choice or responses to pharmacotherapy: can medication safety be improved

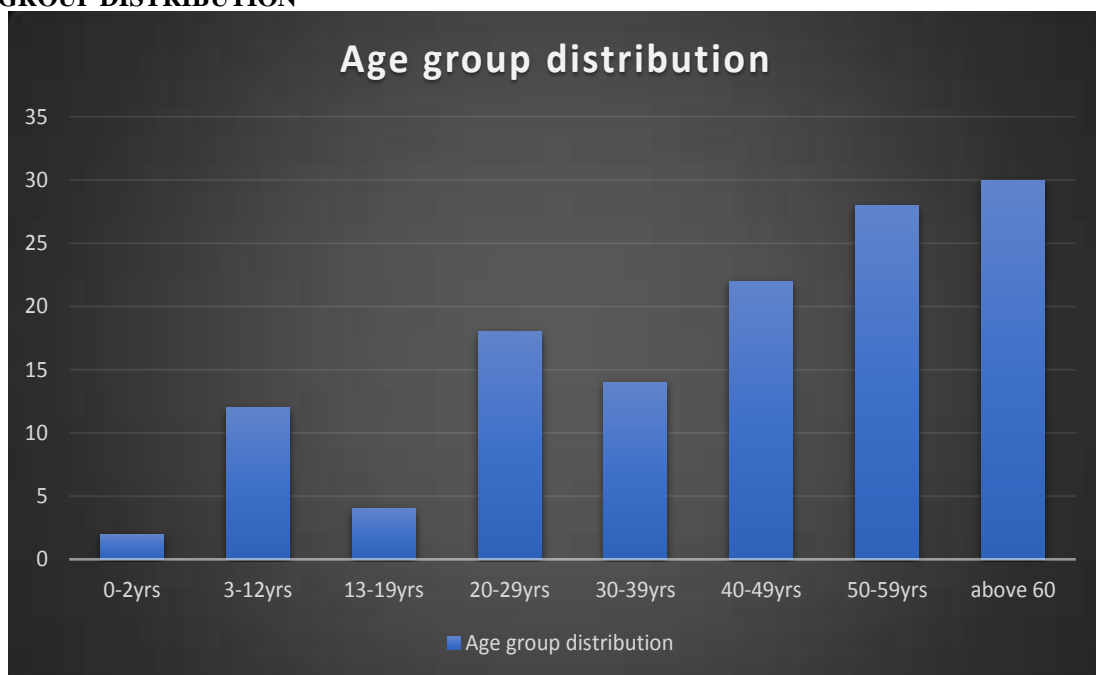
II. METHODOLOGY

Disease review study done by receiving the various method throughout the study period. The literature was collected from various sources. These literatures are combined and the result of the study were taken and the discussion and conclusion were made. Study period starts from February to September. Study site at Sree Krishna College of Pharmacy and Research Centre. The total literature combined is 25.

