Review Article

Medication Error

Bimala Kumari Sah
Lecturer, Maharajgunj Nursing Campus, Institute of Medicine, Kathmandu, Nepal
Correspondence: bimala.shah@mnc.tu.edu.np

ABSTRACT

Background: Medication errors are one of the patient safety problems with a high prevalence in several countries, and often involve a lack of collaborative communication between health professionals, including doctors, pharmacists, and nurses. This article aimed to review about medication error in hospital settings.

Methods: Literature review was done through searching electronic database like PubMed, Research Gate, Google Scholar, and Science Hub and create library via Zotero software to save data.

Results: The review article found most of the medication error occurred in medical and surgical units of the hospital and in morning shift, the most of the nurses are accountable for avoiding medication errors, and it happens mostly during administering the drugs to the patients.

Conclusion: Medication errors and difficulties associated to nurses, doctors and pharmacists in hospital settings must be carefully monitored in order to maintain patients' safety.

Keywords: Literature review, medication error, nurses, safety.

INTRODUCTION

Medical error is a significant public health issue that could endanger patient safety. Reducing medical errors has become an international concern. Medical error is defined as "An act of omission or commission in planning or execution that contributes to or could contribute to an undesired effect". [1] When a healthcare professional choose an ineffective way of care or wrongly applies an appropriate approach, a medical error can occur. There is currently a rising understanding of the significance of prevention of medical error and its effects on both the quality of treatment and patient safety. Therefore, reducing medical errors has become a priority strategic for the majority of healthcare organisations in improving patient safety. Medication errors in hospitalized people can result in negative consequences, increased expenses, and even fatalities.[2]

Medication mistakes are challenging for the experts involved and pose a major threat to public health. The procedure of giving medication to patients involves many interrelated decisions and actions at various phases (medical prescription, solicitation to, separation and dispensing of pharmaceuticals from pharmacy, nursing receipt, nursing preparation, and administration). Errors can arise at any phase of this process. The release of the Institute of Medicine's (IOM) report in 2000 AD, which noted that around 98,000 hospital deaths each year in the United States of America were caused by adverse events (AD).[3]

Patient safety incidents are most frequently caused by drug-related mistakes. The estimated incidence of preventable adverse medication events is 15/1000 person-years, with a global burden of US $42 billion/ year, according to study reported by Assiri.[4]

According to a study on the administration of medications during surgery, 1 in 20 drug administrations resulted in errors, 79 % of which could have been avoided. This finding points to the urgent need for intervention. [4]

For safe administration of the drugs, nursing personnel do follow the common and conventional "five right" principles: the right patient, the right medication, the right amount, the right route,

and the right time. These concepts are covered in pre-registration nursing education for nursing students. The construction of a thorough medication history (reconciliation) when patients arrive at the hospital and providing junior nursing staff and pre-registration nursing students with in-depth training in pharmacological knowledge are some of the hurdles that still need to be overcome.[5]

METHODS

An extensive review of literature has been done through electronic search. Major database like Research Gate, Scopus, PubMed, Goggle scholar, EBSCO, Science-hub were viewed and saved all needful articles with created library in Zotero software. Then after collect the recent needful information regarding title and prepare the article. The words used for searching relevant information are medication error, nurses, hospital and safety.

RESULTS AND DISCUSSION

Medication error prevention and management has become an important part of hospital management and health care organisations.[6]

It was found in study of medication errors in nursing students that there were 1305 errors of a general kind throughout a 5-year period, with omission errors (19%) and the wrong dose (17.16%) ranking first and second, respectively.[7] The most prevalent medication errors reported in the research by Valdez were errors of omission and the wrong dose, which accounted for 34 percent (n = 26) and 41.9 percent (n = 26) of all errors, respectively. [8]

One study done in Brazil at tertiary level hospital, errors occurred in different areas and a total of 1054 errors, errors occurred mostly in the medical-surgical unit, which accounted for 771 (73.1 %) cases from a total of 1054. As for time of the day, the morning (0700 to 1300 h) period showed the greatest number of errors that was 347 (33.0 %) out of a total of 1054 in the morning followed by in afternoon time(0100 to 0700 h) period as similar as 318(30.1%). The night shift had also the greater number of errors, with 248 (23.5 %) out of 1054 errors.[9]

With regards to error occurring among team personnel, nurses were seemed the most responsible which accounted for 490(46.4%) out of 1054. Similarly 342(32.4%) errors happened by physician, there were less errors happened by pharmacy as accounted for 205(19.4%) in comparison to nurses and physicians.[9]

The errors were also classified into five stages: medical prescription, transcription, validation of the prescription by the pharmacist, administration and monitoring. The greatest number of errors occurred during the administration of medications, with 35.5 % (374 of 1054 errors) during the prescribing 364(34.5%), dispensing 207(19.6%), transcribing 73(6.9%) and monitoring 36(3.4%) respectively. [8, 9, 10]

With regards medication error, one study done in North-eastern New York, reported as prescribing errors committed by physician that occur in tertiary care teaching hospital. Total of 289411 written medication orders in the one year study period, among them 905 prescribing errors were detected of which 522(57.7%) having potential for adverse consequences. The overall detected error rate was 3.13 error per 1000 written orders. The error rate was greatest (4.01 per 1000 orders) between 12.00pm to 3.59pm.[10]

Causes of medication errors found in hospitals[11, 12, 13]

- Work load/time pressure or fatigued health care professionals, environmental issues (poor lightning and ventilation)
- Lack of standardized protocol and procedure, lack of accuracy of patients records
- Physical and psychological health issues among nursing staffs
- Using expertise incorrectly, failing to create a plan, overlooking the most evident diagnosis, or providing healthcare automatically.
- Issues with communication, a lack of understanding of the hierarchy, weak leadership, and confusion over to whom to report a problem, failure to reveal problems, or a fragmented system incapable of solving problems.

