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OUT – PATIENT PHARMACY MEDICATION ERRORS - A RETROSPECTIVE STUDY IN OMAN

Asma Nasser Al- Habsi and *Alka Ahuja

Department of Pharmacy, Oman Medical College, Muscat, Sultanate of Oman.

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***Correspondence for Author**

Dr. Alka Ahuja

Department of Pharmacy, Oman Medical College, Muscat, Sultanate of Oman.

INTRODUCTION

Medical errors are often described as human errors in healthcare. A medication error is 'a failure in the treatment process that leads to or has the potential to harm the patient. However, medical error definitions are subject to debate, as there are many types of medical errors ranging from minor to major. Medical errors are associated with inexperienced physicians and nurses, new procedures, extremes of age, complex or urgent care and poor communication**.** Vast majority of medical errors result from faulty systems and poorly designed processes and poor practices or incompetent health care professionals. They can be classified as prescribing errors by doctors (medication orders, like the dose, frequency, duration, medication selection, prescribing medicine with no indication, therapeutic duplication, transcription error.

Adverse drug reactions, drug induced ADRs or drug-drug interactions, addition of another medicine (e.g. Ranitidine for hyperacidity), administrative issues, not reviewing patient history and sensitivity to other medicines are other types of medication errors. Dispensing errors by pharmacists include dispensing wrong medicine, changing dose and duration or frequency without consulting the doctor.

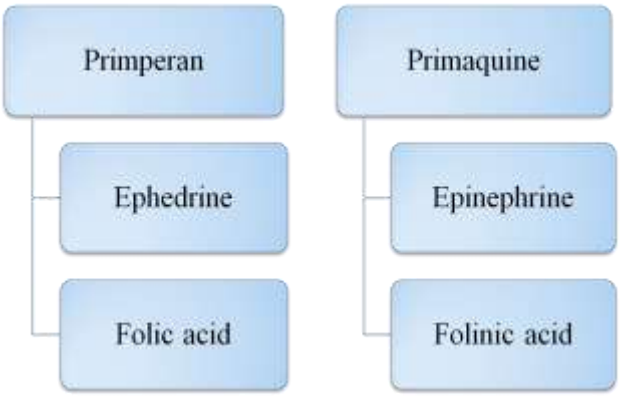
Other miscellaneous problems include non-compliance of the patient with the drug, in terms of frequency or dosage forms. Also, if the medicine was not available in the pharmacy or was out of stock, the pharmacist recommended an alternative**.** ISMP (institute for safe medication practice), based in suburban Philadelphia, is devoted entirely to medication error prevention and safe medication use. ISMP with its 35 years of experience has helped healthcare practitioners, kept patients safe, and continues to lead efforts in improving the medication use

process. They publish four "ISMP Medication Safety Alert" newsletters for healthcare professionals and consumers which reach nearly a million total readers.[1]

Sound alike look alike drugs (SALAD's)

The existence of confusing drug names were one of the most common causes of medication error and were of concern worldwide. With tens of thousands of Drugs currently on the market, the potential for error due to confusing drug names was significant. This included proprietary and nonproprietary names. (brand or trade market).

Some of the Sound alike and look-alike examples are as follows:



Practical steps that can be taken to reduce risk can be listed as follows

Pharmacy staff should develop strategies to accommodate patients with sight impairment, language differences and limited knowledge of health care. They should provide patient information leaflets in other languages if available, always include full direction on labels - not just "as directed", inform regulatory bodies and manufacturers of potential SALAD's.

Multi-disciplinary teams management should ensure that a list of SALAD's pairs that are used in their organization are published at least annually and distributed to front line staff and clinical areas.

The safety of medicine is essential for the safety of patients. Inappropriate drug storage, expiration dates, sharing prescription drugs, self-medication habits and misuse of some drugs are contributing factors affecting medication safety. One or more of these factors may lead to serious health complications and even death. Increasing population awareness about self-medication, products expiration, pharmaceuticals labels and optimum storage conditions would minimize the adverse effects and may even be life saving.