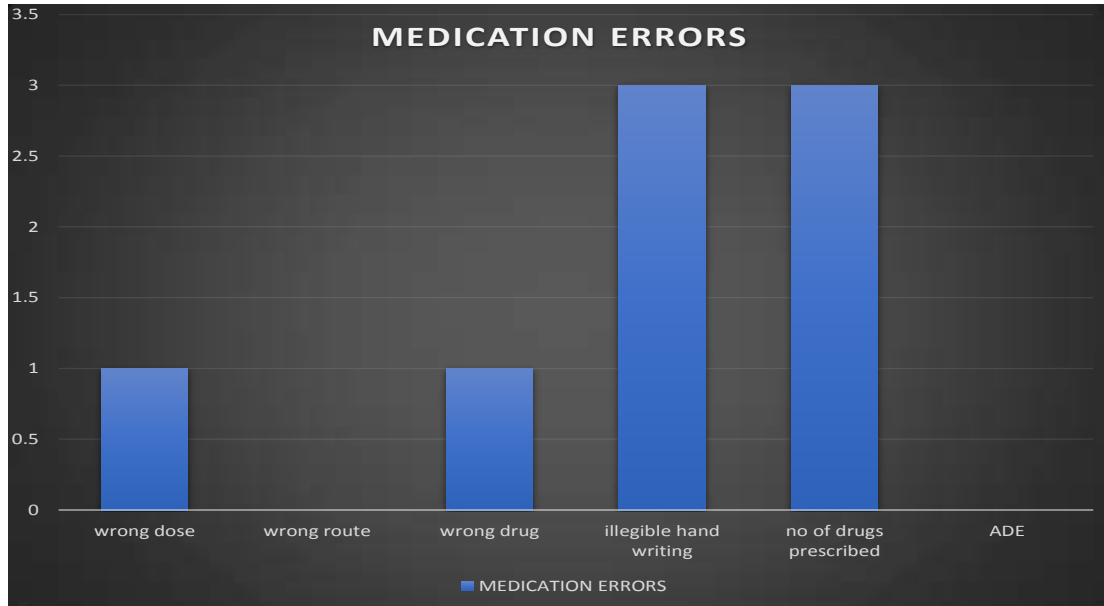
GENDER DISTRIBUTION



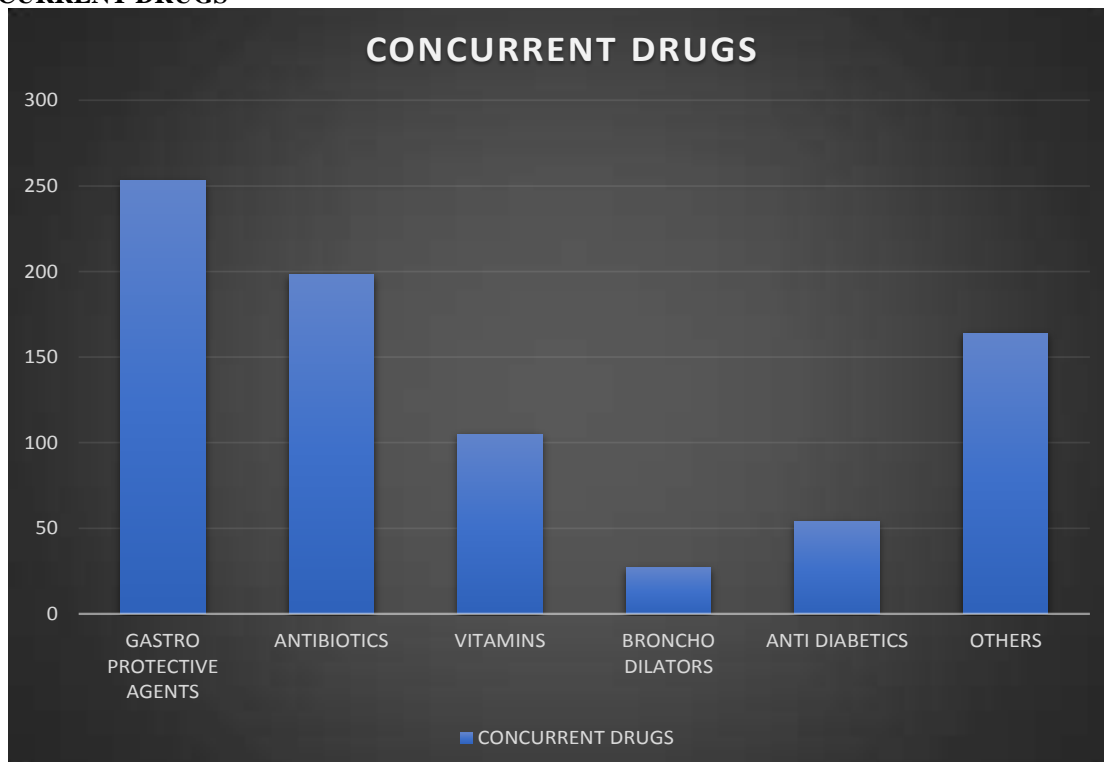
AGE GROUP DISTRIBUTION



MEDICATION ERROR



CONCURRENT DRUGS



III. DISCUSSION

Medication error is an episode associated with use of medication that should be preventable thoroughly effective control system. Pharmacists

have long stood in the improving medication safety and have studied ways to overcome medication errors. A medication error was defined as any deviation from the prescribed order

The current study revealed that the male patients were more than the female patients. Around 130 prescription was taken for the study out of 54 were females and the rest 76 were males. The most prescribed drugs are for the patients above age 60. Here the age group is divided into eight groups and most of the errors are occurred in the age group, above 60, 0-2years, 3-12years

As per the studies in the above collected information wrong doses were - 1, wrong route of administration was nil, wrong drug prescribed is 1, illegible hand writing was 3, average number of drugs prescribed per patients were 3
No adverse drug reaction was found

IV. CONCLUSION

Here by I conclude that the review done on the topic medication error in a tertiary care hospital was done and hereby report that the medication error is less, most of the drugs was prescribed to the patients above age 60 and only less medication error was found

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