- Lacking in education, training, orientation, and experience.
- Inadequate methods of patient identification, incomplete admission assessments, a failure to get consent, and a failure to educate patients, inadequate policies to guide healthcare workers.
- Lack of consistency in procedures.
- Inadequate staffing and/or poor supervision.
- Technical failures associated with medical equipment.
- No audits in the system.
- No one prepared to accept blame or change the system.

Similarly prevention of medication errors are given with different points. [12, 13, 14]

- Identify patient safety dangers and risks
- Identify patients correctly by confirming the identity and name tag
- Improve communication such as getting test results to the correct person quickly
- Build better rapport among teams and members
- Develop safeguards into an administration that requires double- and triple-checks involving look-alike or sound-alike drugs.
- Carefully label medications delivered in bulb syringes, medication cups, and basins.
- Fasten to report abnormal test results.
- Adhere with the written protocols and procedures.
- Building a "quiet zone" or "time out" when preparing medications for administration.
- Monitor hospital discharges through the clinician, nurse, family, and patient; if any have reservations, reconsider discharge.
- Perform any procedure carefully like tube insertion or catheterisation.
- Involve a pharmacist in all high-risk drug delivery to patients
- Limit shift duration to avoid fatigue-related errors.
- Place hazard warnings where they will be seen.
- Promote education, therapeutic training and counselling in avoiding errors
- Store dangerous drugs in a separate area of the electronic dosage medication system.
- Take precautions to prevent central line-associated infections.
- Use anti-coagulants safely.
- Use computer technology for order entry. Maintain audit system and good management in health care centre/institution.

CONCLUSION

It is concluded that medication errors are still of great concern. Most of the medication errors are found among nurses. Regarding area, mostly happened in medical and surgical ward in morning shift and during administering the drugs. It is recommended to monitor the activities regarding medication errors and provide in-depth training in pharmacological knowledge and skill for nurses and other health personals working in health organisation that helps in reducing and preventing medication errors in hospital settings.

REFERENCES

1. Poorolajal J, Rezaie S, Aghighi N. Barriers to Medical Error Reporting. Int J Prev Med. 2015 Oct 7; 6:97.
2. Ciapponi A, Nievas SEF, Seijo M, Rodríguez MB, Vietto V, García-Perdomo HA, et al. Reducing medication errors for adults in hospital settings. Cochrane Database of Systematic Reviews 2021 Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD009985.pub2/full
3. Mieiro DB, Oliveira ÉBC de, Fonseca REP da, Mininel VA, Zem-Mascarenhas SH, Machado RC. Strategies to minimize medication errors in emergency units: an integrative review. Rev Bras Enferm. 2019 Feb; 72(suppl 1):307–14.

4. Assiri GA, Shebl NA, Mahmoud MA, Aloudah N, Grant E, Aljadhey H, et al. What is the epidemiology of medication errors, error-related adverse events and risk factors for errors in adults managed in community care contexts? A systematic review of the international literature. BMJ Open. 2018 May 1; 8(5):e019101.
5. Adhikari R, Tocher J, Smith P, Corcoran J, MacArthur J. A multi-disciplinary approach to medication safety and the implication for nursing education and practice. Nurse Education Today. 2014 Feb; 34(2):185–90.
6. Chiozza ML, Ponzetti C. FMEA: A model for reducing medical errors. Clinica Chimica Acta. 2009 Jun; 404 (1):75–8.
7. Asensi-Vicente J, Jiménez-Ruiz I, Vizcaya-Moreno MF. Medication Errors Involving Nursing Students: A Systematic Review. Nurse Educ. 2018 Sep; 43(5):E1–5.
8. Valdez LP, de Guzman A, Escolar-Chua R. A structural equation modeling of the factors affecting student nurses' medication errors. Nurse Education Today. 2013 Mar; 33(3):222–8.
9. Ferracini FT, Marra AR, Schvartsman C, dos Santos OFP, Victor E da S, Negrini NMM, et al. Using Positive Deviance to reduce medication errors in a tertiary care hospital. BMC Pharmacol Toxicol. 2016 Dec; 17(1):36.
10. Lesar TS. Medication Prescribing Errors in a Teaching Hospital. JAMA. 1990 May 2;263(17):2329. doi:10.1001/jama.1990.03440170051035
11. Rodziewicz TL, Houseman B, Hipskind JE. Medical Error Reduction and Prevention [Internet]. StatPearls [Internet]. StatPearls Publishing; 2022 [cited 2022 Dec 27]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK499956/)
12. Mascioli S, Carrico CB. Spotlight on the 2016 National Patient Safety Goals for hospitals. Nursing2022. 2016 May;46(5):52. *DOI:* 10.1097/01.NURSE.0000482262.78767.19
13. Slight SP, Howard R, Ghaleb M, Barber N, Franklin BD, Avery AJ. The causes of prescribing errors in English general practices: a qualitative study. Br J Gen Pract. 2013 Oct 1;63(615):e713–20.
14. Avery AA, Barber N, Ghaleb M, Dean Franklin B, Armstrong S, Crowe S, Dhillon S, Freyer A, Howard R, Pezzolesi C, Serumaga B. Investigating the prevalence and causes of prescribing errors in general practice: the PRACtICe study. London: General Medical Council; 2012.