Several interventions involving information systems have been shown to reduce medication errors considerably and many others have a promise but have not been sufficiently studied. Among these are computerized physician order entry, computerized physician decision support (which is often, though not necessarily linked with order entry, robots for filling prescriptions, bar coding, automated dispensing devices, and computerization of the medication administration record.[2]

Liya Davydov et.al and Youngmee Kim et.al in 2003 studied pharmacist intervention and documentation in US health care system. The problems were categorized like when the patient was not compliant with the drug administration in terms of frequency or dosage forms. Also, if the medicine was not available in the pharmacy or was out of stock, how the pharmacist would recommend as an alternative. [3-4]

Brennan TA, et.al in 1991 studied the incidence of adverse events and negligence in hospitalized patients**.** A systematic search of studies related to medication errors was performed using the databases on 18 December 2006 using the following key terms: 'medication errors', 'adverse drug events', 'adverse drug events and errors' and 'medication errors and adverse drug events'. The aim of this review was to investigate the multiplicity of

definitions used in studies having medication errors and/or ADEs as the main objective. Although there was no reason to believe that the occurrence of medication errors would be significantly different from hospitals, primary health care was excluded in this review due to assumed differences in medication handling and to the limited amount of completed medication error research in primary health care when the literature search was conducted. In the systematic literature review of 45 studies inconsistency in defining medication errors was reported. [5]

Brabcová, et.al studied the possibility of patient involvement in prevention of medication error. The research included 514 patients hospitalized at the hospital inpatient wards for at least 3 days. The research results showed that patients carried out medication control very superficially. They trusted the nursing staff and did not check medication accuracy. More than half of the respondents (56.2%) did not check the medication and did not ask the nurse about its name. It was puzzling and alarming that almost one-third of patients (26.3%) would not draw the attention of a doctor or nurse to the administration of wrong or unusual medication. In contrast, most patients did inform a doctor about medication already being taken (87.5%), and possible allergies (86.0%), and so the active involvement of patients in risk prevention is a possible solution. [6]

Kim Sears et.al did research titled "patient-related risk factors for self-reported medication errors in hospital and community settings in eight countries". Medication errors can cause substantial harm to patients and may lead to significant costs within a health care system. As such, there was value in identifying patient-related risk factors for medication errors. The objectives of this study were to identify patient-related risk factors associated with self-reported medication errors and to determine whether the risk factors differed between hospital and community settings. In 2008 the International Health Policy Survey of chronically ill patients in 8 countries was the primary data source. A substantial percentage of patients with chronic diseases in the countries covered by the survey experienced medication errors, with most errors occurring in the community setting. Several patient-related risk factors were associated with these errors. Greater emphasis on national incident reporting systems and greater sharing of knowledge across nations could help to identify strategies to overcome these problems. More specifically, strategies to increase reporting of and learning from medication errors, as well as education about potential patient-related risk factors were recommended. [7]

Reed, et.al did research in 2014 about E-prescribing errors which were identified in a compounding pharmacy .The objectives of this study were to estimate the electronic prescription error rate in a compounding pharmacy, determine the most common error types, list the most common interventions pharmacists made, and estimate how long it took to resolve these errors. Out of 111 electronic prescriptions, 70 had errors. The electronic prescriptions error rate was 63%. The most common type of error was wrong entry field (70.3%). For this project, wrong entry field was defined to mean that the drug name was in the wrong field (81%) or that multiple entries were in the wrong field (7%). Pharmacists usually used their own judgment to resolve an error (67%). Many e-prescription errors were identified in this compounding pharmacy. [8]

Nuckols TK, et.al did a systematic review and meta-analysis on the effectiveness of computerized order entry at reducing preventable adverse drug events and medication errors in hospital settings in 2014. The objectives of this analysis were to assess the effectiveness of CPOE at reducing preventable ADEs in hospital-related settings and examine reasons for heterogeneous effects on medication errors. [9]

Hepler CD, et.al in 1990 reported about care opportunities and responsibilities in pharmaceutical care through a systems-oriented approach. Studies reported that the pharmacist should lead collaborative, multidisciplinary efforts to prevent, detect, and resolve drug-related problems that can result in patient's harm. [10]

