

Medication Error in Paediatric Medicine

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Abstract

Medication errors MEs are among the highest medical error; it has a direct bearing on patient safety and organization performance. An extensive literature review was done to evaluate many aspects related to this topic, as well as the importance of medication errors and its implication on patient safety had purposively appraised.

Many definitions emerged in the literature for medication errors but the simplified one is “any error occurring in the medication use process”. Medication error classified in different manners but many types of research emphasized the psychological classification which is interested in the prevention approach more than the description of errors itself.

Pediatric patients are more exposed to medication errors, and it is found that these errors are three times higher than adult patients.

Medication errors have a substantial impact on patient’s morbidity, and mortality and its implication on the patient have a vast range from no harm to severe injury or death.

Keywords: Medication Error; Pediatric; Prevention; Patient Safety

Abbreviation

MEs: Medication Errors

Introduction

Medical errors are a bit common in the practice nowadays, and medication errors are on the top of these medical errors. Medication errors contributors divided into five groups: individual, team, task, patient, and environment. Poor and lack communication is considered the major reason for increased medication errors.

Medication errors terminology

In the literature, there is no agreed single definition of medication errors. World Health Organization WHO have adopted medication errors terminology from the National Coordinating Council for Medication Error Reporting and Prevention NCC MERP which state it as “A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is

in the control of the healthcare professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use”.

Furthermore, Aronson had defined medication errors as “a failure in the treatment process that leads to or has the potential to lead to, harm to the patient” [1]. Bates, *et al.* have simplified its definition as “any error occurring in the medication use process” [2]. It is concluded from above concepts that the error or harm might reach the patients or might be discovered before reaching the patients, and this will be called as near-miss in accordance to Agency for Healthcare Research and Quality AHRQ [3].

There are many critical points in the above definitions which have been revised in the literature and will be critically appraised later; these points are: error occurrence in different stations in the medication use process, errors could harm the patients, and medication errors are preventable.

Medication errors classification

Medication errors classification is essential to realize its nature, analyses its origin, and to help in finding procedures to prevent it. There is no unique methodology used to classify medication errors; many models are shown in the literature to sort the errors.

One research had classified it into three manners; contextual, modal, and psychological [1]. Contextual category sorts errors regarding the error time, occurrence place, medicine affected, and the people concerned in error [1].

Furthermore, modal classification analyses error depending on the errors etiology such as; omission, repetition, and substitution [1]. Many types of research emphasized a psychological classification which is interested in the prevention approach more than the description of errors itself [4].

Psychological classification divided the errors into many categories; mistake (knowledge-based error), skill-based error, and memory based error. Psychological classification considers the error is kind of intended action originated from one of the mentioned categories, and in turn, these errors could be prevented by applying practical actions. World Health organization WHO classification sort errors based on the stage where the error happened in the medication use process sequences, and this approach classifies it into many stages; prescribing, transcribing, dispensing, and administration (WHO, 2016).

Causes of medication errors

Nichols, *et al.* have divided medication errors contributors into five groups; individual, team, task, patient, and environment [5]. There are many reasons related to individuals might increase error rates such as; stress, tiredness, busy doing many tasks simultaneously, and personal health issues [5]. Also, poor communication between team members and poor communication with other staffs found to cause increasing medication errors, besides to lack of senior team members supervision to junior staff [5]. Furthermore, the work environment has a direct impact on medication error incidents, and these factors have to be explained well to help in errors avoidance, these factors include; unorganized workflow with understaffing, insufficient staff training, illegible handwriting, and lack information about the patient [6].

In American pharmacist association, Cohen had summarized medication errors causes in ten key elements to understand it. These elements are listed as follow; lack of patients data, shortage of information about the medicine, teamwork failure with poor communication, Look-Alike Sound-Alike LASA medication, insecure medication standardization and storing, risky medication delivery device such IV pumps, insufficient staff orientation and continuous education, lack of caring organizational culture, poor patient awareness in drugs information, and unorganized workflow with confusing work environment. Mayoclinic had simplified causes of medication errors into

three sets; medication causes (e.g. similar labeling, packing, and names), patient causes (e.g. complex healthcare condition, impaired cognition, and multiple drugs usages), and healthcare professional causes (e.g. dependency on abbreviations in prescriptions and documentation, knowledge predispositions) [2].

Pediatrics at high risk for medication errors

Pediatric patients are more exposed to medication errors, and it is found that these errors are three times higher than adult patients [7]. There is no standardization dose in pediatric practice, the majority of doses is calculated individually for each patient depending on weight, age, body surface, and the clinical situation [8]. Moreover, lack of standardization drug formulation and concentration suitable for pediatric age is an essential factor to increase error rates in addition to the high prevalence of off-label use in pediatric practice [9].

A systematic literature review revealed that incorrect dose is the highest frequency medication errors in pediatric medication administration process [7]. Ghaleb, *et al.* had reported in his research that the medication errors was 14.7 incidents per 100 admissions and 13.4 incidents per 1,000 patient-days [10]. A study showed that antibiotics and sedatives were the most common error reported among inpatient pediatrics, while another study found that antibiotics and opiates scored the more adverse events than any other medication [7]. American Academy of pediatrics experience disclosed that poorly designed labels and packing are the main contributors to pediatric medication errors [11].

Medication errors implication and prevention

Medication errors have a substantial impact on patient's morbidity, and mortality and its implication on the patient have a vast range from no harm to severe injury or death [12].

Also, many research showed that most medication errors cause no harm even if it reaches patients. Healthcare providers involved in medication errors encounter legal consequences with the licensing authorities and some sanctions from the responsible governing bodies in their organization [2]. In the other hand, healthcare providers may feel less confident when they committed a medication error especially if the error discovered by other colleagues in unfair organizational culture. In term of a healthcare organization, medication errors might expose the organization to some liabilities and financial settlement, also repeated medication error will destroy the trust between the hospital and patients or their relatives and this will touch the facility reputation in the market or will affect the accreditation status [14].

In term of the high prevalence of medication errors in daily practice especially in pediatric groups, and the consequences of these errors on the patient, healthcare provider, and the organization itself, it is worth to analyze the root cause for the errors critically and to adapt interventions to prevent these errors. The basic concept in error prevention is to know about its occurrence and to detect it by increasing the reporting rate and implementing a free blame culture to help involved staff to disclose their errors [13]. Many strategies are seen in the literature to prevent errors such; technology-based solutions (Computerized Physician Order Entry CPOE, electronic Medication Administration Record eMAR, and Barcode Medication Administration BCMA), continuous staff education about medication use and its policies, and engage clinical pharmacist in the medication administration. Brabcová, *et al.* had concluded to involve the patient in the medication administration which might reduce the error especially in the verification stage [15].

Conclusion

There is three key thoughts about medication errors especially in daily pediatric clinical practice: it is common, its consequences on the patient safety, and it is preventable. Healthcare organization and professionals who is dealing with pediatric patient should keep in mind these key facts about medication error and have to keep a process in place to avoid and prevent medication error. These prevention efforts has to be on the personal level as well as on the organizational level.

Conflict of Interest

I declare don't have any financial interest or any conflict of interest exists.

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