“MEDICATIONS ERRORS MOST NEGLIGIBLE DISASTER: PRESCRIBING FAULTS AND PRESCRIPTION ERRORS”

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ABSTRACT

Prescription errors are the major problem among the medication errors. A definition states that a ‘clinically eloquent prescribing error occurs when there is an unintended significant reduction in the possibility of treatment being timely and effective or increase in the risk of harm when compared with generally recognized practice. World Health Organization (WHO) identified rational use of drugs requires that patients receive medication applicable to their clinical needs, in doses that meet their own individual requirement for an adequate period of time and at the lowest cost to them and their community. This study aims to evaluate Prescription error comparison in hospital and clinical settings in Pakistan and consequence responsible for that (doctors/nurses/pharmacist) And how it can be minimized. Nevertheless, the drug prescription and administration process in most hospitals worldwide is still based on handwritten medical chart entries. Prescribing errors can be observed if sufficient and necessary information’s are not mentioned in prescription. Nevertheless, the drug prescription and administration process in most hospitals worldwide is still based on handwritten medical chart entries. This study was conducted in Karachi May 2015 on descriptive studies of prescription errors collected from different healthcare clinics and hospitals. At the start of the study, the pharmacist of each of the selected pharmacies was informed regarding the nature of study and its utility and his or her cooperation was sought. We observed that 52% of prescription errors were made by the hospital physicians whereas 48% of prescription errors were made by the clinic physicians. Almost 50% of the error was found in both hospital and clinical prescriptions. Conclusively, after the consensus we found out that the people responsible for medical errors are mostly Doctors. Some doctors verbally direct their patients about their medications which can cause complications in future i.e. the patient might

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misunderstand the directions. Moreover, graphical representation comparisons were made between hospital prescriptions and clinic prescriptions and analyzed whether they fulfill the ideal prescription criteria or not.

