Popular health problemes during care of patients and serious consequences

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Abstract

Medication errors are problems that occur during the treatment of patients, by a health professional or patient themself. They are harmful to patients or may lead to death. They are considered serious problems because they are happening daily and are a significant cause of individual morbidity and mortality. This review aims to know the types of medication errors, their causes, and how to prevent them. In this review, the medical problem was misdiagnosis 59%, an adult who make one medication error at house 12-59 %, administration errors 38%, prescribing errors 39%, and omission 26%. However, medication errors are a popular health problem, and their danger increases day after day, therefore, it is necessary to know their types, any member of health professional cares and patients make medication errors. Finally,Medical errors are widespread and sometimes lead to serious consequences.

Keywords: hospitals, medication errors, medical order entry systems, medication reconciliation, medication therapy management, nurses, patient safety, pharmacists, physicians, systematic review

Conflict of interest statement

The authors declare that there is no conflict of interest

الخلاصه

الأخطاء الدوائية هي المشاكل التي تحدث أثناء علاج المرضى من قبل أخصائي الصحة أو المريض نفسه. فهي ضارة بالمرضى وقد تؤدي إلى الوفاة. تعتبر مشاكل خطيرة لأنها تحدث يوميًا وهي سبب مهم للمراضة والوفيات الفردية. تهدف هذه المراجعة إلى معرفة أنواع الأخطاء الدوائية وأسبابها وكيفية الوقاية منها. في هذا الاستعراض ، كانت النتائج الطبية هي التشخيص الخاطئ 59٪ ، والبالغ الذي يرتكب خطأ دوائي واحد في المنزل 12-59٪ ، وأخطاء الإدارة 38٪ ، ووصف الأخطاء بنسبة 39٪ ،السهو 26٪. ومع ذلك ، فإن الأخطاء الدوائية مشكلة صحية شائعة ، ويزداد خطرها يومًا بعد يوم ، لذلك من الضروري معرفة أنواعهاوتمييز أي عضو من المهنيين الصحيين والمرضى يرتكبون الأخطاء الدوائية. واخيراانتشار الأخطاء الطبية تؤدي في بعض الأحيان إلى عواقب وخيمة.

1.1 Introduction

Medication errors are problems that occur during treatment of patient [1], by a health professional or urgent necessity. But because there are different sources and different types of medication errors is difficult to prevent them [2]. So the knowledge of types and causes, and finding the solutions may help the doctors, nurses, pharmacists, or even patients to reduce or prevent medication errors. Medication errors place at any step of the treatment process, including when the drug is prescribed by doctors, wrong information of the patient, manufacture of drugs, and the wrong use of the drug by the patient [3]. This review focused on the types, causes, and prevention of medication mistakes. One of the obstacles in disclosure errors is that health professionals awe procedures. In general medication errors take place in selecting the drugs (irrational, improper, and inefficient prescribing), how the prescription was written such as illegitimate, preparation the formulation (incorrect concentration, may be susceptible to impurity, incorrect packaging), the administration and use of drugs (incorrect dose, incorrect route, incorrect frequency, incorrect duration), and observation therapy (when a patient needed to alter treatment but this not occur, the wrong alteration)[4]. This review aims to know the types of medication errors, their causes, and how to prevent them from patients themself. They are harmful to patients or maybe lead to death and they are considered a serious problem because they are placed daily and are a significant cause of individual morbidity and mortality.

1.2 Causes of medication errors

Many reasons lead to medical errors, some of them are expired drugs that usually take place because inappropriate storage of products leads to spoilage or use of expired drugs [5]. and also used for long time and this occur when a drug is prescribed by doctors for a certain period but patients receive it for a longer or shorter time[5]. Some errors attributed to wrong preparation this mistake usually happend with compounding or another kind of preparation before the ultimate administration such as selecting the wrong diluent to reconstitute. Also, wrong strength is considered as the cause of medication errors wrong, strength may potentially take place at many stages in the treatment process[6].
It usually takes place because of human mistakes when comparable bottles or syringes or another type of container with the wrong strength is chosen [7]. On the other hand, the wrong rate also causes medication errors wrong rate most often occurred with drugs that are given by intravenous push or infusions, especially serious with many medications and may lead to considerable adverse medication reactions such as rapid intravenous epinephrine lead to tachycardia or vancomycin lead to red man syndrome [8]. However, inaccurate timing it is difficult to be accurate with planned doses in-home or also,placed after. The issue is that the absorption of some drugs varies greatly depending on whether they are taken with meals or not. As a result, it's critical to stick to scheduled timings as much as possible; otherwise, there is the risk of under-dosing or overdosing [9].