In 1989, Manasse HR did research titled medication used in an imperfect world and drug misadventuring as an issue of public policy. Medication errors may be committed by both experienced and inexperienced staff, including pharmacists, physicians, nurses, supportive personnel (e.g., pharmacy technicians), students, clerical staff (e.g., ward clerks), administrators, pharmaceutical manufacturers, patients and their caregivers, and others. The incidence of medication errors is indeterminate; valid comparisons of different studies on medication errors are extremely difficult because of differences in variables, measurements, populations, and methods. Many medication errors are probably undetected. The outcome(s) or clinical significance of many medication errors may be minimal, with few or no consequences that adversely affect a patient. Tragically, however, some medication errors result in serious patient morbidity or mortality. [11]

Dr.James M.Hoffman and Susan M Proulx did research on medication errors caused by confusion of drug names in 2003. Many drug names can look or sound like other drug names, which leads to confusion and potentially harmful medication errors. While various types of drug names exist, brand (proprietary) names are most commonly confused. Examples of the numerous drug names that have been confused because they look and/or sound similar include Celebrex® (celecoxib), Cerebyx® (fosphenytoin), and Celexa® (citalopram). Factors such as poor handwriting and clinical similarity may exacerbate the problem. This problem can be alleviated through actions by regulatory agencies, pharmaceutical manufacturers, healthcare professionals, and patients. To address the problem, significant changes in the pharmaceutical regulatory process have occurred in the US and Europe. [12]

Zellmer WA did research on preventing medication errors in 1990. Editorial medication errors compromised patient confidence in the health-care system and increased health-care costs. The problems and sources of medication errors were multidisciplinary and multifactorial. Errors occurred from lack of knowledge, substandard performance and mental lapses, or defects or failures in systems. [13]

Linda Aagaard Thomsen, et.al did a systematic review research about the incidence and characteristics of preventable adverse drug events in ambulatory care. Twenty-nine studies met inclusion criteria: 14 were ambulatory-based and 15 were hospital-based. Seven studies enrolled only elderly patients. Study was done to estimate the incidence and describe characteristics of preventable adverse drug events (pADEs) in ambulatory care. Medication errors resulting in pADEs occurred in the prescribing and monitoring stages. The most frequent drug therapy problem and error of commission reported in ambulatory-based studies on pADEs was the use of inappropriate drugs (42.7%; 40.4–45%). ADEs in ambulatory care are common, with many being preventable and many resulting in hospitalization. Quality improvement programs should target errors in prescribing and monitoring, especially for patients using cardiovascular, analgesic, and hypoglycemic agents. [14]

Aileen M Grant. et.al did research titled " developing a complex intervention to improve prescribing safety in primary care". The study was done to measure the extent to which different candidate outcome measures identified high-risk prescribing that was potentially changeable by the data-driven quality improvement in primary care (DQIP) intervention, to explore the value of reviewing identified high-risk prescribing to clinicians and to optimize the components of the DQIP intervention. Outcome measures were found prescribing

measures targeting (1) high-risk use of the non-steroidal anti-inflammatory drugs (NSAIDs) and antiplatelet; (2) 'Asthma control' and (3) 'Anti thrombotic in atrial fibrillation (AF)'. They concluded that: 'NSAIDs and antiplatelet' measures were selected as the most suitable outcome measures for the DQIP trial, based on evidence of this prescribing being more easily changeable. In response to the barriers identified, the intervention was designed to include a financial incentive, additional ongoing feedback on progress and re prompting review of patients, whose high-risk prescribing was restarted after a decision to stop.[15]

Hypothesis

The rate of medication errors in the outpatient setting in health care setting **is** high which significantly affects patient outcome.

Aim and objectives of the study

The aim of the present study was to assess, review and evaluate different types of medication errors in outpatient pharmacy setting. The specific objectives of the study were as follows:

1. To conduct literature review on the impact of medication errors on patient' health outcome.
2. To list different types of medication errors.
3. To identify different types of medication errors.
4. To recognize the types of medication errors reported.
5. To list the rate of acceptance of interventions by physician.
6. To know the importance of these interventions in reducing medication errors.
7. To list pharmaceutical intervention on dispensing and prescribing errors.

Methodology (Study design and setting)

The present study is a retrospective study carried out by collecting the medication errors prescriptions available in out-patient pharmacy of different health care centers in Oman.

Permission was taken from hospitals and health centers to study the prescriptions. The prescriptions were collected over a certain time period.