**KEYWORDS:** Prescription errors, Medication error, superscription, mark/label, pharmacist.

**INTRODUCTION**

Among medication errors prescription errors are major problems. Errors occur both in general practice and in hospital, and although they are rarely fatal they can affect patients’ safety and quality of healthcare. A definition states that a ‘clinically eloquent prescribing error occurs when there is an unintended significant reduction in the possibility of treatment being timely and effective or increase in the risk of harm when compared with generally recognized practice’.[1] At any step of the care process errors are possible, from medication selection to drug administration. As a result of medication errors, various studies have shown that patients admitted to hospitals are harmed majority of which are due to prescription error.[2-5] World Health Organization (WHO) identified rational use of drugs requires that patients receive medication applicable to their clinical needs, in doses that meet their own individual requirement for an adequate period of time and at the lowest cost to them and their community.[6] To investigate the rational use of drugs, WHO have established few core indicators, viz. prescribing indicators, patient care indicators and health facility indicators. Prescribing indicators included number of drugs prescribing per encounter, percentage of drugs prescribed by generic name, percentage of encounter by injection and antibiotics prescription and percentage of drugs prescribed from essential medicine list (EML).[7] Prescription errors can differ in severity from minor inadvertences to major faults like unreasonable prescribing, incorrect prescribing, under or over prescribing due to wrong judgment or lack of capability in the prescriber.[8,9] Medication errors can give rise to adverse events too. In one study, 11% of adverse events were due to medication errors.[10] The incidence of medication errors differs from one set up to another depending on a number of factors such as patients type, instruction, patient load, medical audit procedures and sensitization of the workers include in health care. Therefore, prescriptions (for both admitted and OPD patients) need to be proactively screened for such errors and steps be taken to minimize these errors. The important form of medication errors are prescription error. According to studies 15-21% prescriptions contain at least one prescribing error.[11,12] In cancer chemotherapy, cytotoxic drugs that are used are well known for their wide range of
toxicities because of their narrow therapeutic index. Prescription errors involving anticancer treatment could result in potentially harmful adverse effects.\cite{13} Every stage of the medication use process (storage, prescription, transcription, preparation, dispensation, and administration of a drug) is susceptible to errors.\cite{14,15} but errors are most frequent and common during prescribing and administration.\cite{16} Medication error is particularly common in hospitalized patients specially among those who necessitate multiple forms of pharmacological therapies, elderly, perilously ill and pediatric patients.\cite{17} occurrence and consequences of medication errors are increasing day by day and potentially more harmful in the pediatric population than in the grown-up population.\cite{18} For adults 1% to 30% of all hospitals admissions shows medication errors, 15.6 % reported in pediatrics.\cite{19} By both medical and paramedical personnel, medication errors (MEs) may occur at various levels of patient care, hence high standards monitoring is compulsory. According to several reports, nurses are committed to made many errors.\cite{20,21} Although in intensive care units (ICUs), the medical and paramedical personnel’s are more skilled, the fluency of errors is reported to be 52.5% which is more irrational.\cite{22} For the reduction of medication errors many attempts are being ended predominantly by the use of information technology e.g. e-prescribing, which has considerably reduced the chances of such errors.\cite{23,24} In Pakistan, several hospitals have adopted e-prescribing fully or partially for the reduction of medication errors but data on MEs is inadequate. In a study, the prevalence of transcription errors in a main public hospital in Pakistan was studied.\cite{25} Only authorized person can write prescription in medico-legal document for the treatment of patient where each prescription should contain all the four parameters that are, superscription, subscription, inscription and signature with registration number issued by medical council.\cite{26} In superscription, doctor’s information (qualification, address) and patient (name, age, sex address) as well as date of prescription are included so as to minimize the relative mistakes. The subscription should include to the information regarding drug prescribed, like, dosage form, drug name, brand name, its dose, number of drugs, frequency of dosage etc. While in inscription directions for the use of drug needs to be mentioned. Finally, signature of the registered medical expert with their registration number at medical council should be written as last constituent of prescription.\cite{27} All prescription orders should be undoubtedly written by prescriber so it can easily interconnect between pharmacist and patient. Prescribing errors can be observed if sufficient and necessary information’s are not mentioned in prescription.\cite{28} These include errors involving inadvertence of needed information; poor hand-writing perhaps leading to errors of drug dose or timing; and prescription of drugs that are inappropriate for the specific situation.
Prescribing errors promote the irrational use of drugs and therefore decrease patient amenability.\textsuperscript{29} Electronic prescription systems allow the prescribers directly to send the prescriptions to the pharmacy, which have immediate benefits of improving legibility and completeness and eliminating transcript errors. Some of electronic prescription systems are more advanced and assisted by decision-support tools such as drug–drug, drug–dose and drug–Allergy interaction checking.\textsuperscript{30} Many studies have shown that electronic prescribing can reduce the incidence of medication errors by more than 50\% and improve the quality of prescribing and patient safety.\textsuperscript{31} As decisions about computerized prescribing are made, a better understanding of the relative benefit and acceptability of basic systems versus more advanced systems is needed.\textsuperscript{32} Nevertheless, the drug prescription and administration process in most hospitals worldwide is still based on handwritten medical chart entry.\textsuperscript{33,34} Therefore, there is a need to analytically address the legibility of prescription, correct spelling of drugs, authorized abbreviations and all other information of a prescription concerned with patient, prescriber and drugs to minimize the occurrence of medication error.\textsuperscript{35} Also, in the Gulf region there have been fewer studies that addressed the prevalence and degree of prescribing error.\textsuperscript{36}

The objective of the study is to evaluate an incomplete or inaccurate medial order comprises a prescription error. Such errors have probable consequences in terms of transience, morbidity, prolonged hospital reside and in health care expenses. The aim of this study was to determine the rate of incomplete prescriptions observed in a hospital, clinics & pharmacies and categorize the causes of such imprecision.