This review also found that dosage error is an important cause of medication errors. Overdosage, under dosage, and an additional dose are all examples of this blunder[9]. When an unsuitable or different drug dose is provided than what was authorized, mistakes of omission occur when a scheduled dose of the drug is not supplied, and when a medicine is delivered via an erroneous route, it is referred to as an erroneous dose. Incorrect route mistakes are frequently caused by ambiguous labeling or tubing that is adaptable to different connectors/lines of access. The use of the wrong route can lead to considerable morbidity and mortality [10]. Using the wrong dosage form leads to mistakes when a patient obtains a different dose form than what was recommended, examples include when immediate release is received by the patient instead of extended. There are also reasons related to the patient himself such as inappropriate patient behavior when a patient takes a drug incorrectly, this happens.to avoid this type of mistake is for patients to be educated[11]. Some causes related to drugs such as allergen that have been identified poor communication with patients, inadequate chart review, poor documentation, or a lack of technological interface are all common reasons for dispensing medicine to which the patient is allergic and in addition to contraindications that have been identified when drugs are not thoroughly assessed for drug interactions, drug-disease interactions, or drug-food interactions, this can happen [12]. Usually, healthcare practitioners do not put a contact phone number when writing prescriptions or orders in the chart.If a question regarding the drug arises, the healthcare is left to their own devices, and the patient is denied medicine. Another common cause of medication mistakes is failing to consider renal or hepatic insufficiency. A lower dosage is required for patients with renal/hepatic disease. Toxic effects can occur if the medicine is not excreted or broken down properly [13).

The usage of abbreviations is a common source of medication mistakes. routes of administration are frequent. Furthermore, these abbreviations might be misconstrued and have multiple meanings. When making medicine orders, abbreviations should be avoided at all costs [13]. Distraction is one of the leading causes of drug mistakes. This is said to be the cause of about 75% of medication mistakes. In a hospital, doctors are often told to write medication orders and prescription drugs in addition to assessing patients, purchasing laboratory and imaging tests, speaking with professionals, winding on their patients, talking with patient members of the family, and having a conversation with insurance companies before ordering research. In the rush to finish drafting drug orders, a slip in judgment can occur, resulting in medication mistakes[14].

1.3 Types of medication errors

Because there are different types and sources of medication errors, this review focused on some of them.

1.3.1 Patient error

The common belief about medication error is produced by health professionals because of errors in prescription and preparation and other causes. However, in many situations, the patients do errors in the administration of drugs. So any event that produces incorrect drug use when the drug used by a patient is considered a medication error. Studies are interested in errors produced by health professionals more than errors produced by the patient[15].Causes of patient errors may include patients using drugs that doctors do not prescription for them such as he/she using drugs that prescribed to another member of his/her family, patients don't use drugs that prescribed by doctors, or not compliance, which means the patient may forget to take his medications, patients stop taking drugs before recommended period, patient not follow instructions from doctors or pharmacist, patent forgets to take drugs [16]. However, medication errors by patients take place when drugs are taken in wrong doses, at the incorrect time, when drugs have similar names or other similar features, and patients are confused between them, incorrect storage. And when equipment is used by patients incorrectly. Therefore, patient errors cause harm or affect the health of people so it is necessary to find solutions to reduce Patient errors.