Collection of Prescriptions

With the help of clinical pharmacists, dispensing pharmacists and assistant pharmacists working in the department, prescriptions with medication errors from Jan. 2013 to Nov. 2013 were identified and selected randomly from three hospitals in Oman. Total prescriptions collected from a Hospital in the interior place in Oman over a period of four months (Nov.

2013 till Mar. 2014) were 59690 in number.

Identifying medication errors (Criteria of Inclusion)

Prescriptions from OPD pharmacy were only included in the study. Only those prescriptions which had errors incurred by the doctors, pharmacists or patients themselves were documented well along with the pharmacist's comment on the prescription. The work experience of the staff doing the interventions independently, varied from as low as 2 years to more than 10 years.

Criteria of Exclusion

All prescriptions that were excluded for the medication error study were those which were not clearly written, and those prescriptions which did not meet the inclusion criteria Confidentiality of the information was maintained by not disclosing the patient name, patient ID, name of doctor prescribing the medicine and name of the pharmacist who did the interventions.

Studying the pharmacy intervention if any and identifying medication errors.

Reference Standards used to correct medication errors in these health care centers were British National Formulary, Micromedex, Up To Date, Journals (studies), E.G: Meta-analysis, systematic analysis and Made Scape.

Categorization of medication errors

Pharmacist intervention and comments written on the prescriptions were used to revise each error and classify them into following categories : 1) medication selection or wrong diagnosis 2) over dose, sub-therapeutic dose 3) duration of therapy 4) therapeutic duplication or addition of another medicine not reviewing past medical history of patient 5) others like medication not available , patients noncompliance , general physicians not specialized to prescribe specialized medications related to ; neurology, ophthalmology, gynecology etc.

Severity of Consequences

Severity of consequences was categorized as minor, moderate, severe, and others based on seriousness of consequences considered in medication errors.

Table 1: Severity of different types of medication error.

Minor	That do not harm the patient, and need monitoring
Moderate	Can cause temporary harm if used
Severe	Temporary harm that may lead to hospitalization, Results in permanent harm, Near-death event, or death
Others	Like administrative and financial problems.

Reasons of Interventions

The reasons for interventions written on the prescriptions were read and categorized to prevent complications and morbidity, to rationalize the treatment, improve compliance, cost and others.

Analysis of Data

The data was analyzed and results are reported as shown in the next section.

Results (Statistical Analysis of the prescriptions)

Various Errors reported from the hospitals are shown in the following tables.

Table 2: Different types of medication errors reported in Hospital A over four month period from (Nov. 2013 till Mar. 2014) from 59 prescriptions.

Type of error	Definition	Examples
Drug selection	Wrong selection or entering of drug through computer to the patient.	Mefenamic acid 500mg TID was prescribed for pregnant patient. Ibuprofin suspension was prescribed for 13 years old patient. Entering Sodium Chloride IV fluid in place of Nasal drops for a child. Download all previous medication for a patient without need.
Over dose	Administering extra dose of medicines	Digoxin 0.25mg BID was prescribed for admitted patient and seen after discharge by pharmacist in OPD pharmacy. Omeprazole 40mg capsule was prescribed BID for a patient. Ranitidine 150mg TID for 5 days. Clopedogril Hydrogen Sulphate 300mg once (maximum dose 75mg). Cefuroxime 500mg TID for UTI. Warfarin Sodium 67mg OD. (2-5mg maximum 10mg)
Under dose	Administering low dose of medicines	Ciprofloxacillin 250mg capsules BID for 41 years old patient.(should be 500mg) Dipyridamole 75mg was prescribed once.(should be TID) Amoxicillin 250mg capsule TID for 31years old patient.

		Isosorbide dinitrate 10mg once daily for patient with cardiac problem. Metronidazole 500m once daily for 5 days was prescribed for 24 years old patient.
Duplication	Administering two medicines from same group	Patient received Cetirizine , Triploidine HCL and chlorpheniramine maleate from different clinics. Calcium with vitamin D was prescribed with Calcium syndoz tablet. Insulin Mixtard was dispensed with Regular Insulin. Salbutamol syrup with Salbutamol inhaler for 8 years child.
Duration	Administering dose of medicines with low duration	Entering medications for 90 days without following patient's health. Flucloxacillin capsules 250mg BID and TID. (it should be QID).
Unauthorized	Drug prescribed by non-specialized doctor or wrong diagnosis	Lactulose syrup was prescribed for a patient suffering from urinary incontinence. General physician prescribed ophthalmic medications. Omeprazole 20mg was prescribed from Ophthalmology department.