\textbf{METHADOLOGY}

\textbf{Sampling}

This study was conducted in Karachi May 2015 on descriptive studies of prescription errors collected from different healthcare clinics and hospitals. We collected 100 prescriptions altogether out of which 50 were taken from hospitals and 50 were from different clinics. The tool for data collection was self- administered questionnaire. The questionnaire was in the simple English so as to make it easier to comprehend.

\textbf{Field work}

The whole survey was done face to face by interaction with different hospitals, clinic, pharmacies. We had collected in approximately so prescription from different clinic and so prescription from hospitals. Clinic includes: Rameez clinic, Ahmed aliwelfare
medical centre, Medi aid medical centre, Al-batul health centre, Godil eye clinic, Habib medical centre. Hospitals include: Liaquat national, Zainab panjwani, Mamji hospital, Agha khan hospital, Dow university hospital, Fatimiyah hospital, Dr. akil bin Abdul Qadir institute of ophthalmology. We had collected those prescriptions within about 1 month.

**Analysis of data**

We analyzed the prescriptions carefully, and the errors were pointed out manually without the involvement of computer software and then compared it with the ideal prescription criteria. The result was expressed in percentages singly. Then after pointing out the errors from each prescription, we then compared the hospital prescriptions with the clinical prescriptions. Moreover, this comparison was illustrated in the form of graph and pie chart as shown below.

**RESULT**

For the collection of the sample data, 100 prescriptions were analyzed from which 50 were from hospitals and 50 from different clinics. The prescribing habit of physician was assessed that they how irrationally prescribed the drugs without caring about the minute details such as patient’s age, weight etc.

In this analysis we observed that 52% of prescription errors were made by the hospital physicians whereas 48% of prescription errors were made by the clinic physicians. The errors we noticed were that the subscription and special information were not mentioned. Almost 50% of the error was found in both hospital and clinical prescriptions. According to our analysis the date was also not mentioned in the clinical prescriptions. As we know that every medical organization has its own DEA number which has to be mentioned at the time of prescribing the patient and 40% error was found in both hospital and clinical prescriptions.

**TABLE & Fig # 1: Comparison between hospitals and clinical pharmacy subscription error.**

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscription</td>
<td>45%</td>
<td>50%</td>
</tr>
</tbody>
</table>
TABLE & Fig # 2: Comparison between hospitals and clinical pharmacy superscription error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superscription</td>
<td>20%</td>
<td>22%</td>
</tr>
</tbody>
</table>

TABLE & Fig # 3: Comparison between hospitals and clinical pharmacy inscription error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inscription</td>
<td>10%</td>
<td>1%</td>
</tr>
</tbody>
</table>
TABLE & Fig # 4: Comparison between hospitals and clinical pharmacy date error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>3%</td>
<td>28%</td>
</tr>
</tbody>
</table>

TABLE & Fig # 5: Comparison between hospitals and clinical pharmacy signa error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signa</td>
<td>16%</td>
<td>2%</td>
</tr>
</tbody>
</table>

TABLE & Fig # 6: Comparison between hospitals and clinical pharmacy special instruction error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special instruction</td>
<td>41%</td>
<td>49%</td>
</tr>
</tbody>
</table>
TABLE & Fig # 7: Comparison between hospitals and clinical pharmacy prescriber information error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriber information</td>
<td>11%</td>
<td>5%</td>
</tr>
</tbody>
</table>

TABLE & Fig # 8: Comparison between hospitals and clinical pharmacy patient information error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient information</td>
<td>8%</td>
<td>4%</td>
</tr>
</tbody>
</table>

TABLE & Fig # 9: Comparison between hospitals and clinical pharmacy DEA number error.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Hospitals</th>
<th>Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA number</td>
<td>39%</td>
<td>34%</td>
</tr>
</tbody>
</table>
DISCUSSION
In the whole analysis, we have observed that most of the errors occur in writing subscription, most of the time, subscription is not mentioned, when we have analyzed the data and compare our result, we have observed 45% error of subscription in hospital, whereas 50% of errors in clinics. In case of superscription, 22% errors in clinic whereas 20% errors in hospital observed. In case of inscription, major errors occur in hospital i.e about 10% and in case of clinic a very little error observed. In clinics, majority of prescriptions are without date, the ratio of errors observed is 28%. As special instruction plays an important role for the patient’s counseling that how to use medication, but most of the hospitals and clinics not pay any attention to this and the error observed are 49% in clinics and 41% in hospitals. Majority prescriber info mentioned in prescription but sometimes this mistake is also a part of prescription error.