1.3.2 Prescription errors

Prescription errors are the most common cause of pharmaceutical errors. A clinically meaningful prescribing error, according to one definition, happens when there is an unintentional significant decrease in the chance of timely and effective treatment or an increase in the risk of damage when compared to commonly accepted practice [17]. This definition is explicitly focused on the error's result. Prescription errors are those that occur during the act of writing a prescription, whereas prescribing errors include irrational prescribing, inappropriate prescribing. All steps in the prescribing process can lead to errors. A prescribing error can result from selecting the incorrect medicine, dose, administration route, or frequency or length of therapy, as well as from inappropriate or erroneous prescribing in general[18]. It could also be due to an insufficient assessment of the potential harm caused by a particular treatment. The most common errors in dose selection are: misinterpretation by healthcare staff can be caused by inaccuracy in writing and poor readability of handwriting, the use of acronyms, or incomplete drafting of a prescription, such as omitting the total volume of solvent and length of a drug infusion. Also, a prescription error has a great effect on the economic system each year, the overall cost of caring for people who have had medication-related errors surpasses $40 billion [19]. Patients incur psychological and physical pain and suffering as a result of drug errors, in addition to the monetary expense. Finally, prescription errors result in lower patient satisfaction and a rising lack of faith in the healthcare system.

1.3.3 Surgical errors

There are millions of surgeries performed annually in the world. So errors commonly occur. These errors lead to a very serious problem to patient surgery that is done on the wrongbody part is the famous mistake causes of errors in operations such as lack ofexperience, lack of standardized rules, poor communication between staff, poor communication with the patient, use of untrusted protocols, dash to complete status, surgical procedures that are unnecessary or improper, anesthesia errors include employing too much or failing to consider a patient's allergies, by accident, you maycut an organ or another part of the body, left within patients are instruments and otheralien things, viruses and Infections Pre- or postoperative errors, example include failing to address surgery- related issues, failure to provide enough preoperativeinformation to the patient, including hazards and alternative therapies (poorly informed consent), failure to conduct necessary preoperative testing, obtaining insufficient preoperative clearance, failure to recognize post-operative problems or infections in a timely manner[20]. However surgical mistake is an injury that occurs due to an error madeduring an operation that is not a known danger of the operation. Even the most commonplace surgical procedures can go awry if the chief surgeon makes errors.Mistakes, like surgery, can range in severity. Surgical errors, for example, might rangefrom operating on incorrect body portions to hole an organ or nerve byaccident. Inadequate ability, knowledge, or training include poor necessary competence, knowledge, or training to conduct an operation, the likelihood of a surgical error increases[21]. Surgeons must understand the ins and outs of the operation they proceed on patients and surgeons must have good experience to reduce the risk of errors. Planning errors include surgical errors that can be caused by poor planning beforethe procedure. Planning includes thoroughly analyzing the medical history of the patient,present case, and other pertinent medical data. The preparation of appropriateequipment and communication with healthcare about the upcoming procedure is alsopart of proper planning.

Care following surgery includes surgical errors that aren't limited to the operating room. Patients must be followed for indicators of surgicalcomplications and injuries during the post-operative period, also known as the post-operative phase. Staff and surgeons must be aware of symptoms of complicationsthat can develop after specific procedures and can diagnose and treat them quicklybefore they cause more harm than would otherwise occur if they were detected and treated promptly. Post-operative bleeding, intestinal perforations, and post-operative infections are just a few of the disorders that might occur[22].

1.3.4 Laboratory errors

Any defect or flaw in the laboratory, from ordering tests to reporting and interpreting results, is defined as a laboratory error. Laboratory medicine errors are inherently enigmatic because they are difficult to detect and, once discovered, are more difficult to comprehend than other types of medical errors. All clinical laboratories need to know about error rates since it allows them to correctly determine their risk level and compare it to that of other laboratories to evaluate their performance and take corrective action [23]. As a result, any direct or indirect negative consequence of a laboratory test must be considered in the interests of patients, regardless of which step is involved or whether the error is due to a laboratory professional (e.g., a calibration error) or a non-laboratory operator (e.g., an incorrect test request, a patient identification). The errors in the clinical laboratory reports are caused by a variety of causes, both in vitro and in vivo. Homonymy, incorrect patient registration, reliance on incorrect patient data, incorrect or incomplete data entry, order mistranscription, collection of biological specimens from the wrong patient, and inaccurate entry or transmission of test results in the Laboratory information system are all causes of identification errors in medical laboratories[23]. Errors can arise at any stage of laboratory processes, having a substantial impact on the patient's results. Therefore,the errors in the clinical laboratories are categorized into three groups based on the procedural phase (pre-analytical, analytical, and post-analytical). All errors thatoccur before analysis are classified a s apre-analytical errors. inadequate samples,wrong labels, wrong requisitions, clotted samples, and tube breaks in centrifuges are all examples of pre-analytical failures[24]. At the analytical phase, non-conformity with quality control, calibration failure, random and systematic errors can occur. Common post-analytical errors consist of failure to report the test results, delay in reporting, inaccurate calculations, key results not reported or delayed, and results provided to the wrong patient[25]. Any inaccuracy in one of these processes will result in incorrect medicine being dispensed.