Table 3: Different types of medication errors reported from randomly selected prescriptions over a period of Jan. 2013 to Nov. 2013 from Hospital B

Types of errors	Definition	Examples	Correction
Drug selection	Wrong selection or entering of drug through computer to the patient.	Vitamin D3 capsules 50000IU BID for 30days.	Alfacacidol 0.25mg once daily for 30days.
Over dose	Administering extra dose of medicines	Ciprofloxacillin 500mg TID for 90days. Filgrastim injection 300mcg BID for 15 days	Ciprofloxacillin 500mg BID for 7days. Filgrastim injection 300mcg 2days a week for 4weeks.
Others	Pharmacist brought by mistake other medicine (sound alike)	Insulin Glargine was prescribed but pharmacist brought Glycogen	Double check up by pharmacist in dispensing

Table 4: Different types of medication errors reported from randomly selected 55 prescriptions over a period from Jan. 2013 to Nov. 2013 from Health center C

Types of errors	Definition	Examples
Drug selection	Wrong selection or entering of drug through computer to the patient.	Prescribing tetracycline eye ointment, cough syrups and Hydrocortisone cream PRN. Ibuprofen and Diclofenac Sodium tablet were prescribed for Asthmatic patient. Loratidine tablets were prescribed in place of Loperamide for diarrheal patient.
Over dose	Administering extra dose of medicines or multidrugs.	Clotrimazol, Acetic Acid and Glycerin ear drops were prescribed for 13 years old patent to be used TID for 5days.

Duplication	Administering of two medicines from the same group.	Chlorpheniramine Maleate, promethazine and Amydramine cough syrup for common cold.

The total number of prescriptions with medication errors randomly selected and collected from the OPD pharmacy during the period ranging from Jan. 2013 to Nov. 2013 from Health center C were 55 in number and from Hospital B prescriptions with errors were reported as 81. Total prescriptions collected from Hospital A over the period of four months from Nov. 2013 till Mar. 2014 numbered as 59690. The number of medication errors were identified, categorized and interventions were done by the pharmacy staff in the same period. There were 59 OPD prescriptions with medication errors from Hospital A which are about 0.1% of the total dispensed at OPD. Not less than 10 errors were found from Hospital B daily. The results are described in the following charts and tables:

Nature of errors reported are shown in Table no. 5;

Table 5: Nature and severity of different types of medication errors reported.

Total number of errors reported	Nature of errors			
	Minor	Moderate	Severe	Others
195	130	45	-	20
Percent %	66.6%	23%	0	10%

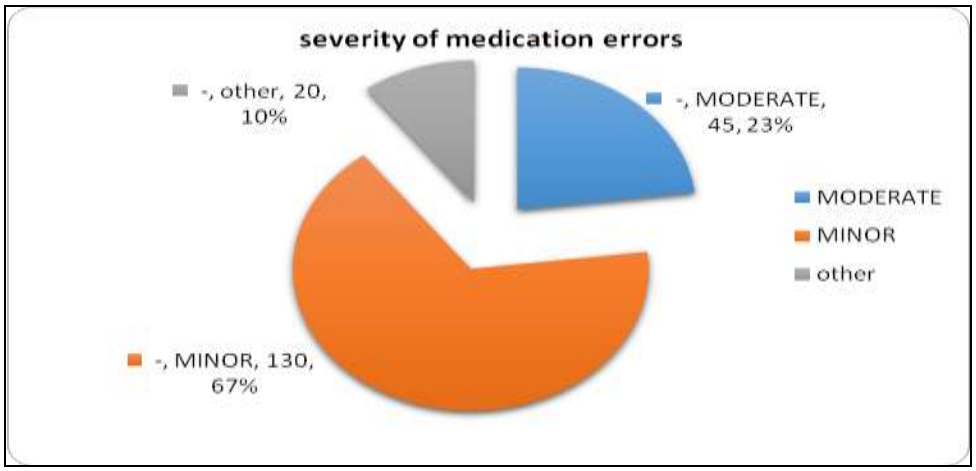


Figure1: Nature and severity of different types of medication errors reported.