DEA no. id must require for the controlled drugs as there misuse chances are on frequent basis but Doctor’s, physicians and prescribers does not know their importance and neglects it by which errors are increased and observed 34% in clinics and 39% in hospitals.

Error rates were observed extensively at high rate in those hospitals and clinics which prescribed a broad range of medication in which antibiotic, controlled drugs include and also different between different hospital, Trusts, with hospitals specializing in pediatrics, maternal health and mental health exhibiting the lowest error rates. However, when corrected for number of medications, these differences did not remain significant, with the exception of parental health. We found no overall difference in error rate among different grades of prescriber, and newly qualified doctors were not most likely to make errors than their senior colleagues. The classifications and brutality of errors made by different prescriber grades were broadly similar however, some differences were observed. For example, writing errors were more frequently observed with newly appointed doctors, medication omission was more frequently observed with junior and mid-grade doctors, and dosing errors were more frequently observed with mid-grade doctors. Electronic prescribing can eliminate particular error types at a great extent depends on the individual systems used. Importantly, while electronic prescribing systems could theoretically have prevented up to a major extent of, these systems are best utilized alongside rather than instead of existing defenses. We did not formally appraise differences in error rates between electronic prescribing and paper-based prescribing systems. To stop errors from causing patient harm, pharmacy services should
facilitate more pre-emptive use of pharmacists to provide advice at the point of prescribing or as soon as possible afterwards, rather than with hindsight. Better training and experience in prescribing as a medical student might improve doctors' knowledge. However, it would be impossible for doctors to memorize all information regarding individual drugs. Directing efforts at improving doctors' information seeking skills might be more valuable. The World Health Organization and the British Pharmacological Society have published guidance for prescribers including steps or principles that should be followed. Yet some of these steps, such as taking into account the patient's medication history and considering individual factors that might influence the prescription choice, were clearly ignored or overridden by external factors during the prescribing events described by these doctors. Poor training in prescribing skills was acknowledged as a latent condition in a study of Australian junior doctors' prescribing errors. The introduction of exercise that focuses not just on following guidelines, but also on the importance of following a routine that includes self-checking, might go some way to improve both types of mistakes. In conclusion, this study has enabled us to unpack the factors implicated in junior doctors' prescribing mistakes. We have demonstrated that, although individual factors, such as knowledge and expertise played a role in prescribing mistakes, there were many interrelated factors that contributed to error. Our study revealed that prescription errors were common in private hospitals. Therefore, educate prescribers to reduce prescribing errors through seminar, conference, workshop are required. There should be also pharmacist and doctor’s joint training for decrease prescription errors in this way the extent of prescribing errors will be beneficially minimized.

CONCLUSION
Conclusively, after the consensus we found out that the people responsible for medical errors are mostly Doctors. At the time of prescribing medication they skip to fulfill the complete requirements, it could either be patient information, subscription, superscription or the special instructions for pharmacist and patient. Some doctors verbally direct their patients about their medications which can cause complications in future i.e. the patient might misunderstand the directions. Then the next person responsible for the medicinal errors is Pharmacists who at times actually ignore some of the errors without questioning anything about it. Later, come the Nurse who sometimes misunderstands the dose, strength or the drug name which has to be administered to the patient. Such type of errors caused by the Professionals may get lethal. The patient has to face the consequences of the medicinal errors. If a wrong medication is given to the patient instead of the right one, some other reactions may take
place causing severe illness or if the dosage is given in increased amount. Incorrect dosage or incorrect medication can be deadly, yet the doctor is not to be blamed.

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