1.3.5 Diagnostic errors

Is also one of the more popular mistakes during the treatment process. A diagnostic mistake is a missing, incorrect, or belated diagnosis that is identified by a subsequent specific test or discovery. The resulting harm is caused by the inability to treat a disease that exists while the official diagnosis is incorrect or uncertain, or by the treatment i s given for a disease that does not exist (26).

Some data is important to know (16.6% of patients are affected). The wrong diagnosis may take place with every member of a health professional. Errors in diagnostic include wrong tests, wrong interpretation, not follow-up, and not refer to doctor at the correct time, ending the diagnosis process before confirming that disease is benignant, the disease may be a danger, delaying therapy post the diagnosis is done is the third more popular mistake and lead to high costs for readmission or increased treatment 2). Type of diagnosis errors are delayed diagnosis when a diagnosis must be made sooner, it is referred to as delayed diagnosis[27]. The most common occurrence in this group is a serious illness that is postponed.One of the key issues today is there are very few reliable standards for making an early diagnosis, and many diseases aren't detected until symptoms continue or worsen. Incorrect diagnosis, for example, a patient who is undergoing a heart attack may be given the incorrect diagnosis of acid indigestion. Because the actual reason is revealed later, the initial diagnosis is shown to be wrong[28]. A missed diagnosis occurs when a patient's medical problems are unnoticed. Many individuals with chronic tiredness or severe pain, as well as those with more valid complaints that are never fully diagnosed, face similar problems. Causes of diagnosis errors include limited access owing to financial constraints, geography, illiteracy, travel restrictions, or a scarcity of health-care services, due to a lack of training, outside migration, or a poor job environment, there are insufficient, competent health care providers [29].
that specialty expertise doesn't exist, or that it does, but it's either scarce or of poor quality, diagnostic tests have limitations in terms of breadth, availability, and quality, medical information is rarely, if ever, shared, the capacity for diagnostic ideas to develop is hampered by a lack of follow-up, consultations are late, results of the tests

1.3.6 Nursing errors

Execution of medical orders is an important part of the healing process and patient care. It is also the main component of nursing performance and has a prominent role in patient safety. Giving medicine is probably one of the most critical duties of nurses since the resulting errors may have unintended, serious consequences for the patient. Although medication errors can be caused by all members of the health care team, nursing medication errors are the most common [30].The reason is that nurses execute the majority of medical orders and spend about 40% of their time in the hospital to administer medicines. The rates of nursing medication errors are high in both developed and developing countries. Some causes of nursing errors include failure to adequately check the order and the right medicine, dose, route, or timing by neglecting to request clarification from the doctor for confusing orders. In transcribing/typing doctor verbal/telephone orders without correct order read-back via failure to employ, follow, and check the (right patient, right drug, right time, rightdose, right route).

Failing to recognize that a dosage, medication translation, or route is inappropriate for the patient due to a similarity in drug names or acronyms.By failure to evaluate the patient and any intravenous drug apparatus in the instance of intravenous medicines, by faulty tube connections or drip/pump settings [31]. However,it's difficult to get precise statistics on the medical error since past research has shownthat, despite the numerous benefits and moral justification for detecting and reporting mistakes, nurses are hesitant to do so to evade administrative penalties and patient complaints.

1.3.7 Dispensing errors

Can happen at any point in the process, including receiving a prescription inside the pharmacy to deliver a dispensed drug to a patient. Dispensing mistakes account for 1–24% of all errors, and include selecting the incorrect strength or substance. This is most common with medications with similar names or appearances [32]. Losec®(Omeprazole) and Lasix® (Frusemide) are two epitomes of trademarked names thatappear alike when written by hand, emphasizing the importance of prescribing generically. Because of several deaths linked to this misconception, the Food anddrug administration in the United States has demanded that the patented name of Losec® be altered.