Different types of errors reported in hospitals are shown in Table 6 and Figure 2:

Table 6: Different types of medication errors reported.

Different types of medication errors reported in Hospitals/ Health centers	Errors in various categories					
	Drug selection problem	Dose error	Duplication of drugs	Duration of treatment	Others	Total
Hospital B	19	30	16	12	4	81
Health Centre C	11	34	7	1	2	55
Hospital A	13	33	7	2	4	59
Percent %	22%	49.7%	15.3%	7.6%	5.1%	100%

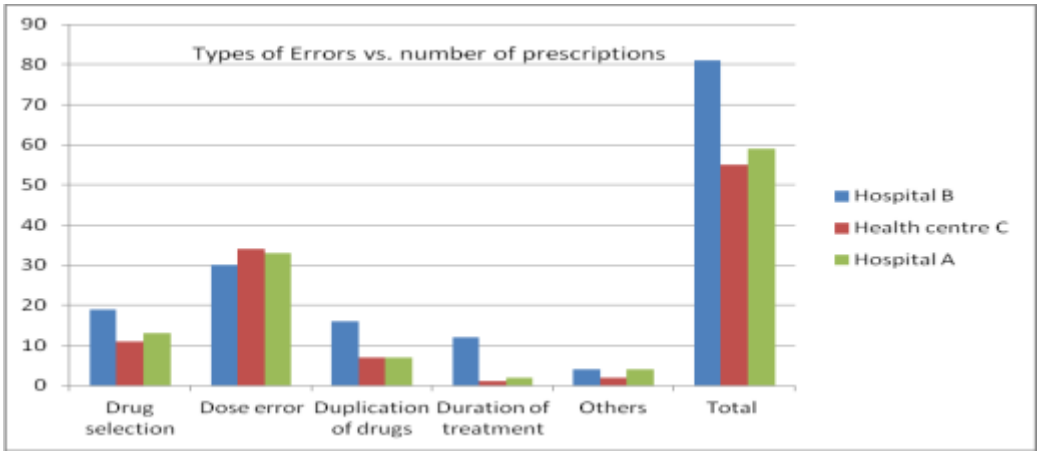


Figure 2: Different types of medication errors reported.

The patients reporting medication errors were classified on gender basis as shown in Table no.7 and Figure No. 3:

Table 7: Medication errors classified on gender basis.

Hospitals/Health centers	Males	Females	Total
Hospital B	20	61	81
Health Centre C	25	30	55
Hospital A	18	41	59
Total	63	132	195
Percent %	32.30%	67.60%	100%

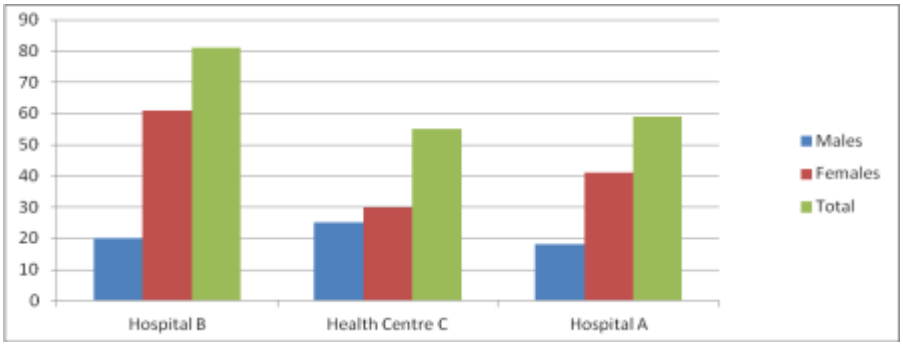


Figure 3: The errors reported on basis of gender

The errors encountered on basis of age are classified as shown in Table no.8 and Figure No.4;

Table 8: Errors reported on basis of ages of patients

Hospitals\ Health centers	Less than 12 years	More than 12 years	Total
Hospital B	10	71	81
Health center C	6	49	55
Hospital A	9	50	59
Total	25	170	195
percent	12.80%	87.10%	100%