Used a systematic evaluation of dispensing error study to definea dispensing mistake as a “difference from a written prescription that happensthroughout the dispensing process. Another definition of a dispensing error is a discrepancy between the prescription prescribed and the drug given to thepatient. These mistakes can result in ineffective and, in some cases, undesirable pharmacologic effects. Patients can be harmed or even killed as a result of dispensing errors. Dispensing medication is a complicated operation that entails more than merely selecting medications from a pharmacy shelf, affixing a label to a pack, and handing it over to the patient after it has been contained. Cause-and-effect analysis or eliciting explanations from practicing pharmacists can be used to track down the causes of dispensing errors [33]. Examples of a deviation that happens throughout the dispensing process may include: dose/item error occurs when the incorrect item is chosen or constructed. When the object is correct but the label is inaccurate, it is referred to as a labeling error. When an order is issued to the wrong patient or is not issued at all, it is referred to as an issue error. When an order is correctly issued but poorly documented, it is referred to as a documentation error. Despite efforts to raise awareness, mistakes continue to occur. While a person could experience harm if given any medicine in error, the likelihood of major clinical effects increases dramatically when the medication implicated has a narrow therapeutic index[32]. Even expert pharmacists who have never made a mistake before can make these mistakes.

1.3.8 Administration errors

When the medication administered by the patient differs from the drug treatment intended by the doctor, administration mistakes occur. The ‘five rights' (providing the correct dose of the correct drug to the correct patient at the correct time by the correct channel) is the cornerstone of nursing education, and medication administration has long been identified as one of the most dangerous aspects of nursing practice. The majority of drug administration mistakes are omission mistakes, in which the medicine is not provided for a variety of causes. Improper methods of administration and the delivery of t h e wrong or expired preparations are examples of other sorts ofmedication administration problems[31].

The intravenous method of delivery is a particularly difficult process that is prone to errors and poses a considerable risk topatients since some have caused the death of cytotoxic medications beingadministered intrathecally rather than intravenously. As a consequence, the healthdepartment has designated this mistake as one of its primary targets for improvingpatient safety. According to recent research on intravenous medicationadministration, there is a 50% mistake rate either as drug preparation or management.The most prevalent form of error found was intentionally breaking guidelines by administering bolus doses faster than the recommended time. Loss of perceiveddanger, inadequate role models, and loss of available technology were all factors inadministration failures [29]. When it came to medication preparation or administration,errors were more likely to occur, with factors including poor awareness of the procedures and the extremely complicated design of the equipment. In thirty thousand cytotoxic preparations, however, a major mistakes rate of 0,19 % was found, showing that prescription mistake rates may be reduced in instances when intravenous medications are administered in specialized facilities. While this %age may appear tobe low, extrapolating it each year throughout a broad clinical area while this incidencemay appear to be low, extrapolating it every year across a big clinical area would result in a huge number of patients being afflicted. Inability to confirm the patient'sidentity before administration and the storing of identical preparations in identical regions are both contributing reasons to drug delivery errors. Noise, for example, is an environmental component that would result in a staggering amount. Interruptionsduring a drug round, as well as inadequate lighting, may lead to the risk of error increases.

1.3.9 Pharmacist errors

Pharmacist mistakes are usually either judgment or mechanical. Poor knowledge of drug interactions, insufficient drug utilization review, improper screening, inability to Providing proper patient counseling, and improper monitoring are all examples of judgment mistakes. A mechanical mistake is an error made when dispensing or preparing a prescription, for example giving incorrect directions, administering the wrong drug or dose, or dispensing the wrong dose, quantity, or strength, workload, identical medicine names, interruptions, an absence of support staff,inadequate time to advise patients, and incorrect spelling are all factors. The greaterthe number of orders that pharmacists must verify, the more probable they are to make errors[33].

2. Recommendation to prevention of medication errors

To avoid medical errors, you must follow these methods that reduce or prevent them. To avoid patient errors educate patients (especially elderly patients) about the nature and quantity of their drugs, giving the patient good information to decrease medication errors, especially in over the counter drugs, improve communication between health professional and patient, give patients information to improve the using equipment such as an inhaler, counsel patients to use applications on the mobilephone to get information about their drugs, and ensure that patients can calculate /her dose appropriately.

To reduce surgical errors, should know when and wheremistakes take place, anything that done should be put on the list before anesthesia shouldensure the patient's identity, where the operation was performed, type of operation,

before skin incision, the team of operation should again ensure from the identity individual and the type of operation. This team of surgery determined the need of patient to antibiotic prophylaxis. After ending of the operation but before leaving the surgery room, the team of surgery verbally deduce the completeness of the number of tools and sponges, confirm that the sample is labeled, and observe the clinical condition of the patient. Regarding diagnostic errors, doctors must be known of the more popular misdiagnosed cases and take extra precincts to seek and emphasize the diagnosis. Doctors must be known of and carefully consider the popular "high risk" diagnoses. Several strategies are described that will assist in reducing clinical laboratory mistakes, improving quality, and lowering costs16, patient identification in various sectors of health care and " identify patients correctly" is the first goal in improving patient safety.

Specimen integrity is the most important prerequisite
for reducing laboratory error during the pre-analytical phase, and it is dependent on a number of activities, including specimen collection, transit, and processing, so the routinely analyzing recommended for each external and internal component of the transportation network and implementing a computerized order entry system to replace paper-based requesting is an improvement done in the complete testing process.In addition to improving the education of health-care professionals. While the following processes must be streamlined to improve the quality of the analytical the phase of testingautomated analysis, analytical procedure validation, checking the reportable range, precision verification, analytical interference verification and checking the reference limits. On the other hand monitoring analysis rates in the phase post- analytical allows for the detection of significant variations i n inpatient outcomes that may indicate a problem and also the immediate review of urgent results38, followed by the creation of a provisional report and delivery to the asking clinician, evaluation of the importance of the results concerning predefined reference values, as well as the choice, to conduct additional tests.

A comprehensivethe plan must be taken into consideration to prevent the testing errors: developing writtenvery clear procedures, regular assessing, and training of the skills ofprofessionals in health care, support, and executive operations functions are automated, improving communication among laboratory professionals and health care. To prevent pharmacy errors, spending time talking to the patient and double-checking their grasp of the dose, medication allergies, and any other drug they might be taking will often prevent these errors. Inability to reach prescribers, imprecise verbal and written directions, and time limits that make checking drug interactions difficult are all obstacles to effective communication. Supervising patients' pharmaceutical therapy and contacting the healthcare team when a disparity is discovered are frequently among a pharmacist's tasks. The majority of prescription errors are discovered at discharge, emphasizing the importance of having a pharmacist on hand to assist with the procedure. To prevent nursing errors drugs should be checked and double-checked, be aware of the patients' mobility, hands should be washed, and equipment should be cleaned, if you aren't qualified or comfortable Do anything, such as raising a patient who has fallen, don't do it yourself. Always enlist the assistance of another nurse to avoid endangering patients. Maintain accurately records.Regarding the prevention of prescription errors automation of the prescribing process, resulting in a reduction of complexity in the act of prescribing, educated prescribers and the use of online tools improved prescriber knowledge, monitoring of intervention effects and feedback control systems when writing orders, avoid using drug abbreviations also another way to prevent prescription errors are check of dubious prescription and confirmation of the respective drug through the barcode, constant updating and searching for knowledge, increased communication with the medical class and use electronic prescribing, so to reduce prescribing, dispensing, and administering errors follow this wayes: repeat the medication name and spell it, utilized computer entry for drug orders, ensure from medication that include strength and administration route, good communication with patient and

caregiver, give patient clear information, and not use abbreviations.

3. Conclusion

Medication errors are a popular health problem and their danger increases day after day , therefore, it is necessary to know their types. Any member of health professional carers and patients make medication errors. Medical errors are widespread and sometimes lead to serious consequences and there are many types of them. Because of their spread and dangerous consequences, they must be studied well and follow the established methods, to reduce medical errors and find solutions to prevent them. It is the obligation of all healthcare practitioners to identify contributing causes to medication mistakes and to use that information to further limit their incidence. Developing countries must rapidly implement instructional programs to improve the skill and knowledge of the health care team.

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