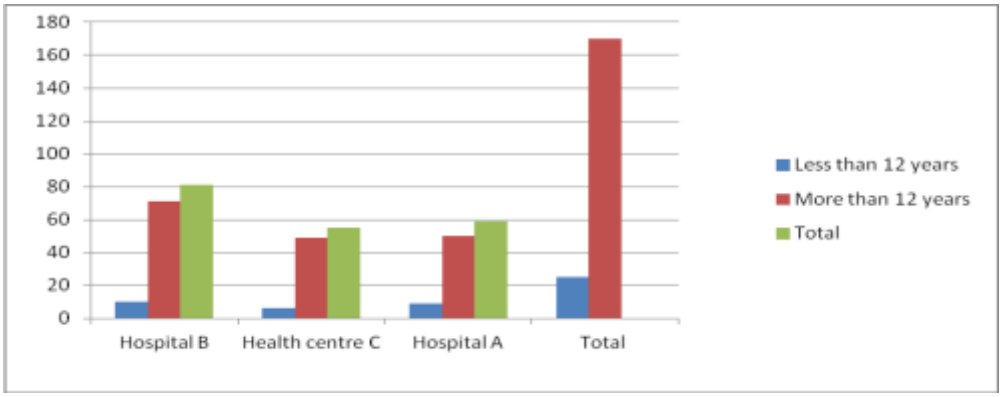


Figure 4: Errors reported on basis of ages of patients

Pharmacist intervention and doctor's response are given in Table no.9

Table 9 : Data showing intervention of pharmacist and response of doctors.

Hospitals/ Health centers	Intervention	Accepted	Not accepted
Hospital B	81	79	2
Health centre C	55	54	1
Hospital A	59	56	3
Percent %	100%	97%	3%

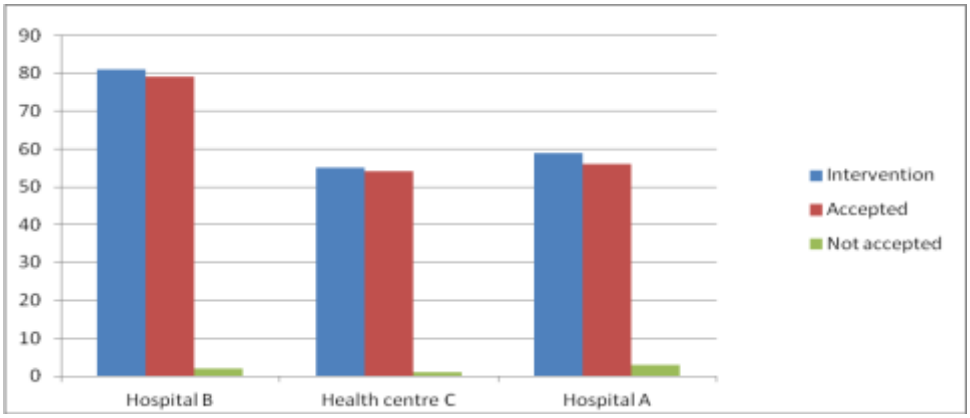


Figure 5: Pharmacist intervention and doctor's response.

DISCUSSION

Most of the clinical medication errors recorded by the dispensing pharmacists in an OPD pharmacy showed that majority of the prescriptions (61.9%) were categorized as of minor severity (had no potential to cause morbidity or mortality significantly). 19.4% interventions were moderately significant. These results are similar to the study carried out in 2001 in USA in a dispensing pharmacy. 97% of interventions involved change in medication order and the reason for prescribing that medication was clarified. In contrast, in a study in USA, 92% of the interventions included change of medication order, 11% needed to review past medical history, 73% had medication selection recommendation, and other interventions were to the extent of 5%. It is of concern in pharmacy practice and needs to be addressed. 22.3% of total prescriptions collected were wrong selection of medication and needed reviewing past medical history of patients (patients came with difficulty in passing urine; doctor wrote for him lactulose syrup). 49.7% were errors due to overdose as reported in the tables. Under dose medication errors were 22.3% and other interventions were found to be 4.9%.

Medication errors in prescriptions obtained by females were 67.6% when compared to males (32.3%). This could be explained by the fact that the female patients were more in number compared to the male patients and were more prone to chronic diseases or due to interest to know about drugs, their indications and any drug therapy problems from the pharmacist. Similar results were viewed in a Dutch study where males' cases constituted 41%, but the opposite was in Australia when a research revealed 78.9% male and 21.1% female cases.

One of the most important things noticed by the dispensing Pharmacists was intervention to prevent complications, to prevent morbidity, to improve patient compliance, cost reduction and to clarify prescription.

The best thing found in the study was that the intervention undertaken by the pharmacists were well received and accepted (97%) by the working physicians in the hospital. It symbolized that the health care system in Hospital A was patient centered not a physician centered. These results are not far from the results of a Dutch research, where 82% of the interventions were accepted by the prescribers.

The Directors of Hospital Pharmacy recommended documentation of pharmacist interventions that could help in reducing medication errors by enhancing the communication with other health care providers; justify workload, and identity opportunities for focused drug

use review. Also, they pointed that reducing medication errors reflect the wide range of the services provided by pharmacy. A study titled: Medication error analysis: a systematic approach. 2010 Jan shows that further research efforts are currently taking place in this challenging aspect of patient care to further provide more strategies for medication error detection, analysis, and prevention as requirement in many hospitals as hospital A in the present study.

CONCLUSIONS

Pharmacy interventions have always been an important tool for determination of the outcomes of the therapy, reduce future medication errors and rationalize the cost of the therapy. The purpose of this study was to determine the number and types of medication errors reported by the dispensing pharmacists at OPD pharmacy in hospitals and health centers in Oman during 2013 and 2014 retrospectively. The prescriptions with medication errors were collected and filed by the pharmacists and assistant pharmacists in the OPD pharmacy. They were analyzed and data was categorized and reviewed. The results showed that 66.6% of the medication errors were minor and 23% were of moderate nature about changing medication order. Females' prescriptions were more than males'. 97% of the interventions were accepted which reflects the awareness of the doctors about the importance of pharmacy practice. Few of new physicians refused intervention in many hospitals. From that we can conclude that improving the documentation system is the key to improve the health care system. Based on that outcome, we recommend to increase similar researches to provide a solution to the prescription and dispensing problems, as it can also improve the documentation system, emphasize the importance of it, reduce prescribing errors, and update the knowledge of pharmacists and other health care professionals. The medication errors can be reduced or prevented by many ways like education, training, screening, management, caring and good counseling.

Limitations of the study

It was conducted only amongst the out patients. Moreover, the study enrolled only 201 prescriptions (small sample) from four different health care centers and hence finding of the study cannot be generalized to the OPD patients in Oman.

Large sample is needed for future research. Additionally, if data base from inpatient clinics is also available for study, it will help to extrapolate the finding of such studies and will give broader and wider picture of medication errors.

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APPENDEX

Format Used to Record Medication Errors at OPD Pharmacy in the Hospital.

Types **(Prescribing Errors)**	
Change medication order (dose, frequency, duration . . .).	
Clarify medicine (dose, frequency, duration . . .).	
Medication selection recommendation.	
Prescribing medicine with no indication.	
Therapeutic duplication.	
Overdose.	
Sub-therapeutic dose/ duration.	
ADRs or (Drug induce ADRs) or (Drug drug interaction).	
Addition of another medicine (e.g. Ranitidine for hyperacidity).	
Transcription error.	
Administrative issues.	
Not reviewing patient history (sensitivity, last visit, and other diseases).	
Total(prescribing errors)	
Types **(Dispensing Errors)**	
Dispensing wrong medicine. (e.g. Tegreol 100mg instead of 200mg)	
Changing dose/ duration/ frequency without consulting the Doctor.	
Pharmacy transcription error.	
Others.	
Total(Dispensing errors)	
Types **(others)**	
Patient non-compliance.	
Medication not available.	

(Dr. Response)	**(Ranking)**
Agree	Minor
Disagree	Moderate
Other(e.g. Dr. was not found)	Major
	Other(e.g. drug not available)

(Risk Management)
Prevent Complications(e.g. side effects)
Rationalize Treatment.
Prevent Morbidity.
Improve patient's Compliance.
Cost Reduction.
Others (e.g. clarify Rx, drug not available etc.).
Total Number of prescriptions dispensed.
Total Number of Interventions.

Average number of medicines in a prescription.
Gander: % Male % Female % Infant/ Child